

MTEL
General Curriculum (03) 1-6
Comprehensive Success System
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Introduction

The purpose of this Comprehensive Success System study guide is to prepare you to pass your exam in the quickest and easiest way possible.

Your test coach will help negotiate the road to test success by motivating and helping you learn and apply the test content. Test coaching works by e-mailing your test coach when you have a question or need help learning the material in your Comprehensive Success System. However, your test coach can't do the work for you. You must do the studying, thinking, problem solving, look up reference information and dedicate yourself to a passing score. It's your success and future.

The Comprehensive Success System's table of contents and organization of subtopics aren't intended to follow the same organization of test content as listed on the testing company web site. In each chapter you will find test information essential for your test success. We have attempted to save you as much study time as possible by focusing only on the actual content that is *currently being tested*. Study and learn this information to prepare and be successful on your exam.

The next best thing to seeing the real exam in advance is the series of practice questions you'll find in this Comprehensive Success System. When you have read and absorbed the information in each of the sections, work your way through the practice questions and read the answer carefully. *Testing your knowledge by taking practice questions is an essential part of effective exam preparation* and an important part of the Teaching Solutions' Method for your test success. Knowing why an answer is correct is as important as knowing the correct answer.

The average test taker wastes their time (e.g. complaining, trying to find something wrong with their study materials, procrastinating) and energy in everything, but preparing for the test. That's not you or you wouldn't be here right now. This is the real thing. Roll-up your sleeves and let's move into learning your exam. It's time for you pass and tell your own success story!

Sincerely,

**Teaching Solutions
Test Coaches**

Mathematics

Algebraic Concepts

There are several important properties used in math for both addition and multiplication. The chart below shows some of the important ones.

Properties of Addition	Rule	Example
Associative	The order that numbers are grouped in addition does not matter.	$3 + (4 + 5) = (3 + 4) + 5$
Commutative	The order that numbers are added does not matter.	$4 + 5 = 5 + 4$
Identity	The sum of any number and 0 is the original number.	$5 + 0 = 5$
Inverse	Any number plus its opposite is 0.	$5 + (-5) = 0$ $-4 + 4 = 0$
Properties of Multiplication		
Associative	The order that numbers are grouped in multiplication does not matter.	$2 \times (3 \times 7) = (2 \times 3) \times 7$
Commutative	The order that numbers are multiplied does not matter.	$5 \times 6 = 6 \times 5$
Identity	Any number times one is the original number	$14 \times 1 = 14$
Property of Zero	Any number times 0 is 0.	$23 \times 0 = 0$
Inverse	Any number times its reciprocal is 1.	$3 \left(\frac{1}{3}\right) = 1$ $-2\left(-\frac{1}{2}\right) = 1$
Distributive	If a, b, and c are real numbers, then ... $a(b + c) = a(b) + a(c)$ and $a(b - c) = a(b) - a(c)$	$3(2 + 5) = 3(2) + 3(5)$ $= 6 + 15 = 21$ $4(5 - 2) = 4(5) - 4(2)$ $= 20 - 8 = 12$

In Algebra, there are often unknown quantities that need to be solved. A **variable** is a letter that represents an unknown number. Variables should be treated like any other number. They can be added, subtracted, multiplied, and divided. To do mathematical operations to variables, we need to understand coefficients.

Coefficients are numbers that are directly in front of a variable. For example, $3x$ has a coefficient of 3, and $-4x$ has a coefficient of -4 . When adding or subtracting

expressions that have variables, we add or subtract the coefficients. $3x + 4x = 7x$ since the sum of the coefficients is 7 ($3 + 4 = 7$). $5y - 8y = -3y$ since the difference of the coefficients is -3 ($5 - 8 = -3$). **Only terms that have the same variable with the same exponent can be added or subtracted together.** $3x$ cannot be added with $4y$ because they have different variables, and $2x$ cannot be added with $4x^2$ because the exponent with the variable is different. When multiplying variables, we need to look at the coefficients as well as the exponents of the variable. Start by multiplying the coefficients. The product of the two coefficients will be the coefficient of the resulting term. Then, add the exponents of the variables. This is the exponent for the variable in the resulting term. $(3x^2)(-2x^4) = -6x^6$. In this example, the product of the coefficients is -6 and the sum of the exponents is 6. (Hint: if a variable has no exponent written, it has an exponent of 1. $x = x^1$.) When dividing terms with exponents, start by dividing the coefficients and then subtract the exponents of the variables. $(12y^{12}) / 3y^3 = 4y^9$.

An **equation** is a mathematical sentence that has an equal sign in it. $12x = 36$ is an equation. In an equation, the left and right side of the equal sign must be the same. A **solution** is a value for a variable that makes an equation or inequality true. In our example $12x = 36$, $x = 3$ is a solution since $12 \times 3 = 36$. Three makes the left side 36, thus both sides are equal. Equations often have more than one variable in them. In the equation $y = 3x - 10$, there are now two variables. To find a solution to this equation, we need to find an x and y that will make both sides equal. There are many solutions to equations with more than one variable. To find one, pick a value for x and substitute it with the x in the equation. Let's choose $x = 4$. If we replace x with 4 we now have $y = 3(4) - 10$. Do the computations on the right hand side to find y . $3(4) = 12$ so $y = 12 - 10 = 2$. This means if $x = 4$, then y is 2. We can write this as an **ordered pair**. An order pair is two numbers set off with parenthesis. Our solution is $(4, 2)$. Always put the numbers in the order they occur in the alphabet. Since x is first, we place it first, followed by a comma and then the value for y . **Inequalities** are expressions where one side of the equation is bigger than the other.

We use different signs for inequalities. The following chart shows the signs we use and their meanings.

Symbol	Definition	Meaning
$>$	Greater than	The left side is larger than the right side.
$<$	Less than	The left side is smaller than the right hand side.
\geq —	Greater than or equal to	The left side is greater than or equal to the right side.
\leq	Less than or equal to	The left side is smaller than or equal to the right side.

Some equations are functions. A **function** is a relationship between two values, known as the input and output, where every input has exactly one output. There are several ways to determine if a relationship is a function. One way is to look at a table. The first table is not a function since 2 has 2 out puts (4 and 6). The second table is a function since every input has only one output.

Not a Function

Input	Output
2	4
5	10
2	6

Function

Input	Output
2	3
3	3
4	7

The second way to tell if a relationship is a function is the vertical line test. If any vertical line can be drawn on a graph and it only intersects the graph in one place it is a function.

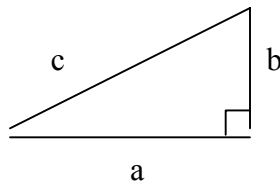
Informal Geometry and Measurement

Triangles have many characterizes to help us classify their difference. The chart below has some of the more important classifications.

Classification	Definition
Acute	A triangle with all angles less than 90° .
Right	A triangle with an angle equal to 90° .
Obtuse	A triangle with an angle greater than 90° .
Isosceles	A triangle with two sides of equal length.
Equilateral	A triangle with all three sides being equal length.
Congruent	Two polygons (not just triangles) that are exactly the same size.

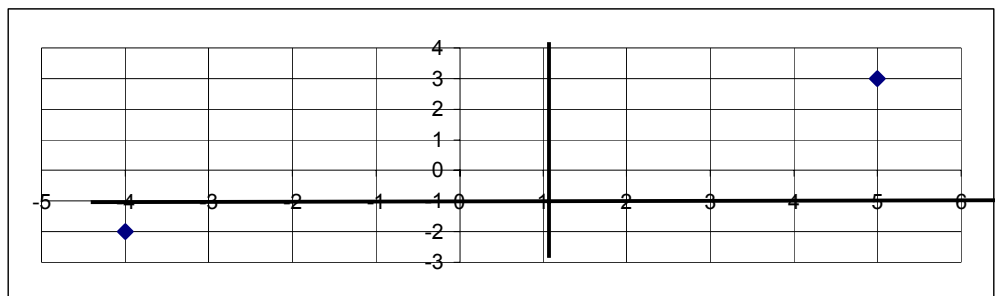
Similar	Two polygons (not just triangles) that are the same shape, but different shapes.
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One of the most important concepts in geometry is the Pythagorean Theorem. The **Pythagorean Theorem** says that in any right triangle the square of the hypotenuse is equal to the square of the two legs added together. This is stated by the formula $c^2 = a^2 + b^2$. If we know the length of two sides of a right triangle, the Pythagorean Theorem allows us to find the side of the third. For example, if the legs have length 3 and 4, we can use the theorem to get the equation $c^2 = 3^2 + 4^2$. $3^2 + 4^2 = 9 + 16 = 25$, so $c^2 = 25$. After taking the square root of both sides we see that $c = 5$.



Perimeter is the distance around a two-dimensional object, **area** is the space inside a two-dimensional object, and **volume** is the space in a three-dimensional object. These three measure very different things, but are very easily confused. To find the perimeter of an object, add the length of all the sides of the figure. Area is a little more difficult to find. To find the area of a rectangle or square multiply the length and width together. In a triangle, the area is found by multiplying one half the base of the triangle and the height ($\frac{1}{2} \times \text{base} \times \text{height}$). Volume is also a little difficult to find. For a rectangular prism (a box), the volume is found by multiplying the length, width and height of the prism. The volume of a cylinder (a can) is found by the formula $2\pi r^2$ where r = radius. The hardest part of keeping these three terms separate is their labels. The label for perimeter is always a length such as feet, inches, or centimeters. Since area is the space an object covers, it is always measured in a length squared such as feet squared (ft.^2), inches square (in.^2), or centimeters squared (cm^2). Volume is always measured in length cubes (ft.^3 , in.^3 , cm^3).

A coordinate grid is a graph used a plot points. The graph below is an example of a coordinate graph.



The numbers that run left to right are on the x-axis and the numbers that go up and down are on the y-axis. Two numbers called an ordered pair represent all points on the graph. The first number represents the x-value and the second number represents the y-value. The x-value indicates how far to move right or left. A positive number means move to the right, and a negative number means move to the left. The y-value indicates how far up and down we move, with a positive number being up and a negative number being down. The blue dot in the upper right hand corner of the coordinate grid is represented by the point (5,3) since we move to the right 5 and up 3. The blue dot in the lower right hand corner is the point (-4,-2) since we moved to the left 4 and down 2.

Data Organization and Interpretation

When looking at data, there are several different ways of looking at what is typical. One way is to look at the mean of the data. The **mean** is the average number. It can be found by adding all of the terms and dividing by the number of terms. Another way of determining what is typical is to look at the mode. The **mode** is the number that occurs the most often. If there is not a number listed more than once, there is no mode. On the other hand, there can be more than one mode if two numbers are the most occurring numbers. In the set 1,1,1,2,2,2,3,3 1 and 2 would be the modes since they both occur three times. The median is also a way of looking at what is typical. The **median** is the middle number. To find the median, list all of the number from smallest to greatest and cross off the largest number and the smallest number. Repeat this until there is only one number left. Sometimes when finding the median, there are two numbers left in the middle. The median is

the average of these two numbers. The **range** is the largest number minus the smallest number. It tells us how wide the numbers are in our data. The following is an example of a set of numbers and the mean, median, mode and range.

1, 2, 2, 5, 10

Mean = $1 + 2 + 2 + 5 + 10 = 20/5 = 4$

Mode = 2 (it occurs the most often)

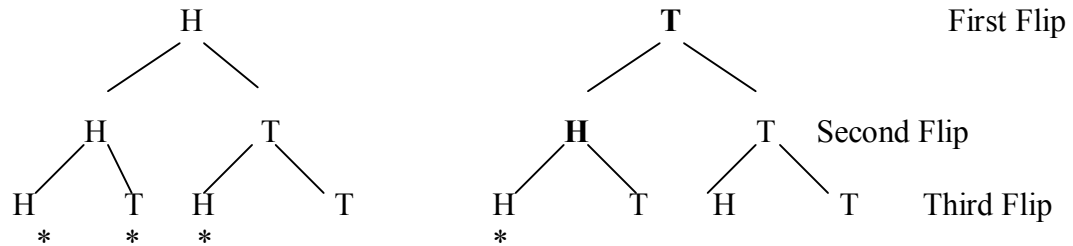
Median = 1, 2, 2, 5, 10 = 2

Range = $10 - 1 = 9$

Probability is the measure of how likely an event is to happen. The probability can be found by taking the number of favorable outcomes and dividing by the number of total outcomes. **Favorable outcomes** are the outcomes you wish to have happen. For example, if we want to find the probability that we will roll an even number on a dice, rolling a two, four, and six are the favorable outcomes. There are three favorable outcomes and six total outcomes (rolling a 1, 2, 3, 4, 5, or 6 would be the six outcomes). The probability of rolling an even number would be $\frac{3}{6}$ or $\frac{1}{2}$. It can also be written as a decimal, in this case 0.5. Two events are considered **equally likely** if they have the same probability of occurring. The chance of flipping a head and a tails with a penny is equally likely to occur since the probability of each is 0.5. Events can also be independent or dependent. **Independent events** are events that have no relationship to each other. One event does not affect another event. Flipping a penny and rolling a dice are independent events since flipping a penny has no impact on rolling the dice. Conversely, **dependent events** are events where one event affects the probability of another event. An example of this would be drawing a card from a full deck of cards. Before any cards are drawn the probability of drawing a king is $\frac{4}{52} = \frac{1}{13}$ since there are four favorable outcomes (four kings in the deck) and 52 total outcomes (52 total cards in the deck). If a king is drawn on the first card the probability will now be $\frac{3}{51}$ or $\frac{1}{17}$. The probability was affected by the first draw so the events are dependent.

Tree diagrams are very helpful in finding some probabilities. Let's say we want to find what the probability of flipping two or more heads if we flip a coin three times. To figure this problem out, we can make a tree diagram. The first step is to list the possibilities on the first flip, which is heads (**H**) or tail (**T**). Repeat this for the next

two flips. Make a “branch” between each flip. The branches indicate possible outcomes. The highlighted letters would indicate the first flip as tails, the second flip as heads and the third flip as tails.



The stars indicate which flips have at least two heads. There are four stars. So the probability (favorable outcomes divided by total outcomes) is $\frac{4}{8} = \frac{1}{2}$.

Statistics, data analysis, and probability are used when taking surveys, but it is important to make sure a good sample is taken so the results reflect people’s opinions. When a survey is set up, it should be designed to take a random sample. A **random sample** is a group of people who represent the population as a whole. The population could be humans, Americans, students at a school, athletes at a school, or even as small as the football team at a school. Obviously, the smaller the population the easier it is to take a survey. It might be possible to survey every member of a football team, but it would be impossible to survey every American. It is the larger population where a random sample is needed. In order to get a random sample, the survey must be designed so it reaches people from every background and every way of life. It would not be a good random sample to ask only teachers if more money should be spent on school. The best way of getting a random sample is to ask random people. Calling every fourth person in a phone book would be a great way of getting a random sample. So how does a sample work? Here is a quick example. Let’s say we are taking a survey to see how many Americans think more money should be spent on education. To get a random sample we call people from every state and all walks of life. We have a good random sample. In our survey, 67% of the people said we should spend more money on education. If our sample size were large enough, it would be a good bet to say that 67% of all Americans think we should spend more money on education.

Number Sense and Numeration

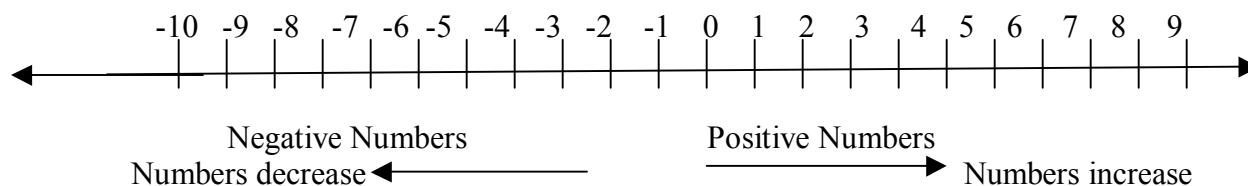
Our system of numbering uses a base ten system. This is why we have our place values. There are an infinite amount of place values since numbers can go on forever. The list below shows some of the more common place values.

Place value	Example (bold number has the designation place)	Place value	Example (bold number has the designation place)
Ones	123,456,78 9	Tenths	0.12345678 9
Tens	123,456,7 8 9	Hundredths	0.12345678 9
Hundreds	123,456,7 8 9	Thousandths	0.12345678 9
Thousands	123,45 6 ,789	Ten-thousandths	0.12345678 9
Ten-thousands	123,4 5 6,789	Hundred-thousandths	0.1234 5 6789
Hundred-thousands	123,456,7 8 9	Millionths	0.12345678 9
Millions	1 2 3,456,789	Ten-millionths	0.12345678 9
Ten-millions	1 2 3,456,789	Hundred-millionths	0.12345678 9
Hundred-millions	1 23,456,789	Billionths	0.12345678 9
Billions	12 3 ,456,789,123	Ten-billions	0.1234567891 2 3
Ten-billions	12 3 ,456,789,123	Hundred-billions	0.1234567891 2 3
Hundred-billions	1 23,456,789,123	Trillionths	0.1234567891 2 3
Trillions	1 ,234,567,891,234		

Numbers can be divided into differing groups. Some of the groups often used are whole, integers, rational, and real numbers. Whole numbers are positive numbers that do not have any decimals or fractions (1, 2, 3, 4, 5, 6, ...). Integers are numbers, positive or negative, and do not have a fraction or decimal (... -3, -2, -1, 0, 1, 2, 3, ...). A rational number is any number that can be written as a fraction.

All whole numbers and integers are rational numbers as are decimals that either repeat or end. Some examples of rational numbers are 0.25, 0.5, 0.121212 ..., -5, and $\frac{1}{13}$. Finally, real numbers are any numbers that can be written on a number line. They include whole numbers, integers, and rational numbers. All numbers we use in our every day lives would be considered a real number.

Using a number line is not only an important concept for people first learning their numbers, it is also used quite often in algebra and higher-level math. A number line is usually set up with 0 in the middle. This is not always the case though. A number line may start anywhere as long as the numbers are in the correct order. To the right of 0 are the positive numbers. They increase just like we learn to count (1, 2, 3, ...). The numbers to the left are called negative numbers, and they often cause a sense of confusion. Negative numbers follow the same pattern as their positive counterparts, but it is important to remember -1 is greater than -2, -2 is greater than -3, and so on. This may seem backwards, but if a number is negative, the larger the number, the more negative it is. Meaning it is farther to the right, thus it is smaller. As we move right on the number line, numbers increase, as we move left and the number line, numbers decrease. The arrows and the number line below indicate that the number line continues in both directions forever.



The four main operations in mathematics are addition, subtraction, multiplication, and division. Addition and subtraction are opposites as are multiplication and division. Adding two numbers together, is the same as subtracting the opposite of the second number. For example: $2 + 3 = 2 - (-3)$. Subtracting two numbers is the same as adding the opposite of the second number as well ($5 - 4 = 5 + (-4)$). Multiplication and division works much in the same way. The product

(multiplying) of two numbers is equal to the quotient (dividing) of the reciprocal of the second number, $3 \times 4 = 3 \div (\frac{1}{4})$. The reverse works as well ($6 \div 4 = 6 \times \frac{1}{4}$).

Factors and multiples are two important concepts in mathematics that are often confused. A **factor** of a number is any integer that can be divided evenly. The factors of 6 are 1, 2, 3, and 6 since $6 \div 1 = 6$, $6 \div 2 = 3$, $6 \div 3 = 2$, and $6 \div 6 = 1$. All four integers divide 6 evenly. Every number has at least 1 and itself as factors. If a number only has two numbers as factors the number is called **prime**. If a number has more than two factors, the number is **composite**. The **greatest common factor**, often called **gcf**, of two numbers is the largest factor that they have in common. As stated earlier the factors of 6 are 1, 2, 3, and 6. The factors of 9 are 1, 3, and 9. Therefore, their greatest common factor is 3. **Multiples**, on the other hand, of a number a are numbers that are the product of a and another number. For example, the multiples of 6 are 6, 12, 18, 24, 30, 36, 42, ... because $6 \times 1 = 6$, $6 \times 2 = 12$, $6 \times 3 = 18$, $6 \times 4 = 24$, $6 \times 5 = 30$, ... The **least common multiple (lcm)** of two numbers are the lowest multiple each number has in common. The multiples of 6 are 6, 12, 18, 24, 30, 36, ..., and the multiples of 9 are 9, 18, 27, 36, 45, 54, 63, ... Therefore the least common multiple is 18 since it is the first multiple they have in common.

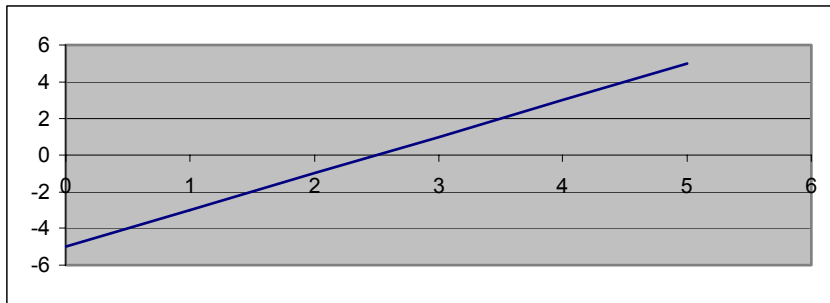
Many times in math, just using a little logic and common sense can solve problems. One way to do this is by checking the reasonableness of an answer. This can be done before or after a problem is even solved. Problems that involve money should only have two decimal places. It does not make any sense to have \$1.253 dollars. Many other real world problems should not have any decimals or fractions in the solution. It does not make sense to have 3.7 people. It should be rounded to 3 or 4 depending on the problem. Negative numbers do not make sense in many real world problems as well. People, number of buses, length, and area are just some of the things measured that cannot be negative. Because of this, it is important to check all solutions for reasonableness. Using quick estimation is very helpful when checking for reasonableness. If a problem asks for the amount of tax on a \$100

item, we should have a quick estimation at what the solution should be. \$107 would be way too high, as would \$1,428 dollars. Just by eliminating these two options, we now have a fifty percent chance of getting the correct answer. Now it is time to do the computation. It is important to always check solutions for accuracy after solving a problem.

Mathematics Sample Questions

1. **What property is demonstrated by $3 + 4 = 4 + 3$?**
 - a) Associative
 - b) Commutative
 - c) Identity
 - d) Distributive
2. **Which of the following is a solution to the equation $y = 3x^2 - 10$?**
 - a) (0,10)
 - b) (1,7)
 - c) (4,2)
 - d) (2,2)
3. **Factor $x^2 - 4x + 4$**
 - a) $(x - 2)(x - 2)$
 - b) $(x - 4)(x - 1)$
 - c) $(x + 2)(x + 2)$
 - d) $(x - 2)(x + 2)$
4. **If the base of a triangle is 10 cm and the height is 5 cm, what is the area?**
 - a) 15 cm^2
 - b) 25 cm^2
 - c) 30 cm^2
 - d) 50 cm^2
5. **Rewrite the following in a mathematical sentence: One more than twice a number is 15.**
 - a) $1 + 2 + x = 15$
 - b) $1x + 2 = 15$
 - c) $1 + 2x = 15$
 - d) $1 + 2x = 15$

6. What is the equation of the graph below?



- a) $y = 2x$
- b) $y = 2x - 5$
- c) $y = x - 5$
- d) $y = 2x + 5$

7. The formula $C = \frac{5}{9}(F - 32)$ converts Celsius into Fahrenheit where C is degrees Celsius and F is degrees Fahrenheit. If it is 80 degrees Fahrenheit outside, about how warm is it in degrees Celsius?

- a) 176°C
- b) 48°C
- c) 27°C
- d) 12°C

8. Which of the following tables is not a function?

a)

Input	Output
0	1
1	1
2	1

b)

Input	Output
3	10
4	11
5	12

c)

Input	Output
7	1
7	2
7	3

d)

Input	Output
10	11
11	15
12	17

9. What is the slope of the line passing through the points (2,3) and (4,4)?

- a) $\frac{1}{2}$
- b) $-\frac{1}{2}$
- c) 2-
- d) 2

10. $3x + 10 + 2x^2 + 5x - 4$ is equal to which of the following?

- a) $16x^4$
- b) $2x^2 + 12x$
- c) $2x^2 + 8x + 14$
- d) $2x^2 + 8x + 6$

11. Which of the following is a solution to the following system of equations:

$$y = 2x + 5$$

$$3x - y = -3$$

- a) (0,5)
- b) (2,9)
- c) (1,0)
- d) (2,3)

12. $3 + (5 - 2)^2 \times 4 = ?$

- a) 144
- b) 48
- c) 39
- d) 7

13. Use the distributive property to simplify $2y(3y - 4)$

- a) $5y - 8$
- b) $6y^2 + 8y$
- c) $6y^2 - 8y$
- d) $6y^2 - 4$

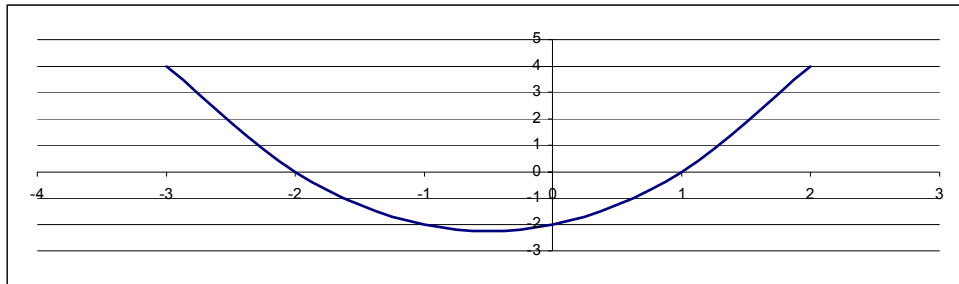
14. Two lines that intersect to form a right angle are called ...

- a) Parallel lines
- b) Perpendicular lines
- c) Straight lines
- d) Right lines

15. Which of the following is a solution to $y > -x + 5$

- a) (2,3)
- b) (0, 5)
- c) (2,8)
- d) (8,2)

16. The equation of the graph below is $y = x^2 + 2x - 4$. Find x if $y = 0$



- a) 0
 - b) 1
 - c) -2
 - d) a and c
17. $3x + 10 = 4$ is best described by which of the following:
- a) Three more than a number and ten is four
 - b) Ten more than a number is four
 - c) Three times a number is greater than ten and four
 - d) Ten more than three times a number is four
18. A globe is best described as which shape?
- a) Circle
 - b) Sphere
 - c) Prism
 - d) Quadrilateral
19. If a map has a scale of 2 centimeters to 5 miles and two towns are 10 centimeters apart on the map, what is the actual distance between the two cities?
- a) 10 miles
 - b) 15 miles
 - c) 25 miles
 - d) 100 miles
20. 300 centiliters is equal to which of the following?
- a) .3 meters
 - b) 3 meters
 - c) 30 meters
 - d) 300 meters

21. A car travels 200 miles in 4 hours. What was the average speed of the car?

- a) 5 miles per hour
- b) 50 miles per hour
- c) 196 miles per hour
- d) 800 miles per hour

22. If the hypotenuse of a right triangle is 10 feet long and one of the legs is 6 feet long, how long is the length of the reaming side?

- a) 4 feet
- b) 8 feet
- c) 16 feet
- d) 64 feet

23. What would the surface area of a cube with side length 5 meters be?

- a) 150 meters squared
- b) 150 meters
- c) 30 meters squared
- d) 30 meters

24. How many lines of symmetry does the star have?

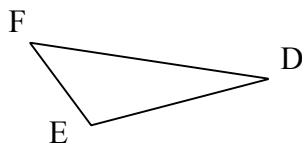
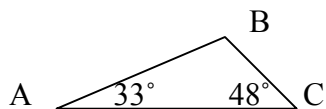


- a) 1
- b) 2
- c) 3
- d) 4

25. Bill is working for a lawn mowing company on the weekend to help pay for a new car. Bill spends 1 hour and 35 minutes mowing Mrs. Smith's yard, 2 hours and 45 minutes mowing Ms. Jacobs's lawn, and 2 hours and 5 minutes mowing Mr. Redding's lawn. How much time did it take him to mow the three lawns?

- a) 5 hours and 25 minutes
- b) 5 hours and 35 minutes
- c) 6 hours and 25 minutes
- d) 6 hours and 35 minutes

26. If triangle ABC is congruent to triangle DEF, what is the measure of angle D?



- a) 33°
- b) 48°
- c) 81°
- d) 99°

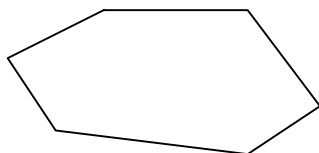
27. John needs to cut a piece of string that is 108 inches long. How many yards should his string be?

- a) 3 yards
- b) 12 yards
- c) 36 yards
- d) 324 yards

28. A paper clip would weigh approximately how much?

- a) 1 gram
- b) 1 kilogram
- c) 1 millimeter
- d) 1 milliliter

29. What is the best name for the figure below?



- a) Quadrilateral
- b) Pentagon
- c) Hexagon
- d) Heptagon

30. What is the transformation from figure A to figure B known as?

Figure A

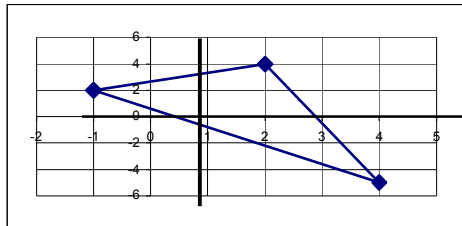
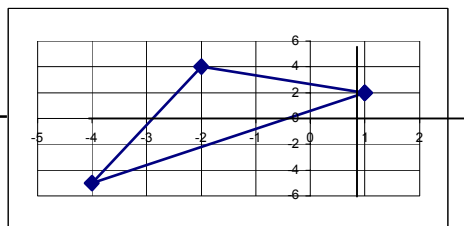
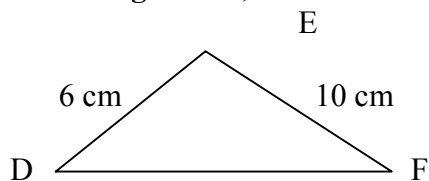
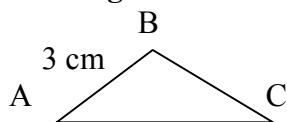


Figure B



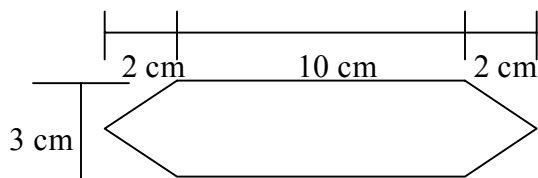
- a) Rotation
- b) Slide
- c) Manipulation
- d) Reflection

31. If triangle ABC is similar to triangle DEF, what is the length of side BC?



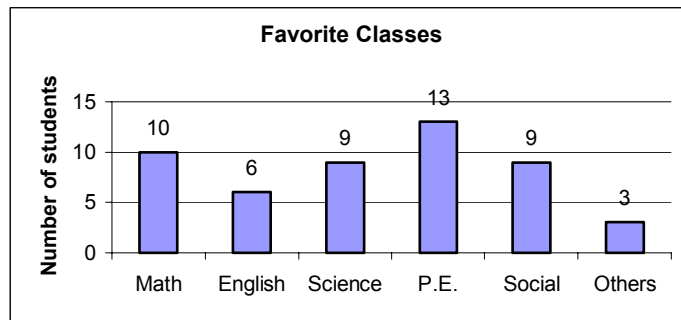
- a) 4 cm
- b) 5 cm
- c) 10 cm
- d) 20 cm

32. What is the area of the figure below?



- a) 30 cm^2
- b) 36 cm^2
- c) 42 cm^2
- d) 120 cm^2

33. What percent of the people chose math as their favorite subject?



- a) 0.2%
- b) 5 %
- c) 10%
- d) 20%

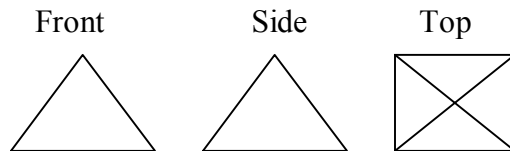
34. If Jimmy has five pairs of jeans, four shirts, and two pairs of socks, how many different combinations of clothing could he wear?

- a) 10
- b) 11
- c) 20
- d) 40

35. Coach Anderson has nine people on his baseball team, and he needs to make a batting order. How many different ways can he set his batting order?

- a) 9
- b) 45
- c) 81
- d) 362,880

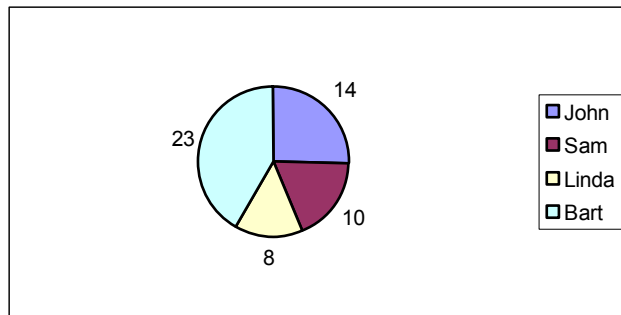
36. By looking at the front, side, and top view shown below, what three-dimensional figure do we have?



- a) Triangle
- b) Triangular Prism
- c) Cone
- d) Triangular Pyramid

37. What is the probability of flipping six heads in a row with a penny?
- a) .5
 - b) .25
 - c) 0.015625
 - d) 3
38. What is the mean of the numbers 8, 12, 36, and 36?
- a) 23
 - b) 24
 - c) 28
 - d) 36
39. What is the median of the numbers 3, 3, 8, 16, 2, and 5?
- a) 3
 - b) 12
 - c) 4
 - d) 5.67
40. On a basketball team with ten players, only five can start. How many different combinations can be made for finding who will start the game?
- a) 3,628,800
 - b) 30,240
 - c) 252
 - d) 5
41. Mrs. Tomko broke her reading class into groups of four. Each group was expected to read 100 books by the end of the year. What percent does this group have left to read?

Books Read



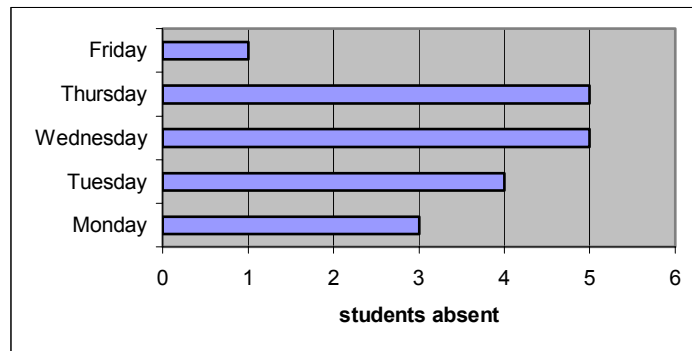
- a) 23%
- b) 45%
- c) 55%
- d) 65%

42. Which of the following would give the best results for finding the opinions of students at a school?

- a) Give a survey to students who are in after school activities
- b) Give a survey to all students and teachers
- c) Give a survey to every fourth student in the lunch line
- d) Give a survey to all the students in a calculus class

43. What was the mean number of students gone each day in Mr. Martin's class?

Mr. Martin's class absents for the week of April 1st



- a) 3.6
- b) 4
- c) 5
- d) 18

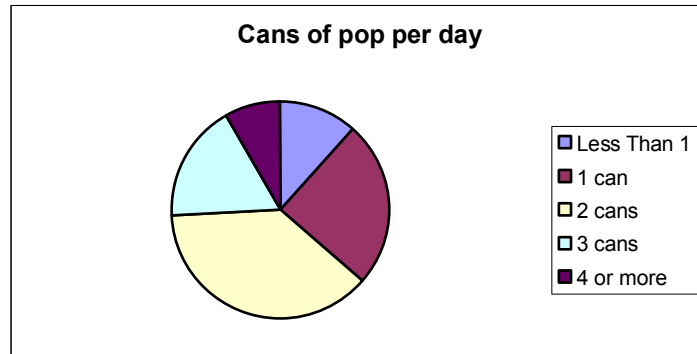
44. In a bag of marbles there are three blue marbles, two green marbles, and seven orange marbles. What is the probability that a marble drawn at random will not be an orange marble?

- a) $\frac{5}{12}$
- b) $\frac{1}{2}$
- c) $\frac{1}{6}$
- d) $\frac{7}{12}$

45. Which of the following would not be the correct way to express the probability of rolling a one with a dice?

- a) $\frac{1}{6}$
- b) 0.167
- c) .167%
- d) 16.7%

46. About what percent of the class said they drank 1 can of pop a day?



- a) 10 %
- b) 25 %
- c) 45 %
- d) 90 %

47. Jack is eating at a restaurant and looks at the menu below.

Select one entrée, one side dish, and one dessert.		
Entrees	Side Dish	Dessert
Ham Steak	Corn	Apple Pie
Filet Mignon	Garlic Bread	Ice Cream
Chicken Fettuccini	Salad	
Walleye		

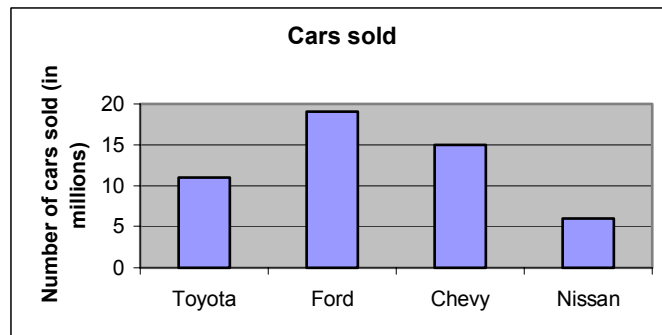
How many options does Jack have?

- a) 4
- b) 9
- c) 12
- d) 24

48. What is the mode of the following numbers: 1, 2, 23, 13, 5, 7, 1, 2, 2, 3, 11, 15?

- a) 1
- b) 2
- c) 4
- d) 17.8

49. How many more cars did Ford sell than Nissan?



- a) 13
- b) 130,000
- c) 1,300,000
- d) 13,000,000

50. Put the following numbers in order from least to greatest: -1 , $-\frac{1}{2}$, -2 , $-\frac{3}{4}$

- a) $-\frac{1}{2}$, $-\frac{3}{4}$, -1 , -2
- b) $-\frac{3}{4}$, $-\frac{1}{2}$, -1 , -2
- c) $-\frac{1}{2}$, -1 , -2 , $-\frac{3}{4}$
- d) -2 , -1 , $-\frac{3}{4}$, $-\frac{1}{2}$

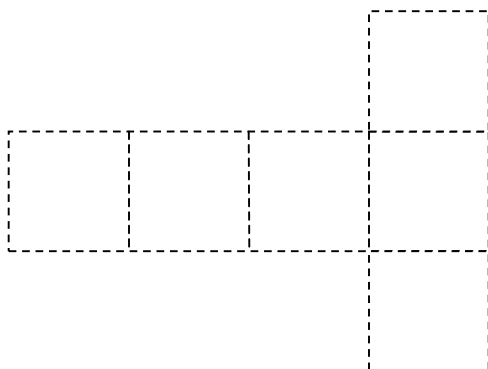
51. How would the number 321,000,000 be written in scientific notation?

- a) 32.1×10^7
- b) 3.21×10^8
- c) $.321 \times 10^9$
- d) 321×10^6

52. Round the number 321.467 to the nearest tenths place.

- a) 320
- b) 321.4
- c) 321.5
- d) 321.37

53. The net below would make what figure?



- a) Square
- b) Cube
- c) Triangular prism
- d) Rectangle

54. What is the least common multiple of 12 and 9?

- a) 1
- b) 3
- c) 36
- d) 72

55. What would the next number of the sequence -16, 4, -1 ... be?

- a) $\frac{1}{4}$
- b) $-\frac{1}{4}$
- c) 4
- d) -4

56. What would $(2 \times 3^2)^0$ equal?

- a) 0
- b) 1
- c) 2
- d) 18

57. -4 is all of the following except which one?

- a) A negative number
- b) A whole number
- c) An integer
- d) A rational number

58. John buys a shirt at the mall for \$36. There is a 7% sales tax. What would the total price be after sales tax?

- a) \$2.52
- b) \$33.48
- c) \$38.52
- d) \$550.29

59. Evaluate 3^6 .

- a) 18
- b) 243
- c) 729
- d) 2,187

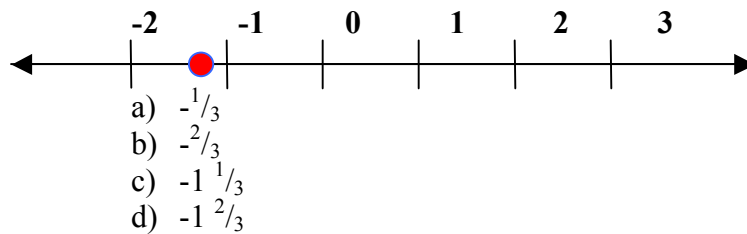
60. Write 2.1×10^{-5} in standard notation.

- a) 0.000021
- b) 0.0000021
- c) 210,000
- d) 2,100,000

61. What is the greatest common factor of 32 and 36?

- a) 1
- b) 4
- c) 8
- d) 288

62. Which number best represents the point on the number line?



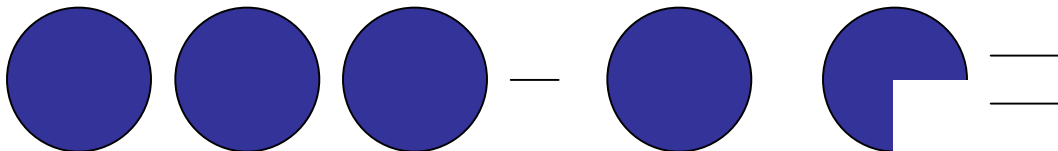
63. There are six seventh grade classes at Lincoln middle school with twenty-five students in each class. If a bus holds fifty-two students and there are ten adults going, how many busses will be needed?

- a) 3
- b) 3.0769
- c) 4
- d) 5

64. What is $\frac{3}{4} \div -1\frac{1}{2}$?

- a) $-\frac{1}{2}$
- b) $-\frac{3}{4}$
- c) $\frac{1}{2}$
- d) $\frac{3}{4}$

65. Use the pictures below to answer the problem.



- a) $4\frac{1}{4}$
- b) $1\frac{1}{4}$
- c) $1\frac{3}{4}$
- d) $1\frac{1}{2}$

66. Put the following numbers in order from least to greatest: $\frac{1}{4}$, 0.2, 0.255, 0.246

- a) $\frac{1}{4}$, 0.2, 0.246, 0.255
- b) 0.2, 0.246, $\frac{1}{4}$, 0.255
- c) 0.2, $\frac{1}{4}$, 0.255, 0.246
- d) 0.255, 0.246, $\frac{1}{4}$, 0.2

67. Which of the following is equivalent to $10 < 3x - 4$?

- a) $10 = 3x - 4$
- b) $3x - 4 = 10$
- c) $3x - 4 < 10$
- d) $3x - 4 > 10$

Mathematics Answer Key

1. **B:** Commutative

The associative property says numbers can be regrouped, the identity property says anything plus 0 is the original number, and the distributive property is shown by $3(x + 4) = 3(x) + 3(4)$. Therefore, the commutative property is correct and says numbers can be added in any order.

2. **D:** (2,2)

A solution is an ordered pair that makes both sides of an equation equal. To check which one is a solution, replace the variables with the given values. In this example replace 2 for x and 2 for y . This is the only solution that gives you the same value on both sides of the equal sign.

3. **A:** $(x - 2)(x - 2)$

Use the **FOIL** (First Outside Inside Last) method to solve this problem. Start with the choices and work backwards. Multiply the first number in each expression $[(x)(x) = x^2]$. Then multiply the Outside two numbers $[(x)(-2) = -2x]$. Next, multiply the inside two numbers $[(-2)(x) = -2x]$. Finally, multiply the last two terms $[(-2)(-2) = 4]$. Thus we have $x^2 - 2x - 2x + 4 = x^2 - 4x + 4$.

4. **B:** (25 cm^2)

The area of a triangle is $\frac{1}{2} \times \text{base} \times \text{height}$. Since the base is 10 and the height is 5, the area of the triangle is $\frac{1}{2} \times 10\text{cm} \times 5 \text{ cm} = 25 \text{ cm}^2$.

5. **D:** $(1 + 2x = 15)$

1 more means $1 +$, twice means multiplied by 2, and is means equals. Since we do not know what the number is we need to assign it a variable. Put it all together and it becomes $1 + 2x = 15$.

6. **B:** $(y = 2x - 5)$

Start by finding a point on the graph. (0, -5), (3,1), and (4, 3) are just a few of the possible points. Plug the points into the equations and see which equations provide a solution. To be safe you should check two points.

7. **C:** (27° C)

Substitute 80 for F in the formula $C = \frac{5}{9}(F - 32)$ and solve. $C = \frac{5}{9}(80 - 32) = \frac{5}{9}(48) \approx 27$.

8. **C**

A function is a relationship where every input has exactly one output. In a every input has one output, they just happened to all be the same. But in c the input 7 has three different outputs.

9. **A:** ($\frac{1}{2}$)

The slope of a line is found by dividing the change in y and the change in x between the two points. The first point is (2, 3) and the second point is (4,4). The change y (3 – 4) is –1 and the change in x (2 – 4) is –2. Therefore the slope is $\frac{-1}{-2} = \frac{1}{2}$.

10. **D:** ($2x^2 + 8x + 6$)

Only terms with the same variable with the same exponent can be added together, thus *a* and *b* are not correct. *C* may look correct, but the last term is a negative so it needs to be subtracted. *D* is the correct answer.

11. **B:** (2,9)

A **system of equations** is simply two or more equations. A solution to a system is an ordered pair that satisfies both equations. In this example, if (2, 9) was substituted into each equation, both would be solutions. Therefore, it is a solution to the system.

12. **C:** (39)


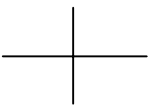
We need to follow the order of operations in this example. The order of operations can be remembered by the acronym “please excuse my dear aunt Sally”. P = parenthesis, E = exponents, M/D = multiplication and division, A/S = addition and subtraction. Do all operations in this order to get the correct answer. If there is multiplication and division or addition and subtraction in the same problem, do the indicated operation from left to right.

13. **C:** ($6y^2 - 8y$)

The distributive property says $a(b - c) = ab - ac$. In the example $2y(3y - 4)$, start by multiplying $2y$ and $3y$ to get $6y^2$. Then multiply $2y$ and 4 to get $8y$. Since the original problem has a subtraction sign in it, our simplified version needs the same. Thus

$$2y(3y - 4) = 6y^2 - 8y.$$

14. **B:** (Perpendicular lines)

Parallel	Perpendicular	Straight	Right
		Does not exist	Does not exist

15. **C:** (2,8)

In the inequality $y > -x + 5$, the greater than sign ($>$) means the left side needs to be greater than the right side. For (2, 3) and (0, 5) both sides are equal so they are not solutions. (8, 2) makes the right side greater. But (2, 8) makes the left side greater so it is a solution.

16. **D:** (a and c)

Since $y = 0$, we need to find when the graph of $y = x^2 + 2x - 4$ crosses the y-axis (where $y = 0$). We can see that it crosses in two places at 0 and at -2 .

17. **D:** (ten more than three times a number is four)

All of the other choices are missing some information or is saying it incorrectly. In *a* three more means to add three, in *b* there is no mention of the three, and in *c* is greater than would be an inequality ($>$). But *d* has everything in the right order with the correct mathematical operation.

18. **B:** (sphere)

Many people would put a circle for this answer, but a circle is a two-dimensional object, not a three-dimensional object like a globe. A prism is three-dimensional object, but prisms have straight edges unlike a sphere. A quadrilateral is a two-dimensional figure that has four sides.

19. **C:** (25 miles)

For this problem we need to set up a proportion. We know that 2 cm on the map is equivalent to 5 miles in the real world so we can get the fraction $\frac{2 \text{ cm}}{5 \text{ miles}}$. We also know the two towns are 10 cm apart on the map. Since we do not know the actual distance between the two towns assign it a variable, x . Now we can set up another fraction in the same way to get $\frac{10 \text{ cm}}{x \text{ miles}}$. The proportions will be equal so $\frac{2 \text{ cm}}{5 \text{ miles}} = \frac{10 \text{ cm}}{x \text{ miles}}$. After we cross multiply we get $(2)(x) = (5)(10)$ or $2x = 50$. Divide each side by 2 and the answer is $x = 25$ miles.

20. **B:** (3 meters)

There are 100 centimeters in every meter. Take 300 and divide it by 100 to get 3 meters. In the metric system, there are six main prefixes. In order from largest to smallest they are kilo, hecto, deka, base (meter, liter, grams), deci, centi, and milli. To convert from one unit to another other, start at the unit given. In this example we will start at centi since we had centimeters. Move to the unit we wish to convert to. Any time we move to the right, we multiply by 10. Any time we move to the left, we divide by 10. In our example, we moved to the left from centi to the base so we have to divide by 10 twice (which is the same as dividing by 100).

21. **B:** (50 miles per hour)

To find the speed, take distance divided by time. The distance is 200 miles and the time is 4 hours. Thus 200 miles divided by 4 hours is 50 miles per hour.

22. **B:** (8 feet)

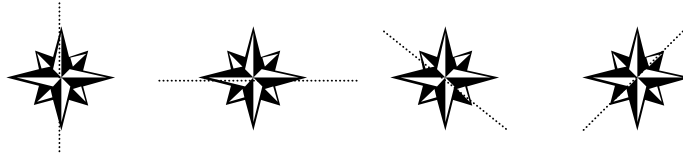
The Pythagorean theorem is needed for this problem. Use the formula $c^2 = a^2 + b^2$. The hypotenuse is 10 and one of the legs is 6. Substitute these values into the equation to get $10^2 = 6^2 + b^2$ or $100 = 36 + b^2$. Subtract 36 from both sides to get $64 = b^2$. Finally, take the square root of both sides to get the resulting answer of 8 feet.

23. **A:** (150 meters squared)

The surface area is the area of the surface of an object. Think about it as painting an object. If all sides were painted, that is the surface area. To find the surface area, we must find the area of each side and add them together. In this example, we have a cube with sides 5 meters. A cube has all equal sides so all the sides are 5 meters long. Think about the front face of the cube. Since it has length of 5 meters and width of 5 meters, the area of the front face would be 25 meters squared. A cube has six faces so 25 meters squared times 6 is 150 meters squared. Notice the unit is meters squared because area is always measured in a length squared.

24. **D:** (4)

A **Line of symmetry** is a line that can be drawn through an object where the exact same thing is on each side of the line of symmetry. In this example we can draw lines of symmetry in the following ways:



In each drawing, the two sides of the line have the exact same image.

25. **C:** (6 hours and 25 minutes)

Add up all the hours and minutes in this problem and we should get 5 hours and 85 minutes. It is vital to remember that 1 hour is equal to 60 minutes, **NOT 100!!** If we subtract 60 minutes from 85 minutes we now have 25 minutes, but those 60 minutes must be accounted for somewhere so we add another hour. Thus the solution is 6 hours and 25 minutes.

26. **A:** (33°)

When two figures are congruent, they are the exact same size and shape. Since they are the same shape, all corresponding angles must be equal. It is important to notice the order the angles are listed in. The first triangle is listed as ABC and the second triangle is listed as DEF. This means A and D are equal, B and E are equal, and C and F are equal since they are corresponding angles. (Corresponding angles are always listed in the same order.) Angle A is 33° so angle D must be 33° .

27. **A:** (3 yards)

There are 3 feet in every yard and 12 inches in every foot. Thus there are 36 inches in every yard. So take 108 inches and divide it by 36 to get 3 yards.

28. **A:** (1 gram)

Millimeters measure length and milliliters measure volume so the only two options are 1 gram and 1 kilogram. A kilogram weighs more than a pound. The only option left is 1 gram, which is the correct answer for this problem.

29. C: (Hexagon)

The chart below shows some of the common geometric figures

Figure	Number of Sides	Figure	Number of Sides
Quadrilateral	4	Heptagon	7
Octagon	5	Octagon	8
Hexagon	6		

30. D: (reflection)

A rotation is when a figure is rotated, a slide is when a figure is slid up or down or side-to-side, a reflection is when an object is reflected across a line, and a manipulation is not a transformation. In this example, the triangle is reflected across the y-axis. It may be hard to see this, but process of elimination also leads to the conclusion that it is a reflection.

31. B: (5 cm)

If two polygons are similar, their corresponding sides are proportional. This means the length of AB divided by the length of DE will be equal to the length of BC divided by the length of EF ($\frac{AB}{DE} = \frac{BC}{EF}$). Substitute the values we now have $\frac{3}{6} = \frac{BC}{10}$. Cross multiply to get $30 = 6(BC)$. Divide both sides by 6 and the solution is 5 cm = the length of BC.

32. B: (36 cm²)

There are actually three different shapes in this figure, one triangle on each end and a rectangle in the middle. The middle rectangle has a length 10 cm and a width of 3 cm. This means the area of the rectangle is 30 cm². The area of a triangle is $\frac{1}{2} \times \text{base} \times \text{height}$. The base is 2 cm and the width is 3 cm, thus the area of each triangle is $\frac{1}{2} \times 3 \text{ cm} \times 2 \text{ cm} = 3 \text{ cm}^2$. Since there are two triangles, multiply by 2 and get 6 cm². After we add the area of the rectangle and the area of the triangles (30 cm² + 6 cm²), we find the total area of 36 cm².

33. D: (20%)

Start by adding up all the students to find the total number of students surveyed. There were 50 students. Since 10 of them liked math as their favorite subject, take 10 and divide it by 50 to get 0.2. This shows the answer as a decimal, not a percent. We must change the answer from a decimal to a percent by multiplying by 100. After doing this, the resulting answer will be 20%.

34. D: (40)

This solution can be found in a number of different ways. One way and perhaps the easiest way, is to use the counting principle. The **counting principal** says the total number of choices can be found by multiplying together the number of choices for each option. In this example, there are 5 choices for jeans, four for shirts, and two for socks. So $5 \times 4 \times 2 = 40$. Another way to find the answer is to make a tree

diagram. After making a tree diagram, count the bottom line of the tree diagram to get the answer.

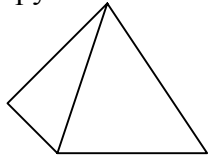
35. **D:** (362,880)

This problem is an example of a permutation. A **permutation** is a list of events, people, or objects where the order does matter. In this example, the order does make a difference. To find the number of options the coach has, start with the number of options for the first person. There are nine people on the team so there are nine options for the first batter. The second batter has only eight options because the first batter has already been selected. The third batter has only seven since two batters were already used. This pattern continues to the end of the line up. Now we need to multiply all of these numbers together. So $9 \times 8 \times 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 362,880$.

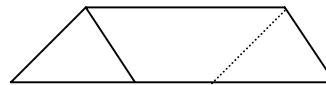
36. **D:** (triangular pyramid)

Since the figure is three-dimensional, it cannot be a triangle. A cone would have a circle with a dot in the middle for the top view. A triangular prism would have a rectangle as the top view. Thus the only option would be a triangular pyramid.

triangular pyramid



triangular prism



37. **C:** (0.015625)

The probability of flipping one heads is 50% or .50. Each flip has a 50% chance of landing on heads. To find the probability of a multistage event, multiply the probability of each stage. This example has six stages with each stage having a probability of .50. So $.50 \times .50 \times .50 \times .50 \times .50 \times .50 = 0.015625$.

38. **A:** (23)

The mean is found by adding all the terms together and dividing by the number of terms. The numbers are 8, 12, 36, and 36. The sum is 92. There are four numbers so take 92 and divide by 4 to get 23.

39. **C:** (4)

The most common mistake on this problem is forgetting to write the numbers in order. Before the median can be found, the numbers must be in increasing or decreasing order. The numbers written in order are 2, 3, 3, 5, 8, and 16. The middle number is between 3 and 5. So we need to find the average of 3 and 5. The average of 3 and 5 is 4. This is our median.

40. **C:** (252)

This problem is called a combination. A **combination** is a set of numbers where order does not matter. In a combination, the total options can be found by the formula $\frac{n!}{r!(n-r)!}$, where n is the number of options and r is the number of selections. The exclamation mark (!) is a factorial. A factorial is the product of the number and every number less than it. For example $6!$ (six factorial) is $6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$. In our problem n is ten since the team has ten players and r is five since only five can start. Substitute these numbers into the formula to get $\frac{10!}{5!(10-5)!} = \frac{3,628,800}{120 \times 120} = \frac{3,628,800}{14,400} = 252$.

41. **B:** (45%)

The students have read a total of 55 books. This means they have 45 left to read. Since they have 100 books to reading in all, divide 45 by 100 to get 0.45. To convert from a decimal to a percent, multiply by 100. The solution will be 45%.

42. **C:** (Give a survey to every fourth student in the lunch line)

A would not be a good choice because the students who take the survey would be bias toward after school activities. *B* survey teachers, and would get the opinions of not just the students, but also the teachers. *D* would also be a bias subgroup. Therefore, *C* is the best answer. It would be the most random sample of the choices.

43. **A:** (3.6)

The mean is found by finding the sum of all the numbers and dividing by the number of terms. The sum of all the numbers is 18 and there are five numbers. So 18 divided by 5 is 3.6.

44. **A:** ($\frac{5}{12}$)

To find probability, take the number of favorable outcomes (outcomes we want to happen) and divide it by the number of total outcomes. It is important to read the question carefully. The question asked what is the probability of **NOT** drawing an orange marble. There are five marbles that are not orange, so there are five favorable outcomes. Since there is twelve total marbles, there are twelve total outcomes. Thus the answer is $\frac{5}{12}$.

45. **C:** (.167%)

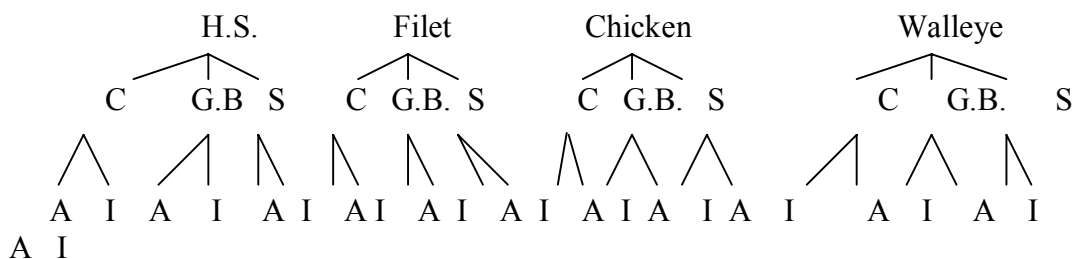
By using some logic, we can reason that the incorrect way to write the probability is either *c* or *d*. This is because we cannot have two different percents that correctly represent the same probability. Since there is one favorable outcome and six total outcomes, take one divided by six to get 0.167. To change from a decimal to a percent, we must multiply by 100 to get 16.7%. Therefore, .167% is not the correct way to represents this probability.

46. **B:** (25%)

Just looking at the graph can solve this problem. There are not any values given for this example, so we must use some estimation. 25% is a quarter of the circle. It looks like the one can a day section is about 25% of the circle. None of the other options are even close.

47. **D:** (24)

We must revisit the counting principle for this example. The counting principle says we can multiply the number of options for each choice to find the total options. There are four choices for the entrée, three for the side dish, and two for the dessert. So $4 \times 3 \times 2 = 12$. We could also make a tree diagram like the one below.



Count the number of option on the bottom row. This is the number of total options.

48. **B:** (2)

Remember that the mode is the number that occurs the most often. In this example, 1 and 2 both occur more than once. But 2 occurs three times and 1 occurs twice. Therefore, 2 is the mode.

49. **D:** (13,000,000)

Looking at the graph, it appears that Ford sells 19 cars and Nissan sells 6 cars. Subtract the two and to get 13. However, it is important to read the labels because our labels are in millions. This means Ford sold 13 **million** cars more than Nissan. So the correct answer is 13,000,000.

50. **D:** (-2, -1, $-\frac{3}{4}$, $-\frac{1}{2}$)

It is important to understand the concept of negative numbers. The larger the actual number, the more negative it is, meaning it is smaller. -2 and -1 are the smallest two numbers. $\frac{3}{4}$ is larger than $\frac{1}{2}$ so $-\frac{3}{4}$ is smaller than $-\frac{1}{2}$. Thus the order from smallest to largest is -2, -1, $-\frac{1}{2}$, $-\frac{3}{4}$.

51. **B:** (3.21×10^8)

A number written in scientific notation has three components. The first number is always greater than or equal to one and less than 10. To find the first number, move the decimal place, until the new number is between 1 and 10. The second component is times 10. The last component of scientific notation is the exponent. The exponent is the number of decimal places we moved to find the number

between one and ten. In this problem the number is 321,000,000. Move the decimal place until the new number is 3.21 (between 1 and 10). The decimal was moved 8 spots. Therefore, the number 321,000,000 written in scientific notation is 3.21×10^8 .

52. C: (321.5)

The tenths place is the first number after the decimal place. The number 321.467 has 4 in the tenths place. The number to the right of the tenths place is 6. Since 6 is larger than 5, round up, so the 4 becomes a 5. The answer will now become 321.5.

53. B: (cube)

A net is a two-dimensional pattern that can be folded into a three-dimensional figure. This problem takes a little imagination. Imagine if the figure were folded into a three-dimensional object, it would be a cube. This problem can also be solved using logic. A square and rectangle are not three-dimensional object. There are no triangles in the net so it cannot be a triangular prism. The only option is a cube.

54. C: (36)

Listing the multiples of each number is the best way to solve this problem. The multiples of 12 are 12, 24, 36, 48, 60, 72... The multiples of 9 are 9, 18, 27, 36, 45, 54, 63, 72... The smallest multiple they have in common is 36.

55. A: ($\frac{1}{4}$)

A sequence is a list of numbers that have a pattern. The first thing to notice is the sign change on each term. This shows that the each new term was multiplied by a negative number. The first number is -16 and the second number is 4 . We get from -16 to 4 by dividing by -4 and from 4 to -1 in the same way. To find the next number take -1 and divide by -4 . The next number would be $\frac{1}{4}$.

56. B: (1)

Any number with an exponent of zero is 1. So the resulting number inside the parenthesis does not matter. If you are unsure of this, a calculator could also be used. To enter an exponent on a calculator use the y^x bottom or the carrot (\wedge), which looks like an up arrow.

57. B: (a whole number)

A negative number is any number with the negative sign in front of it. An integer is a number, positive or negative, without a decimal or fraction, and a rational number is any number that can be written as a fraction. -4 is all of these since it has a negative sign, it does not have a decimal or a fraction, and it can be written as a fraction ($-\frac{4}{1}$). The only one -4 is not is a whole numbers. Whole numbers are positive, so -4 it not a whole number.

58. **C:** (\$38.52)

To find the sales tax, first start by changing the percent to a decimal. To change from a percent to a decimal, move the decimal place two spots to the left so 7% becomes 0.07. Now multiply 0.07 and the cost of the shirt (\$35) to get \$2.52. Add the \$2.52 to \$35 to get \$38.52.

59. **C:** (729)

A common mistake made is to multiply 3×6 to get 18. But $3^6 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 = 729$. A calculator is probably the best way to solve this problem. Use the y^x or the carrot to solve this problem.

60. **A:** (0.000021)

If a number written in scientific notation has a negative exponent, it will be a decimal. Start with the original number of 2.1×10^{-5} . The -5 exponent means we need to move the decimal place to the left 5 places to get 0.000021.

61. **B:** (4)

The best way to solve problems involving greatest common factors is to list all the factors of the numbers. The factors of 32 are 1, 2, 4, 8, 16, and 32. The factors of 36 are 1, 2, 3, 4, 6, 9, 18, and 36. The common factors are 1, 2, and 4. Thus the greatest common factor is 4.

62. **C:** ($-1 \frac{1}{3}$)

We can start by eliminating two answers right away. The point is between -1 and -2 , so $-\frac{1}{3}$ and $-\frac{2}{3}$ are not reasonable answers. The point is definitely closer to -1 so the correct answer would be $-1 \frac{1}{3}$.

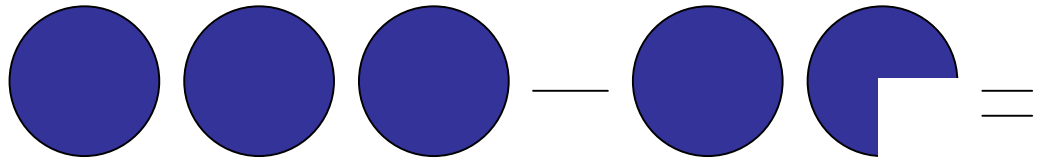
63. **C:** (4)

This question can be a little tricky. Start by finding how many total people will be riding the bus. Since there are six classes with twenty-five students each, take 25×6 to get the total number of students. $25 \times 6 = 150$ so there are 150 students and 10 adults or 160 people in all. 52 people can ride each bus so $160 \div 52 \approx 3.0769$. (The \approx symbol means the answer is an approximation). 3 buses will not be enough because we have .0769 left over. Therefore we need 4 buses.

64. **A:** ($-\frac{1}{2}$)

To multiply the fractions start by changing $-1 \frac{1}{2}$ to an improper fraction ($-\frac{3}{2}$). Dividing fractions is the same as multiplying by the reciprocal of the second number. So $\frac{3}{4} \div -\frac{3}{2} = \frac{3}{4} \times -\frac{2}{3}$. Multiply the numerators to find the new numerator and the denominators to find the new denominators. So $\frac{3}{4} \times -\frac{2}{3} = -\frac{6}{12} = -\frac{1}{2}$. Another way to do it is to use the fraction key on a calculator. To type in a fraction, type the whole number then the $a/b/c$ button the denominator, the $a/b/c$ button again, and finally the denominator. If there is no whole number just type the numerator followed by the $a/b/c$ button and the denominator.

65. **B:** ($1\frac{1}{4}$)



Start by changing the problem from symbols to words. There are three circles a minus sign, one and three fourths of a circle and an equal sign. This problem written as an equation would be $3 - 1\frac{3}{4} = 1\frac{1}{4}$.

66. **B:** (0.2, 0.246, $\frac{1}{4}$, 0.255)

$\frac{1}{4}$ written as a decimal is 0.25. 0.2 only has one decimal place, but zeros can be added without changing the problem. So the numbers we are trying to order from least to greatest is 0.200, 0.250, 0.246, and 0.255. Compare the numbers one place value at a time to see that the correct order is 0.200, 0.246, 0.250, and 0.255.

Change the numbers back to how they were originally written to get 0.2, 0.246, $\frac{1}{4}$, 0.255 as the numbers from lowest to highest.

67. **D:** ($3x - 4 > 10$)

Since the equation started with an inequality, it must end with an inequality so a and b are not correct. $3x - 4$ is the larger side in the original problem, so it must remain the larger side. The numbers were flipped so we must flip the inequality as well.

Language Arts

Words

A sentence must consist of a noun (an object) and a verb. A noun is a person, place, thing, or idea and can be singular or plural. A verb is the action the noun is taking. For example, I (noun) am walking (verb).

Parts of a Sentence

Part of Sentence	Description	Example
Noun	A person, place, thing, or idea	Thomas Jefferson, Minnesota, table, democracy
Pronoun	A word that replaces a noun	‘She’ can replace a woman, ‘he’ a man, ‘it’ an object. ‘Them’ is a plural pronoun
Possessive Pronoun	Indicates ownership	Their, her, his
Verb	Action	Run, Walk, Talk
Adjective	Describes a noun	She is pretty
Adverb	Describes a verb	She runs quickly
Conjunctions 1. Coordinate 2. Subordinate 3. Relative	Joins two objects	1. And, but, or, nor 2. While, although, since 3. That, which, who
Prepositions		For, from, about

Prefixes and Suffixes

Many common words contain either a prefix or suffix. A **prefix** is an addition at the front of a word, whereas a **suffix** is an addition at the end. Common suffixes include –ness, -able, or –less. Common prefixes include pre-, anti-, and in-. Examples include baldness or incorrupt. A prefix or suffix can change both the meaning of the word and the word’s identity, like make a noun into an adjective.

Sentences

A ‘**simple** sentence’ contains only a noun and a verb. As you add parts to the sentence, it becomes **compound** or **complex**. To understand compound and complex sentences, we must first understand **clauses**. A clause is a group of words

usually containing a subject and verb that may or may not be its own sentence.

Dependent clauses cannot stand by themselves, and thus, are not complete sentences. ‘If I go to Florida’ is a dependent clause; it is dependent on another clause or phrase to make it a sentence. An **independent** clause can stand on its own as a sentence. I wore my boots today (sentence/ independent clause) because it is supposed to snow (dependent clause). A new clause can come prior or after the main sentence and includes its own noun or verb. In this example ‘it is supposed to’ is a verb. Compound sentences include an independent clause and a dependent clause. A complex sentence, on the other hand, combines two distinct sentences, or independent clauses, into one sentence.

Punctuation

There are several punctuation marks that are important to know when considering sentences. Punctuation marks that separate two different sentences include the exclamation point (!), the question mark (?), and the period (.). There are also punctuation marks within sentences. These include hyphen (:), semi-colon (;), dash (-), and comma (,).

There are seven main situations within a sentence that need punctuation marks.

Situation	Punctuation	Example sentence (with the situation in bold)
Introductory Element	Comma	If the sun does not come out today , I will go insane.
Interruptive	Comma	After my birthday, January 18 , I flew to Florida.
Afterthought	Comma	I will go insane, if the sun does not come out today .
Bound Modifiers	Comma	Our musty, old apartment gets really dusty.
Elements in Series	Comma	When I went shopping I bought a spoon, bowl, and Kleenex .
Independent clauses joined with a coordinate conjunction	Comma	We went to a movie , and I fell asleep.
Independent clauses not joined with a coordinate conjunction	Semi-colon	We went to a movie ; I fell asleep.

****In all these situations, the comma is the most used punctuation mark, but a dash, a semi-colon, and/or a colon can be substituted depending on the situation.**

Understanding Literature

When reading any type of literature - novel, poetry, narrative, etc – there are several concepts to be aware of.

Important Literary Terminology

Attitude: The authors or character's thoughts and/or feelings on a particular subject.

Diction: Word choice.

Figurative language includes similes, metaphors, and irony.

Simile: A comparison of two objects using “like”, “as”, or “than”

Metaphor: A comparison of two objects not using “like”, “as”, or “than”

Irony: A contrast appearance, where intent and actual meaning differ

Point of view: The manner the piece of literature is told, usually First person, Second person, or Third person

Description of Point of View

First Person	A story told using “I”, “We” or the equivalent
Second Person	A story told using “You”
Third Person	A story told through using an all-knowing narrator. They know and see everything that goes on, and tell what they choose. (Also known as omniscient point of view)

Setting: The background of the piece of literature: its physical location, dates, or any outside surroundings that affect the piece

Structure: The organization of the piece of work. Chapters are the common structure of novels and lines or stanzas are typical of poems.

Style: The expression of the piece, usually in reference to its diction and syntax.

Symbol: Something that is both itself and a reference to something else.

Syntax: The structure/arrangement of words in a sentence.

Theme: The main thought or idea of a work.

Tone: The voice/attitude portrayed by the author.

Hyperbole: Purposeful exaggeration, not intended to be taken literally.

Oxymoron: Combining opposites terms

Personification: Using human characteristics to describe the nonhuman

Alliteration: The repetition of similar sounds, usually in the beginning of sentences

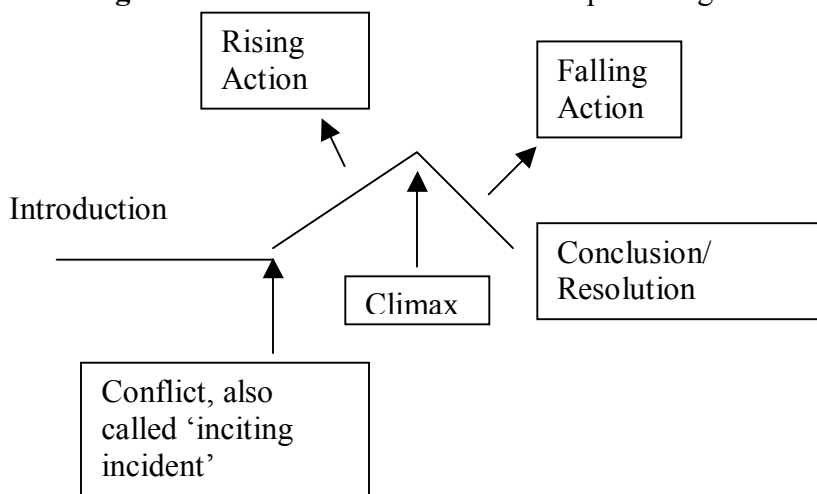
Onomatopoeia: Words that sounds reflect their meaning

These terms are useful when reading a piece of work. They help the reader establish the work's meaning and the author's purpose in writing.

In addition to these terms, there are additional methods of examining a text. When reading a short story or narrative the following questions will give the reader some direction:

1. Who is the author?
2. What is the title? Does it imply anything about the subject or meaning?
3. What is the setting? Where and when does the story take place? What is the mood?
4. What point of view is the piece written it?
5. What is the central conflict of the story? It is **internal** (taking place between a person and himself) or **external** (between two people)?
6. What is the plot of the piece? What are the main events?

Plot diagram -You can follow and chart the plot using this simple diagram:



7. Who is the main character? (Main character is often called the **protagonist**, who is having an external conflict with the **antagonist**.) Who are the other major and minor characters?
8. What figures of speech and other language tools did the author use?
9. What is the theme of the piece?

******A poem I studied much the same way, looking at author and title first. However, much more emphasis is placed on the figures of speech and language tools, including sound devices and imagery. When reading a poem, one must also take into consideration its genre, organization, and rhyme scheme.

Writing Development and Process

When beginning to write a piece of literature, whether a poem, essay, short story, or even a speech, there are proper steps to take:

1. **Prewriting:** Before writing a single sentence, one should consider their topic, purpose, audience, and voice.
2. **Drafting:** After deciding on a topic, purpose, audience, and voice, the writer will have a clear direction of what they want to write. Drafting includes expanding on these items. What do you know about the topic and what do you still need to know? How are you going to make your point/ argument? Or how are you going to develop the plot – what is the climax, characters? Drafting can be done in outline form, or in just free thought writing. Then one can start a first draft.
3. **Revising:** After the first draft is done, it is time to revise. Revising includes checking for editorial mistakes and ensuring you completed the directions you planned out in the prewriting section.
4. **Proofreading:** After making any changes necessary after the revising stages, the draft is ready to be proofread. Proofreading is double-checking the final draft to ensure it is flawless in form and free of editing mistakes.
5. **Publishing:** The draft is ready to be ‘published’.

Literary Acquisition and Reading Instruction

Words are made up of letters and syllables. It is important for children to recognize the letters in order to read the entire words. Thus, learning the alphabet is essential to reading success. Students should also be able to recognize syllables, or breaks in words. One method of finding syllables is to say and write words, then having the students count the syllables. The students should be able to know how many breaks a word has and their correct placement. In addition to letters and syllables, words are also made of **phonemes**. Phonemes are the sounds the letter makes. After teaching letters, phonemes are the next important step.

Teaching phonemes:

1. Vowels: a, e, i, o, u. Say each vowel sound, having children repeat it after you.
2. After teaching the vowel sounds, add a consonant for a two-letter combination: ba, ca, da, fa, ha, sa, ta, or ma for example.
3. Next introduce three letter combinations: bad (ba-d), dad (da-d), fad (fa-d), sad (sa-d), had (ha-d), tad (ta-d), mad (ma-d)
4. Use the three letter combinations to make short sentences. I hug Mom.

~As students are learning to say the phonemes and words, they should also be writing them. Writing them enables them to practice everything twice, better committing the sounds/letters/words to memory.

An example of this technique: using the word *history*. History has seven letters h-i-s-t-o-r-y. History has three syllables: his/to/ry. With the word broken down in syllables, the sound patterns are easier to recognize. You have three smaller segments instead of one long word.

Reading Comprehension:

It is one thing to teach a student to read, it is another to teach them to understand (**comprehend**) what they read. The simplest way to teach comprehension is to ask the students about what they read. What were the significant details: can they answer who, what, when, where, and how, about what they read?

An example:

Yesterday, my dad and I went to the farm. I saw cows, and got to help milk. I also sat in a big tractor, and my dad let me pretend to drive it. I played with all the cats and dogs they have at the farm. After playing I was very tired, and my grandma read me a story. Then I ate some fresh made chocolate chip cookies. But then it was time to go home – I was very sad. But my dad said we could go back later and that made me happy. I went home and told mommy all about my day with dad at the farm.

There are five main concepts in reading comprehension:

1. Understanding the **main idea**: What is a good title for this story?
2. Understanding **details**: What is an animal they had at the farm?
3. Understanding **sequence of events**: What did I do after grandma read me a story?
4. Drawing **conclusions**: Why was I happy?
5. **Critical evaluation**: Do you think the story is true?

Students may know the answers after one time through the story. Others may take a few times through the story in order to answer the questions. Both are fine, as long as they can eventually answer the questions. Another method is to give them the questions before they read the story, so they can find the answers when reading the story, a form of research.

Reading

Reading aloud to children is often said to be the number one method in teaching children to read. Reading aloud should be done both in and outside the classroom. Reading aloud engages the child in different sounds and helps them recognize letters. The more sounds and letters children are familiar with, the more sounds and letters children can emulate. Reading aloud also helps get the child familiar with books as a whole. The more familiar books become, the more likely a child will continue to read. Along this same notion, the more experiences (the zoo, the park, the farm) a child has, the more a child will recognize. It is easier to sound out

words that you are familiar with. A person with knowledge of what a *computer* is will be better able to identify it.

In addition to having stories read to them, children should eventually be reading by themselves. Start with picture books and gradually introduce more difficult books to the child. It is important to know the child's reading level.

There are four reading levels for each child:

1. Independent: able to read by themselves (Should be the majority of books they read)
2. Instructional: able to read with help from others (Should be used occasionally to introduce new vocabulary or longer sentences)
3. Frustrational: Too difficult (Avoid the temptation to challenge or push the child with books at this level. As it says, these books can frustrate a child and turn them off from reading all together)
4. Listening: Usually a step above 'Instructional' level. (Books read aloud to the child should be at this level. Children can ask questions since someone is there to read aloud.)

Language Arts Sample Questions

Questions 1-6 are about the following poem:
“Choice” Emily Dickinson

Of all the souls that stand create
I have elected one.
When sense from spirit files away
And subterfuge is done;

When that which is and that which was
Apart, intrinsic, stand,
And this brief tragedy of flesh
Is shifted like sand;

When figures show their royal front
And mists are carved away,-
Behold the atom I preferred
To all the lists of clay!

1. **What is the rhyme scheme of the first stanza?**
 - a) abab
 - b) abcb
 - c) abac
 - d) There is no rhyme scheme
2. **How many stanzas compose this poem?**
 - a) 1
 - b) 2
 - c) 3
 - d) 12
3. **The first stanza in the poem contains an example of what?**
 - a) Simile
 - b) Metaphor
 - c) Alliteration
 - d) Free verse
4. **What is the topic of the poem?**
 - a) The process of making a choice
 - b) Comparing two elements in order to make a choice
 - c) Choosing in general
 - d) The completion of a choice

5. **What is the mood of the poem?**

- a) Tragic
- b) Joyful
- c) Thoughtful
- d) Satisfaction

6. **Line 7 – “This brief tragedy of flesh” is an example of what?**

- a) Personification
- b) Simile
- c) Metaphor
- d) Irony

Questions 7-9 are about the following line:

“I may safely say that all the ostentation of our grandees is just like a train, of no use to the world...”

7. **This line is an example of what?**

- a) Personification
- b) Simile
- c) Metaphor
- d) Irony

8. **In the above piece, what type of word is ‘ostentation’?**

- a) Verb
- b) Adverb
- c) Adjective
- d) Noun

9. **What does ostentation mean?**

- a) Large
- b) Display
- c) Greatness
- d) To show

Questions 10-13 use this excerpt from “I Have a Dream” by Martin Luther King:

Let freedom ring from the snowcapped Rockies of Colorado!

Let freedom ring from the curvaceous peaks of California!

But not only that; let freedom ring from Stone Mountain of Georgia!

Let freedom ring from every hill and molehill of Mississippi. For every mountainside, let freedom ring.

10. **How many synonyms for the word ‘mountain’ are in this piece?**

- a) One
- b) Zero
- c) Six
- d) Five

11. **What is an antonym of ‘mountain’?**
- a) Freedom
 - b) Peak
 - c) Flat land
 - d) Hill
12. **What is the effect of the repetition in this piece?**
- a) Emphasis on freedom
 - b) Emphasis on different states
 - c) A and B
 - d) None of the above
13. **Using this short excerpt and what you know of Martin Luther King, what is the most likely theme of this piece?**
- a) Freedom is important
 - b) His dream is to have freedom for everyone
 - c) It is important to have a dream
 - d) America
14. **What is an example of irony?**
- a) A wealthy individual whose pride turns the riches to rags
 - b) A friendship going sour
 - c) A house burning down
 - d) A character not showing true feelings
15. **Which is not an example of an external conflict?**
- a) Family prejudices
 - b) A thunderstorm interrupting a drive home
 - c) A man being hunted for his life
 - d) A man debating whether to marry his sweetheart
16. **Which of the following is not considered part of the nonfiction genre?**
- a) Short story
 - b) Autobiography
 - c) Biography
 - d) Essay
17. **Which of the following is not a style of the essay?**
- a) Narrative
 - b) Anecdote
 - c) Persuasive
 - d) Expository

18. **In poetry, what is a *foot*?**
a) The last line
b) The last word of a line
c) A way to describe the meter of the poem
d) Another word for beats
19. **Which of the following is not a common connotation of the word ‘amusement park’?**
a) Crowds
b) Noise
c) Roller coaster
d) Rain
20. **Which of the following is not a sentence?**
a) I am running.
b) I run.
c) I ran in the sun.
d) If I ran yesterday.
21. **In the sentence, ‘I ran boldly in the house’, boldly is a?**
a) Adverb
b) Adjective
c) Noun
d) Verb
22. **Boldly contains**
a) A prefix
b) A suffix
c) A noun
d) An adjective
23. **The sentence, “I am getting married this summer; I am really looking forward to it”, is an example of what?**
a) Simple Sentence
b) Compound Sentence
c) Complex Sentence
d) A Sentence
24. **This is an example of what form of writing?**



- a) Alphabet
b) Logogram
c) Pictogram

- d) B and C
25. **Where were cuneiforms used?**
- a) Rome
 - b) Persia
 - c) Turkey
 - d) China
26. **Which of the following is not a conjunction?**
- a) But
 - b) So
 - c) Yet
 - d) In
27. **In the sentence, “We bought my mom a book on our vacation”, ‘my mom’ is**
- a) An object
 - b) An indirect object
 - c) A Verb
 - d) The subject
28. **What is an example of a change to the English language caused by ‘external history’?**
- a) The French invasion of England
 - b) The introduction of slang words
 - c) The addition of vowels
 - d) The Industrial Revolution
29. **What’s wrong with the sentence “The book are in the library”?**
- a) There is nothing wrong with this sentence
 - b) It should read: The book is in the library
 - c) It should read: The books are in the library
 - d) Both B and C
30. **The verb ‘will love’ is in what tense?**
- a) Past
 - b) Present
 - c) Future
 - d) Singular
31. **What is wrong with the sentence “On the playground the children played on the swings”?**
- a) Incomplete sentence
 - b) Wrong verb tense
 - c) Too many modifiers
 - d) There is nothing wrong with this sentence

32. **The cat put _ paws on the table.**
a) Its
b) It's
c) Neither
d) Both are correct
33. **♪ is an example of?**
a) Ideogram
b) Pictogram
c) Alphabet
d) None
34. **μ is an example of?**
a) Ideogram
b) Pictogram
c) Alphabet
d) None
35. **Identify the dependent clause in this sentence: I was late because the exit was closed.**
a) I was late
b) The exit was closed
c) Because the exit was closed
d) The sentence does not have a dependent clause.
36. **Fill in the blank: The tree almost fell on David and**
a) I
b) Me
c) Both A and B
d) None of the above
37. **A book is organized by?**
a) Chapters
b) Verses
c) Stanzas
d) Sentences
38. **In an essay, the main idea is expressed in?**
a) The conclusion
b) The thesis statement
c) The first sentence
d) Somewhere in the piece

39. **In the introduction of a piece, one should address?**
- a) The arguments/ points the writer is discussing
 - b) The thesis statement
 - c) Both A and B
 - d) None of the above
40. **Which is not important to remember when giving a speech?**
- a) Pitch
 - b) Tone
 - c) Gestures
 - d) Volume
41. **A common distraction in speech giving is?**
- a) Note cards
 - b) Podium
 - c) Microphone
 - d) Chewing gum
42. **After drafting, who should not edit your paper?**
- a) Your mom
 - b) Editing is not needed
 - c) Your teacher
 - d) Your roommate
43. **Fill in the blank: The frog was _____ from lily pad to lily pad.**
- a) Hoping
 - b) Hopping
 - c) A and B
 - d) None of the above
44. **Fill in the blank: My mother was _____ to the hospital yesterday.**
- a) Admitted
 - b) Admited
 - c) A and B
 - d) None of the above
45. **What is an example of a *homonym*?**
- a) Break
 - b) Lead
 - c) Bear
 - d) Book

46. **How many syllables does the word *educator* have?**
- a) One
 - b) Two
 - c) Three
 - d) Four
47. **Two major components in learning to read are:**
- a) Reading aloud and looking at books
 - b) Reading aloud and learning phonetics
 - c) Learning phonetics and looking at books
 - d) Spending time with other children and learning letters
48. **Which is not a way to learn to recognize a word?**
- a) Use phonetics
 - b) Use the dictionary
 - c) Use context clues
 - d) Use structural clues
49. **In order to having reading comprehension, the student must first have?**
- a) Knowledge of alphabet
 - b) Listening comprehension
 - c) Knowledge of how to spell
 - d) Long attention span
50. **Which of the following is not an author of children's books?**
- a) Richard Wright
 - b) Dr. Seuss
 - c) Eric Carle
 - d) Hans Christian Anderson
51. **Which of the following is not a book recommended for 3-6th graders?**
- a) *Bridge to Terabithia* by Katherine Patterson
 - b) *The Cay* by Theodore Taylor
 - c) *Where the Red Fern Grows* by Wilson Rawls
 - d) *The Great Gatsby* by F. Scott Fitzgerald
52. **What is not considered a popular genre of children's literature?**
- a) Biographies
 - b) Poetry
 - c) Romance
 - d) Mysteries

53. **Why is poetry important to young children?**
- a) Poetry has many word images and sounds for children to enjoy
 - b) Poetry teaches about the world around children
 - c) The rhymes and rhythm are easy for the child to understand
 - d) All of the above
54. **What is not an important component of reading?**
- a) Reading comprehension
 - b) Attention span
 - c) Size of words or letters
 - d) Understanding sentence structure
55. **Phonics focuses on:**
- a) Sounds
 - b) Letters
 - c) Words
 - d) Reading
56. **In phonetics, vowels have two sounds: a long vowel and a short vowel. What is not an example of a word with a long 'a' sound?**
- a) Paint
 - b) Ray
 - c) Ant
 - d) Haystack
57. **What is not a way to help children identify letters?**
- a) The alphabet should be learned letter-by-letter
 - b) Reading books
 - c) Sound of letters
 - d) Identify words that start with it
58. **What is not a level of early reading?**
- a) Children's literature
 - b) Pictures
 - c) Early print reading
 - d) Middle-level strategic reading
59. **What is wrong with this sentence: 'Looking down with awe, the tiger pounced away'?**
- a) Incorrect subject/ verb agreement
 - b) Dangling modifier
 - c) Incorrect word choice
 - d) There is nothing wrong with this sentence

60. What is not a common error when learning to read?

- a) Substitution
- b) Repetition
- c) Mispronunciation
- d) Reading too slow

61. What is not a reason why students make errors when reading?

- a) Student is thinking of similar objects
- b) Visual clues
- c) Reading too fast
- d) Structural

Language Arts Answer Key

1. B (abcb)

Rhyme scheme is always determined by the last word of the line. It is best to letter each line in relation to the other lines to determine the rhyme. For example, in the first stanza of the poem, we can letter the lines as such:

Of all the souls that stand create (create - a)

I have elected one. (one does not rhyme with 'a', so it gets a new letter – b,)

When sense from spirit files away (away does not rhyme with 'a' or 'b', so it becomes - c)

And subterfuge is done (done does rhyme with one, so back to b)

If you would follow this pattern throughout the poem, it becomes clear the poem follows an 'abcb' pattern with the second and fourth lines the only ones rhyming.

Thus the entire poem's rhyme scheme is abcb, defe, ghij – since the rhymes do not continue through each stanza.

2. C (Three)

A **stanza** is a common method of organizing a poem. It is generally defined as a grouping of three or more lines with the same meter and rhyme scheme. In this poem, there are three distinct stanzas, each with four lines.

3. C (Alliteration)

The first stanza has an example of **alliteration** (the repetition of initial consonant sounds).

Alliteration is often used in poetry for its rhythmic quality. With all the s-words in bold, we can see five s-words are repeated in four lines:

Of all the **souls** that **stand** create

I have elected one.

When **sense** from **spirit** files away

And **subterfuge** is done

4. D (The completion of a choice)

The title "Choice" is the first clue that the poem will deal in some way with choice.

Then, the word choice, 'elected one' (line 2) shows that the choice has been made.

Using process of elimination, the poem is not about the process of the choice, comparing two elements, or choosing in general. The diction (word choice) of the poem does not suggest any of these choices, so D is the best answer.

5. D (Satisfaction)

As suggested by the title, the poem is about a choice. The speaker seems to be reflecting on the choice it made, and then the last stanza shows the excitement for the choice the made:

When figures show their royal front

And mists are carved away,-

Behold the atom I preferred

To all the lists of clay!

Paraphrased the stanza means, when all is said and done, the choice I made still stands out as the best.

6. **C** (Metaphor)

A **metaphor** compares two things without using ‘like’ or ‘as’. This line is comparing ‘brief tragedy of flesh’ to one’s life. To the speaker, life is a brief tragedy of flesh. Essentially, ‘brief tragedy of flesh’ describes life for the speaker.

7. **B** (Simile)

Any comparison using like or as is a **simile**. In this case, the writer uses ‘like a train’ to describe other’s ‘ostentation’.

8. **D** (Noun)

We can use our knowledge of words to answer this question. ‘Ostentatious’ is an adjective; this word usually describes an object. However, when the suffix –ion is added to a word (in this case, ostentatious, the word becomes a noun. We can also tell that the word ostentation has an article ‘the’, an article that only nouns are given.

9. **B** (Display)

When reading unfamiliar passages, we can use context clues to find the definition of unknown words. The first step is to determine what type of word the unknown word is, which we did in the last question: ‘Ostentation’ is a noun. So, which of the choices is a noun? Large is an adjective and to show is a verb, so they are ruled out. Display and greatness are both nouns, so we still are left with two choices. So, read the sentence with both alternatives. “I may safely say that all the ‘display’ of our grantees is just like a train” or “I may safely say that all the ‘greatness’ of our grantees is just like a train”, which one sounds better? In this situation ‘display’ sounds better. The sentence has a negative tone and display is a more negative word than greatness, a more positive choice. (The method of replacing the suggested definitions in the sentence can be done right away, but figuring out what type of word the unknown word is may eliminate choices.)

10. **C** (Six)

A **synonym** is a word similar in meaning to another word. For example, purse and bag are synonyms of each other. So, which words are similar in meaning to mountain? Rockies, peaks, Stone Mountain, hill, molehill, and mountainside are all synonyms of mountain, so there are six.

11. **C** (Flat land)

The opposite of synonym is **antonym**, a word different in meaning than another word. Also called opposites: good/ bad or synonym/ antonym are both examples. So, the opposite of mountain would be flat land or choice C.

**** Both synonyms and antonyms are important elements writers use to stress a point they are trying to make. Synonyms, for example, are used in for repetition – a technique writer used to emphasis a point.**

12. **C** (A and B)

In this section, King actually repeats three distinct elements: the phrase ‘let freedom ring’, the different states, and various types of mountains (See questions 7-8 above). As a persuasive essay, the purpose of the piece is to convince the audience of a particular opinion or idea. Thus, the author is repetition elements in the piece to fulfill this purpose. So, King wanted to emphasize freedom ringing from different states – throughout the country – on mountaintops, heights that allow noise to carry farther.

13. **B** (His dream is to have freedom for everyone)

The **theme** of a piece of work is its meaning. It is easy to remember using ‘theme’ = **the meaning**. Using this short excerpt, we know that freedom is important to King. However, we also should use what else we know about the piece to determine the theme. The title “I Have a Dream” clues us in that a dream should relate to the theme. The author is also important to consider. King was a well-known advocate for racial equality. If you notice, we are answering the questions of examining a test listed in the written section. Using what we know about the author, title, language techniques (such as repetition) the most likely theme recognizes his dream of freedom and choice B is the most likely option.

14. **A** (A wealthy individual whose pride turns the riches to rags)

Irony is described as a contrast appearance of reality. So, which of the options reflects a contrast appearance? A friendship going sour or a house burning down, although unfortunate events have nothing to do with contrasting reality. A character not showing his true feelings is not contrasted by anything. However, a wealthy individual is contrasted with a poverty-stricken individual – and the reality has changed. But the key to making this scenario ironic is the reason of the downfall – pride. The individual brought their demise on himself or herself.

15. **D** (A man debating whether to marry his sweetheart)

Internal conflict is an internal struggle. In this scenario, the man is internally debating whether or not to marry his sweetheart. In an external conflict, man is struggling with some other force, which could be nature (thunderstorm), other people (getting hunted for their lives), or the environment of its world (being caught in a family struggle).

16. **A** (Short story)

Although some short stories are considered nonfiction, not all short stories are nonfiction, so it cannot be considered part of the genre as a whole. There are three major categories of literature: fiction, nonfiction, and poetry. **Nonfiction** discusses real life, or actual people, places, or things. Examples are biographies (stories about a life written by someone else), autobiographies (stories about a life written about the actual person), and essays. **Poetry** is categorized by its rhythm and rhyme, stanza and verse organizational structure. **Fiction** is most often described as everything else.

17. **B** (Anecdote)

There are four main types of essays: narrative, expository, descriptive, and persuasive. An anecdote is a short story often incorporated in an essay, but it is not a type of essay in and of itself. The four types have essays usually have one of six purposes: to narrate, to describe, to explain, to argue, or to persuade. Often an essay has more than one of these purposes. The purpose of the essay is important when considering its theme or main idea.

18. **C** (A way to describe the meter of the poem)

The **meter** of a poem is also described as its rhythm. The rhythm of a poem is reflected in the combination of stressed and unstressed syllables the poem has. The stressed and unstressed syllables are then divided into the poems **feet**.

Common Metrical Terms

Term	Meaning
Free Verse	No fixed metrical pattern, usually no rhyme
Iamb	A two-syllable foot with an unaccented syllable
Pentameter	A line with five feet
Tetrameter	A line of four feet

19. **D** (Rain)

Words have two different meanings: their **denotation** and their **connotation**. Denotation is the dictionary meaning of the word, whereas connotation is other words that are associated with the given word. The denotation of amusement park is probably something like a place of diversion and fun. But what is commonly associated with the phrase ‘amusement park’? Many people probably think of crowds, noise, and roller coaster. Rain, is not commonly associated with amusement park. However, if a person had an amusement park experience rained out, they may associate rain and amusement parks.

20. **D** (If I ran yesterday)

‘If I ran yesterday’ is a clause. Although it has a subject ‘I’ and a verb ‘ran’, it is not a complete thought. If I ran yesterday, what? The thought must be completed in order for the sentence to be complete.

21. **A** (Adverb)

An adverb describes a verb. In this case, ‘boldly’ is describing ‘ran’ (a verb). Most words that end in –ly are adverbs. If boldly was to describe an object, it would be an adjective.

22. **B** (Suffix)

Boldly is the word ‘bold’ plus –ly. Because –ly is added to the back of bold, it is a suffix. A prefix would come before the major word.

23. **C** (Complex Sentence)

“I am getting married this summer; I am really looking forward to it” is made up of two distinct independent clauses. Independent clauses are determined by whether the clause can stand by itself as a complete sentence. In this case, ‘I am getting married’ and ‘I am really looking forward to it’ can both stand alone as sentences. Thus, it is a complex sentence, as a complex sentence is defined as having two independent clauses.

24. **D** (B and C)

The picture is a common symbol of a Pumpkin. It is a symbol representing a single word, pumpkin, which makes it a logogram. It is also a symbol representing a specific object, also a pumpkin, which makes it also a pictogram.

25. **B** (Persia)

This chart shows the early forms of writing. Cuneiforms were used in Persia and Assyria.

Early Forms of Writing

Writing Form	Definition	Place of Origin or Popularity
Cuneiform	Symbols that are pictures of the objects they represent	Mesopotamia, Persia, Assyria
Ideogram	Concept expressed through a picture or symbol without expressing a specific word. +, -	
Logogram	Symbols that represent a single word	Chinese
Hieroglyphs	An object stands for a word or phrase	Egypt
Pictograms	Pictures or symbols representing a specific object	American Indian
Alphabet	Each symbol represents a separate phoneme, not an entire syllable. A, B, Λ	Greek, Roman

26. **D** (In)

Conjunctions join two objects or clauses together. Popular conjunctions are and, but, or, nor, so, and yet. In is not a conjunction because it does not connect two objects or clauses. 'In' is more of an adjective: The chicken is in the oven.

27. **B** (An indirect object)

In addition to objects and verbs, which must be part of a sentence, a sentence can also contain indirect objects. An indirect object answers the question: to or for (usually whom)? So, the best method of determining a potential indirect object is to ask if the main object is to whom or for whom anyone. In this case, "We bought my mom a book on our vacation" – we bought the book (the direct object) **for** my mom. Thus, my mom is an indirect object.

28. **A** (The French invasion of England)

Changes in language occur in two ways: '**external history**' and '**inner history**'. External history is described as outside events that have occurred to speakers of a given language that have lead to changes. Inner history is described as changes that occur within the language itself. The introduction of slang and the addition of vowels are examples of inner history. The French invasion of England, as an example of external history, actually had a profound influence on the English language. The French introduced new words and new dialect to the English language, both causing lasting changes to English. The Industrial Revolution, although a famous historical event, is not known for causing major changes to the English language.

29. **D** (Both B and C)

Even though the sentence has a noun/ object 'the book' and a verb 'are', there is not object/verb agreement. A singular noun must have a singular verb, as a plural noun must have a plural verb. In the original sentence, the book is singular, but 'are' is a plural verb. It should read 'the book is in the library' or 'the books are in the library'. Articles and pronouns must also match in agreement.

30. **C** (Future)

There are six verb tenses and six verb subjects. As discussed in Question 30, a subject and verb must agree. The verb tense describes the time frame of the verb.

Verb Chart

Subject	Present	Past	Future	Present perfect	Past perfect	Future Perfect
I	Love	Loved	Will love	Have loved	Had loved	Will have love
You (Singular)	Love	Loved	Will love	Have loved	Had loved	Will have love
He/She	Loves	Loved	Will love	Have loved	Had loved	Will have love
We	Love	Loved	Will love	Have loved	Had loved	Will have love
You (Plural, like you all)	Love	Loved	Will love	Have loved	Had loved	Will have love
They	Love	Loved	Will love	Have loved	Had loved	Will have love


31. **D** (There is nothing wrong with this sentence)

This sentence has a subject (the children) and the proper verb (played), so it is a sentence. There are two modifiers in the sentence ‘on the playground’ and ‘on the swings’ both are modifiers, but they are in proper form, so there is also nothing wrong with them. (A **modifier** can be either an adverbial or adjectival phrase). For example, on the playground describes where the children are playing.

32. **A** (Its)

The cat puts **its** paws on the table. ‘Its’ is the proper possessive form. ‘It’s’ is actually not possessive, but a contraction of it and is. It would be used – “It’s Saturday”. Because ‘it’s’ is not correct, both B and D are incorrect, and A is revealed as the correct answer. Other contractions include can’t (can and not) and won’t (will and not).

33. **A** (Ideogram)

The symbol  commonly represents a concept ‘music’, is does not have an actual definition of a word or object. This narrows it down to one option, an ideogram.

34. **C** (Alphabet)

μ is a letter of the Greek alphabet. It represents a syllable, which, like our alphabet, is joined together with other letters to make words. In contrast of ideograms, pictograms, and other early forms of writing, the alphabet was the first to combine the symbols to create words, instead of the symbols representing words as a whole.

35. **B** (Because the exit was closed)

A dependent clause cannot stand alone as a sentence, because they contain a subordinating word (in this case 'because'). The subordinating word connects the two phrases, making a complete sentence. To find dependent clauses look for words like because, if, that, which, or who. Dependent clauses usually answer who, what, when, where, or why in relation to the complete sentence. In this example, 'because the exit was closed' gives the reason (why) 'I was late'.

36. **B** (Me)

The best method to use in order to decide between I or me is to put both words back in the original sentence. Just take out the 'David and' part of the sentence, and then add both phrases: 'The tree almost fell on me' or 'the tree almost fell on I'. Your ear then becomes the most important tool in determining the correct answer. Your ear should tell that 'the tree almost fell on me' is the best choice, which is option B.

37. **A** (Chapter)

Basic organizational structure:

Words → Sentence → Paragraphs

The common misconception is three to five sentences make up a paragraph, but actually there is no limit to how many sentences can be or need to be in a paragraph. There is also no limit to how many words can make up a complete sentence: 'I know' or 'He runs' are both complete sentences with only two words. There have been books written in which one sentence takes up a whole page of text. (Having one sentence take up a page is not recommended – the sentence can be difficult to follow and comprehend.) Academic writing should have about fifteen to twenty words per sentence, although this is not a hard or fast rule.

Books then have Paragraphs → Chapters → Books

Poetry is slightly different: Lines → Stanzas → Poem

The number of lines determines the type of stanza in a poem:

1. Couplets are 2- line stanzas
2. Quatrains are 4-line stanzas
3. Sextets are 6-line stanzas
4. Octets are 8-line stanzas

So, although sentences are included in books, the main organizational structure is chapters.

38. **B** (The thesis statement)

The thesis statement in an essay, or other nonfiction piece of work, describes the main idea or main argument of the piece. When reading, it is important to always keep the thesis statement in mind and examine how the author expands the argument through specific points and examples. In writing, the thesis statement

should be clearly stated and each point given should relate back to it in some way. That is why prewriting is critical: one must know their thesis statement - and the points one will use to make the key argument or idea - well before actually writing.

39. C (Both A and B)

The introduction of a piece of nonfiction should include the thesis statement and the arguments the writer will be discussing. This gives the reader a brief outline of the writer's points to follow while they are reading. They can anticipate the arguments and know exactly what the arguments are supposed to prove. Usually, a piece of literature includes the introduction, paragraphs (one each to describe each of the arguments the writer wants to make), and then the conclusion. The conclusion is used to summarize the arguments and then state the key idea one last time. It is then up to the reader to decide whether they agree with the points.

40. A (Pitch)

Important Speech Concepts

Term	Definition
Tone	Tone is how fast or slow one says their words. Tone in a speech should always be slow enough to be easily heard, but can vary throughout the speech to emphasize different points
Volume	Volume is how loud or soft ones voice is. Volume should always be loud enough to hear, but not overpowering. It can also vary for emphasis.
Eye Contact	When giving a speech, it is important to look at the audience. One does not need to look directly at the audience; you can look over or above the audience. Just don't look down or always at note cards or paper. You will be much more engaging if you look at the audience.
Gestures	Gestures are hand motions. A popular gesture in speeches is shaking a fist in the air. They can be used in conjunction or as a replacement with tone and volume when making a strong point.

41. **D** (Chewing gum)

When giving a speech you should avoid anything that could potentially distract your audience. Distractions take the attention off the speaker and their words and onto what the speaker is doing.

Common distractions when giving a speech include:

1. Having an object in your fingers. Any foreign object takes attention off the speaker and will prevent the speaker from making needed gestures. Unless the object is directly related to the speech, avoid having objects in your hands.
2. Chewing gum. Although one may think gum chewing is discreet, an audience can tell when the speaker has gum in their mouth. Having gum prevents the speakers' from speaking clearly, thus affects the speakers' volume and tone.
3. Having an object in your pockets. Speeches are nerve-wracking activities and to calm one down, many people play with objects or fiddle with whatever is in their pocket. To prevent unnecessary fiddling, keep things out of pockets. Concentrate on giving the best possible speech.

Note cards can actually be a distraction if they are used incorrectly. Note cards can be a vital part of a speech – memorizing a speech can be tricky. The trick to note cards is writing only key words and phrases to trigger your memory of the speech's content. The note cards should be in outline form, **not** written out word-for-word. However, note cards can be distracting if the speaker plays with them instead of using them. Another distraction with note cards is using them too much – if a speaker does not look up from his or her note cards, it will not be an engaging speech and the audience will quickly lose interest. Podiums and microphones are common provided resources for speech-givers.

42. **B** (Editing is not needed)

Editing is a critical aspect of the writing process. As many people as possible should edit your writing. Your mom, best friend, teacher, and roommate are all potential editors. Editors should be looking for both English errors and to ensure the text flows smoothly. You, the writer, should always edit your own writing. How many times a piece of writing is edited depends on the person and the piece of writing. If the writing is very complex, it may need more editing than other easier pieces. A piece of writing is finally done when the writer is happy and confident with it.

43. **B** (Hopping)

Hopping contains the root word 'hop', whereas hoping contains the root word 'hope'. Distinguishing between whether to add or not add a consonant can be difficult, especially for younger children. The rule to follow: short vowel sounds always end with a double consonant before adding any suffix beginning with a vowel. Thus, hop (a short vowel 'o' sound) gets an extra 'p', but the word hope does not. Other common words include moped versus mopped or taped versus

tapped. This is another reason why learning phonemes are so important in further increasing English skills.

44. A (Admitted)

In addition to using short versus long vowels to determine whether a word should have a single or double consonant, there are other types of words that need this distinction. One example is multi-syllable short vowel words.

This rule for this type of words says:

- When accent is on the last syllable, the last consonant is doubled. Examples include 'admitted' and 'permitted'.
- When accent is on first syllable, the last consonant is not doubled. Examples include 'visited'.

45. C (Bear)

There are three types of words that typically give young readers trouble:

homonyms, **homophones**, and **homographs**, because words that fall under these categories are words that sound alike yet are different in some other way.

Type	Description	Example Sentences
Homonyms	Same sound and spelling, yet with different meaning.	The <i>bear</i> climbed the tree. I cannot <i>bear</i> to be away from you any longer.
Homophones	Same sound, but with different spelling and meaning	We took a <i>break</i> from cutting the lawn. Do not <i>brake</i> too soon!
Homograph	Same spelling, different meanings, usually different pronunciation	The <i>dove</i> is a pretty bird. The swimmer <i>dove</i> into the water.

When learning to read, and to spell, homonyms, homophones, and homographs, context clues are very important. Using context clues will help the child distinguish between the two different words. Words that are homonyms, homophones, and homographs are also best learned by sight and their definitions by memory.

46. D (Four)

The word *educator* is broken down into 4 syllables: ed/u/ca/tor. The simplest way to learn and teach syllables is to count the number of vowels in the word. If you notice, educator has four vowels and four syllables. The number of vowels almost always corresponds to the number of syllables. The more children know their vowels the easier it will be to count the syllables. However, children should be able to recognize syllables in words they hear, not just counting vowels. Children need to know syllables because the more big words are broken up, the easier it is to read. What is easier to read - educator or ed/u/ca/tor? Children can learn to read by blending sounds together, a primary beginning step to reading as a whole.

47. **B** (Reading aloud and learning phonetics)

The more children are read, they better able and prepared they are to start reading as a whole. Children must get familiar with letters, words, and word sounds, which they do not get from just looking at a book. After learning how to read, children themselves should read aloud in order for teachers/ parents to understand their reading struggles and strengths. Reading aloud is a simple test to ensure children comprehend reading. Part two to learning to read is phonetics – again relating to learning and recognizing sounds and letters. As children learn to sound out unfamiliar words, the easier reading becomes.

48. **A** (Use phonetics)

Phonetics is an excellent tool for learning to read, but not for recognizing words. Here are four suggestions for helping children recognize words.

- A. Learn as many words by sight as possible. Children should start with very common words: the, school, their name, Mom, Dad, their siblings' name, brother, sister, boy, girl, I, he, she - to name a few. Once they have learned these words, expand their vocabulary. Learning words by sight allows children to recognize sound patterns in addition to helping them recognize words.
- B. Learn prefixes, suffixes, and other structural clues. Learning the make-up of words can help children identify the word. For example, perhaps the child knows the word read, but struggles with the word reading. If they can recognize that reading is just read + ing, they may have an easier time figuring out and reading the new word. It is especially helpful to know what the prefix/ suffix means. Then children can know what exactly reading means in relation to the word read.
- C. Use context clues. Often when a reader discovers an unknown word, context clues can be used to figure it out. Take the sentence, for example, 'I sit on the couch'. Perhaps the child does not know the word couch. Asking where are common places they sit may help the child recognize couch. It will at least tell the child the unknown word is something they sit on. Older readers can use context clues like where the word is in the sentence or whether is it a noun, adjective, verb, etc to figure out an unknown word.
- D. Use the dictionary. Even young children can use a dictionary – a picture one can be valuable for teaching words. Having children see a picture of what they are learning will help in word recognition. Take the above example, 'I sit on a couch.' If a child sees a picture of a couch and can recognize that they sit on couch, they will have the picture and word in their memory. Older students can benefit from using a dictionary to find out both pronunciations and definitions of unknown words. Children are more likely to include the word in their vocabulary if they are sure they know the correct pronunciation and definition.

49. **B** (Listening comprehension)

Again, when children are read to, they are better able to recognize sounds in relation to words. In fact, they are better able to recognize words as a whole. Hearing words is another form of word recognition. Children are better able to read words they have heard. Also, if they can listen and understand what is being read to them, chances are they will have more success comprehending books they read themselves. Listening comprehension often indicates the students' reading potential. Students should be able to correctly answer 75 % of reading comprehension questions when listening to a text being read. Reading aloud also enhances listening skills, crucial for any classroom success.

50. **A** (Richard Wright)

Children's literature has an abundance of excellent books. Early children's literature can not only help children become familiar with words, but also numbers, objects, days of the week, nature – the possibilities are endless. Many books also incorporate moral lessons. When children read, they are not just learning how to read, but are picking up valuable lessons about the world around them. Three famous children's authors include Dr. Seuss (*Cat in the Hat*, *Green Eggs in Ham*), Eric Carle (*The Very Hungry Caterpillar*), and Hans Christian Anderson (fairy tale author, *Little Mermaid* for one). Richard Wright, however, is not a children's author, his books are more suitable for adults.

51. **D** (*The Great Gatsby* by F. Scott Fitzgerald)

As children get older, their books grow with them. Students can start reading longer books, with more complex themes and ideas. Although they may have complex themes, the books still cater to their interests as they discuss friendship, family, sports, etc. Three of those books include *Bridge to Terabithia* by Katherine Patterson, *The Cay* by Theodore Taylor, and *Where the Red Fern Grows* by Wilson Rawls. However, *The Great Gatsby* by F. Scott Fitzgerald is more suitable for adults. Whether choosing books for younger or older children, stories that delight their imagination and stimulate their emotions will help them appreciate literature, and, hopefully, facilitate further reading.

52. **C** (Romance)

Types of books (genres) adults like are plentiful in children's literature as well. Biographies, poetry, and mysteries have delighted children for ages. Other popular genres include folk and fairy tales, quests, mythology, and picture books. Children's literature is much like adult literature, just simpler sentence structure and theme. Although romance may be incorporated in many children's books, it is probably not appropriate for a genre as a whole.

53. **D** (All of the above)

Children grow up learning poetry. Imagine back to when you were a child, you probably had a favorite nursery rhyme and fell asleep to lullabies – both examples of poetry. Poetry is easy for children to enjoy, as they easily pick up on the rhymes and rhythms, or sounds of poetry. Also, poetry is a very visual art; it is easy for children to use their imagination in poetry. Whatever the reason for enjoyment, poetry is and should be an integral part of the literary beginning of a child.

54. **B** (Attention span)

When a child learns to read, they are also developing other critical skills. Thus, these are all important components, not only of learning how to read, but reading in general.

Reading uses:

- a. Knowledge of how the world works
- b. Comprehension
- c. Knowledge of sentence structure
- d. Importance of order of ideas, or words, or of letters
- e. Size of words or letters
- f. Special features of sound, shape, and layouts
- g. Special knowledge from past literary experiences

55. **A** (Sounds)

Phonics teaches children the sounds that make up words. Learning sounds essentially enables children to be able to sound out any word they are not familiar with. Phonics focuses on sound blends, not individual letters. Syllables often are used to break up words, but not always. Phonics would teach words like such: ‘bush’. First learn ‘bu’ sound. Then add ‘sh’ sound. Then add them together. Bush became two two-letter words: bu and sh instead of one four letter word. All words can be broken up this way, and children should be able to sound out any pronunciation.

56. C (Ant)

All vowels have a short sound and a long sound. The short 'a' sound is in words like apple and ant. The long 'a' sound is in words with 'ai' and 'ay' (especially at the ends of words). This includes words like paint, ray, rain, hay, and haystack. It is important for children to learn both sounds, but it is best taught slowly. First start with short vowel sounds and then adding the longer vowels. Below is a chart with examples of long and short vowel sounds.

Vowel Sound	Example Word – Short Vowel Sound	Long vowel clues	Example Word – Long Vowel Sound
A, a	Apple, ant	Ai, Ay	Jail, lay
E, e	Edge	Ie	Thief, field
I, i	Itch, igloo	Ie, y	Pie, by
O, o	Octopus, ostrich	Oa, Oe, Ow	Bowl, toe, oat
U, u	Ugly, umbrella	Oo, Ew, Ue, Ew	Too, New, True, Few

~If children have difficulties distinguishing between the short and long 'e' and 'i' sounds, have them say the opposite letters with words. For example, say 'idge' or 'egloo', 'thief' (with 'i' sound) or 'pie' (with 'e' sound).

57. B (Reading books)

Learning letters is critical for further reading success. Students should recognize letters, sounds of letters, and words that start with the letter. These can be learned through practice, repetition, picture cues, and by getting read to. Reading books will not necessarily help the child. If the cannot recognize letters, they probably cannot read. Steps should be taken to ensure reading success; letter recognition (using these cues) will be a step in the right direction.

~It is important for students to be able to recognize both upper and lower case letters. Both cases should be taught in conjunction.

58. A (Children's literature)

In addition to the broader levels discussed earlier, beginning readers have their own step-by-step reading stages. Knowing where students fall can help teachers pick literature at each student's level. Teachers can also easily recognize when early readers need to advance, and what is most important for each child to work on when reading.

Step one - Describing pictures: Children are able to read a story using pictures alone. They grasp limited story development; yet can connect many pictures together.

Step two - Connecting pictures into a story: Children use their own language (instead of more traditional literary language) to describe a story using only pictures

Step three – Transitional picture reading: Children begin to use more literary language when describing pictures as a story

Step four – Advanced picture reading: Children are telling the story of pictures as they are actually reading a text (literary language)

Step five – Early print reading: Describes a story using pictures, although text is involved. The student recognizes some words by sight

Step six – Early strategic reading: Children are beginning to read text. They recognize words and sounds, and can use context clues to guess at unknown words.

Step seven – Middle-level strategic reading: Children are advancing in their reading skills. They know more sounds and have less unknown words.

59. **B** (Dangling modifier)

Modifiers can be adjectives or adverbs that modify or describe the main part of the sentence. The modifier in the sentence: ‘Looking down with awe, the tiger pounced away’ is ‘Looking down in horror’. But the modifier is unclear: who is looking down in horror? Is it the tiger? Is it an unknown subject? (Probably) Because the modifier is unclear, it is known as a **dangling modifier**. Dangling modifiers make ineffective and should be avoided when writing sentences. Another type of ineffective modifier is called a **misplaced modifier** – a modifier in a sentence that’s placement makes it unclear what it is modifying. An example sentence: ‘The baby was in the corner filled with tears.’ The modifier, ‘filled with tears’, is presumably describing the baby, but its placement in the sentence makes it seem like its modifying the corner. The modifier would work much better if placed next to the subject it is modifying.

60. **D** (Reading too slow)

When learning to read, students should combine both silent reading and reading aloud. Reading aloud helps teachers recognize common mistakes that are not evident during silent reading. The following chart demonstrates the common errors in reading that students commit. When evaluating students’ reading, teachers should indicate the error type and the mistake so children can learn from them.

Common Errors in Reading	Description (if needed)
Mispronunciation	Incorrect pronunciation of a word, usually with a word that does not exist
Substitution	Replacing the actual word in the text with another
Insertion	Adding a word not in the text
Teacher Assistance	Student stuck on a word and needing help from the teacher. Also counts when students ask for help in silent reading.
Repetition*	
Omission	Not reading a word
Self-Correction*	When students corrects a mistake himself

These errors are added together (except for the two with asterisks) and the teacher will have an excellent idea of the problems the reader may have and can work to correct them.

~Listening for errors is crucial when determining the level of text for students. Making too many errors indicate the student is not quite ready for that level. On the other hand, errorless reading indicates the student is ready to move up a reading level. Students should average about two errors when they are reading the proper level of text.

61. C (Reading too fast)

Students make errors for several reasons:

1) Errors of meaning: does the error make sense? If the student's reading makes sense, they may just be confusing meaning of words. The benefit of errors of meaning, however, is that the student is showing they understand the text. They just might not understand a part of the text. However, they are using their knowledge of the world in a positive way.

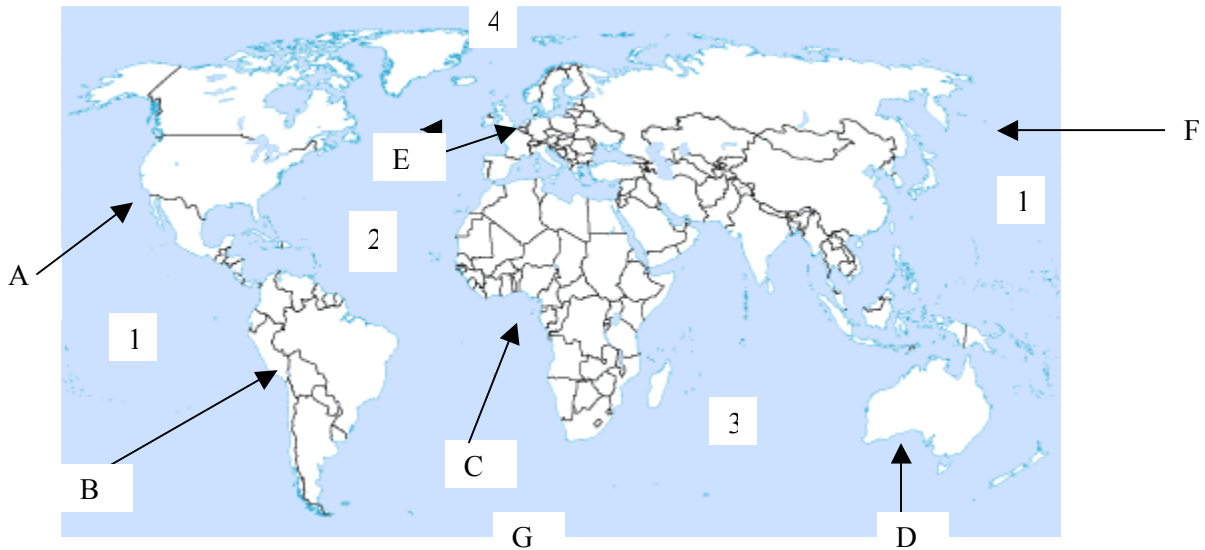
2) Structure: does the error sound right? Examine if what the student is saying makes sense according to the English language. If it is, their oral language may influence the student. Their language may be limited, and they may not understand basic grammar.

3) Visual language: could the error have been made from a mistake in visual cues? The student may be using visual cues from letters and words instead of the actual words. Another reason is the student may be seeing only the first part of the word, and missing the last part. For example, the actual word may be 'book' and the student reads 'boat'.

4) Word Memory. The student may be reading from memory instead of really reading the text. They may be associating one word for another.

History and Social Science

Geography



Continents of the World:

North America (Represented by the letter A). Countries/regions include United States, Canada, Mexico, and Central America.

South America (Represented by the letter B). Countries include Brazil, Argentina, Chile, Peru, and Columbia.

Africa (Represented by the letter C). Countries include South Africa, Madagascar, Kenya, Egypt, Sudan, and Morocco.

Australia (Represented by the letter D). Countries/ regions include Australia, New Guinea, and Oceania.

Europe (Represented by the letter E). Countries include Russia, France, Spain, England, and Germany.

Asia (Represented by the letter F). Countries include Japan, China, Vietnam, Korea, India, Saudi Arabia, and Iraq.

Antarctica (Not shown, but represented by the letter G)

Oceans of the World:

Pacific (Represented by the number 1)

Atlantic (Represented by the number 2)

Indian (Represented by the number 3)

Arctic Ocean (Represented by the number 4)

World History

Descriptions of the Early Civilizations

Civilization	Geography	Religion	Political/ Cultural	Significant Contributions
Mesopotamia	Located on the Tigris and Euphrates Rivers	Many different gods, usually symbolizing aspects of life	Developed a common law code and justice system	The first forms of writing, education, and math.
Egypt	On the Nile River, isolated by desert and Mediterranean	Served many gods, Pharaoh became religious leader	Pharaoh 'God-king' was appointed by god to lead	Own writing system: hieroglyphics
Hebrew	Eastern part of Mediterranean Sea	Served one true God, beginning of the Jewish faith	Start of Monotheism: the belief of only one god	A law code based on religious teachings
Greek	Mountainous and many small islands	No uniform religious faith or leadership	Rise of Polis or 'City-State', Athens began democracy	Coinage, literature, poetry, history, drama
Rome	Between foothills, on the Tiber River, center of Italy	Many different gods, polytheism	Had complex system of a leader, Senate, and overseers	Roman empire was one of the largest, longest lasting

Other important historical time periods:

Renaissance (Began in the 14th century)

Key Factor: Previous substantial economic growth and prosperity

Key Ideas: **individualism** (fully realizing your abilities, belief in self), **humanism** (a rebirth of classical literature and a new commitment to learning. This new way of thinking led to an increased priority of education), and **secularism** (concern with the material world). Also during this time was the creation of the printing press, revolutionizing the way people communicated.

Key People: Gutenberg, Michelangelo, Erasmus, Machiavelli

Scientific Revolution: (17th Century)

Key Factors: Renaissance because it stimulated scientific progress, new math discoveries, and the inventions of new instruments

Key Ideas: Revolutionized scientific thinking in new ideas about planets going around the sun, Newton's laws of motion and gravity, inspired growth of international scientific community and a new intellectual movement as a whole.

Key People: Kepler, Galileo, Newton, Bacon, Descartes

History of the United States:

In comparison to much of the world, the history of the United States is young. The first settlers arrived at Jamestown around 1607. Although these first settlers all perished, Europeans had a quest for conquest and riches and quickly colonized the new soil. England held much of the first colonies, now known as the 13, although Spain and France also held land in North America. Spain held much of modern-day Florida and Mexico, and was very successful mining gold. France had more pockets of settlements of fur trading posts, mainly by the Great Lakes and into Canada.

The English increasingly began to immigrate to the new land. Many of the settlers came to America to get away from the religious persecution occurring in England at this time. Because the 13 English Colonies were subjects of the English crown, England treated America like any other colony. Americans had little rights of their own and England exploited the resources and work of America and its people. As America grew in size, many of its citizens began to resent the power of the English throne. England was heavily taxing their American counterparts, but America had no say in the English government. Many Americans wanted their own government, not one an ocean away. They wanted economic freedom, not an economy decided by the English crown only for its own interests. This group of radicals eventually had enough support and declared war on the English crown. After fighting for five years, the Americans finally won their independence and had the daunting task of establishing their own government.

Major Growth of the United States

Expansion	The Louisiana Purchase	Western Frontier	California	Texas
Description	In 1803, Thomas Jefferson bought it from France	A need for more land caused many Americans to move West of the Mississippi	As Americans moved West, the Gold Rush of 1848 caused many to settle in California	After defeating Mexico in the Spanish-American war, United States received Texas

The 1800s, although a time of great growth and expansion of the United States, is best known for the Civil War. After the American Revolution, America's economy was based on cash crops, including tobacco, sugar, and cotton. Wealthy individuals owned these crops, but slave labor worked the fields and harvested the crops. Since its inception, the English had participated in the slave trade, bringing mainly Africans into its various colonies. Since the inception of slave labor, there had always been a division among the American people. The Constitution developed after gaining independence was mute about the issue of slavery. The consensus at the time was to let individual states handle the issue. Soon, it was apparent that the Southern states accepted the practice, while the Northern states abolished it. As former slaves began to speak out against the practice of slavery, the abolitionists' desire intensified. They saw slavery as a horrible institution, one that exploited the slave who could do nothing about it. Slaves had no rights and no say. They were not considered people, but mere property to the people who owned them. Slave owners rejected these beliefs, and continued to declare that slavery was an economic necessity.

The division between the North and South became heated when the United States began to expand west. The Southern states needed more land, and wanted to bring slavery into the new frontier. The north allowed slavery to co-exist with them, but denied its expansion. The debate heated until 1860 and the election of Abraham Lincoln, an abolitionist. The South had had enough and in 1861, South Carolina succeeded from the Union, and officially declared war on the United States. Other

Southern states joined them, and the Confederacy was born. The South had to protect its best interests, and slavery was on of them. The next five years brutal fighting ensued as a nation fought itself. In the end, the North proved victorious. The North did have significant advantages over its southern counterpart. Most importantly, it was more industriously developed, with railroads and factories to make and transport war supplies and people.

The period after the war is generally known as the Reconstruction period. Slavery had been officially abolished, and the South had to reconfigure their economy and industry to reflect this change. Thousands, even millions, of previous slaves, were now free. Many migrated to the North to settle into new lives, but still others stayed in the South and ended up working for their former masters. America had to transition these new people. Unfortunately, for many years blacks did not receive the rights they deserved as American citizens. Segregation of blacks and whites became a common practice. White Americans held the upper hand politically and socially and exploited it at all costs.

The 1900s saw many significant developments occur on all arenas. After the Great War (World War I), the 1920s were an age of increased prosperity. Unfortunately, morale and prosperity plummeted as the stocks fell in 1929. The 1930s was The Great Depression when the Dust Bowl made farming impossible and obsolete. In the 1940s, when Europe was beginning another war, America tried to stay out of it, struggling to climb out of the depression. Franklin D. Roosevelt's New Deal created many new jobs and opportunities for the American worker, and morale was beginning to climb. In 1942, America was thrust into the war it was trying to avoid as Japan bombed American soil at Pearl Harbor. The war had great effects on the United States. American industry suddenly was booming, as it developed equipment for the military. As the men went off to fight, many women worked outside the home for the first time. When the war ended and the men returned women went back to the home. It was another time of prosperity, signified by a sudden growth of the family ("the baby boomers").

As America enjoyed its peace, it also became increasingly speculative of Russian communism. As Europe was rebuilding from the war, Communist Russia was

expanding its borders from the weakened countries around it. As America rejected Russia's plan, the Cold War developed. On American soil, the fear of Communism was seen through massive witch-hunts, targeting anyone suspected of associating with communists. The Cold War was relatively peaceful with Russia, and ended with the fall of the Berlin Wall in the 1980s. However, it was not all a peaceful time, as America tried to stop the spread of communism in both Korea and Vietnam. These wars caused substantial protests on American soil and divided the nation. The Americans ultimately failed in their effort to eliminate communism in Southeastern Asia.

Political Science

Types of Government

Type of Government	Definition	Example
Monarchy	A single person, usually a king or queen, holds all power	Pharaohs of early Egypt, most of Europe around 1800
Totalitarianism	Government controls all parts of the government on the interest of the state; the state above all else	Russia under Stalin and Lenin, Germany under Hitler
Democracy	All people have the right to participate either directly or indirectly in government	Rome United States, 1776-present

The Evolution of Politics

Politics has evolved dramatically from the time of the early empires. Most of the European cultures used a **monarchy**, where a king or queen is the leader of the people. The leader was not chosen by the people, but was succeeded by a first-born or other family member. This inevitably, and not surprisingly, caused many of the wars and conflicts between European powers between 1000 and 1900. However, along with a king or queen, many cultures had a congress, which had its own governmental power. Another popular government was **despotism**, a form of monarchy where kings had absolute power. A **republic** – a government entirely ruled by a Senate or Congress – also had political influence throughout Europe.

Republican Democracy began in early Athens, where the government shifted from an emperor to a Republic – government by the many rather than the few. However, a need for absolute and total control caused many republics, including Rome to fall. A democracy-type government was the point of the Magna Carta, written in England in 1214. This document stated that everyone, king included, must obey the law. It was also guaranteed law and justice, and protected widows, orphans, townspeople, freemen and the church from unlawful manipulation. By 1272, a common law was in effect in England.

The Enlightenment also had profound effects on the ideas of politics. During this time, the monarchs became increasingly tolerant. There were advances in politics and religion, as well as philosophical, social, and legal freedom. The most noted monarchs of the time were Fredrick the Great and Catherine the Great. Many enlightened thinkers - John Locke, for example – believed that democracy should rely on the consent of the people. Individuals and people as a whole became the central focus of government.

United States Politics

After the Revolutionary War, a new government needed to be formed. The new government began with the Grand Convention - and the shaping of a new Constitution. Eventually, three branches of government were established: the **executive** (Presidential), **legislative** (Congress), and **judicial** (Supreme Court). The legislative branch was the most debated section of the Constitution. Virginia called for proportional representation, whereas the smaller states wanted equal representation. The arguments continued until the Great Compromise was born. There would be a bicameral legislation, with white population plus 3/5 of the black population would be counted towards proportional representation. After the Constitution was written, it now had to be ratified. In an effort to sway states in question, the addition Bill of Rights was promised. To avoid fears the government would become too strong, the Bill of Rights protected the individuals' basic rights throughout the nation's history.

The Constitution

According to the Constitution, the function of the national government includes: establishment of justice, promotion of general welfare, and security of individual liberty.

Article	Branch of Government	Powers Allotted
I	Legislative – Congress	Collect taxes, borrow money, create national guard
II	Executive – President	Commander in chief of armed forces, grant pardons
III	Judicial – Supreme Court	Uphold the Constitution through the court system

Social History

The institution of marriage changed dramatically in the eighteenth century. Early in the century, people were marrying relatively late in life (average age of 27) and there were few illegitimate children born to parents out of wedlock. However, in the second half of the century, illegitimate births rose dramatically. Before, a child cemented the marriage plans, and was a strong determiner of when the marriage would take place. Now, the expectation of children created an animosity toward marriage. An additional reason for an increase in illegitimate children was a new resistance of abstinence.

The unfortunate consequence of so many illegitimate children was the practice of infanticide. Although infanticide had been practiced for many years, the church's influence had all but stopped it. During the middle ages, the method of giving up unwanted children was abandonment. Parents would leave their children in hopes that some one more capable of raising a child would receive them. In the late eighteenth century, at a time when unwed mothers had little options and hope, infanticide became a logical alternative to raising a child.

Children, at this time, were not highly thought about, and were often neglected or abused if they were kept. Often, the high risk of infant death prevented parents from becoming too attached to their children. However, also in the eighteenth century, a movement developed for greater love and tenderness toward children. This

movement changed the attitudes toward children, and families began having fewer children.

As the industrial age began, the men went off to work and the women's place increasingly became the home. Before, families worked as units, but soon "separate spheres" developed. As women became the homemaker and mother, their control and influence grew. All domestic decisions about their children were the woman's to make. In America, in the 1800s, the mother was responsible for raising children who would contribute to society. In short, they were charged with the maintenance of liberty through the next generation.

Economics

Common Economic Theories

Theory	People or places associated with Theory, if applicable	Description
Macroeconomics	Adam Smith, John Maynard Keynes	Study of large-scale economics: the workings of economics as a whole
Microeconomics		More analytical study of specific parts of economics
Monetarism		In order to prevent too much money chasing too few goods, there must be a steady increase in money supply
Keynesians	John Maynard Keynes	Market does not automatically function at a full-employment, low-inflation level. Government must create the right level of demand
Mercantilism	England – 1800	At a time of limited resources, the government is responsible for securing them. The idea is to sell more to your neighbors than they sell you.

Laissez Faire		Government does not interfere with economic affairs, leads to unrestricted private enterprise
Capitalism		Land and businesses are privately owned. Individuals, not government, have economic control

Social Studies Sample Questions

1. **What is monotheism?**
 - a) The belief of no God
 - b) The belief of many Gods
 - c) The belief of one God
 - d) The belief God exists
2. **What was the first monotheism?**
 - a) Christianity
 - b) Judaism
 - c) Islam
 - d) Paganism
3. **The religion of Islam started in what region of the world?**
 - a) Africa
 - b) Middle East
 - c) Europe
 - d) Asia
4. **In 661, Islam separated in two, called:**
 - a) Shiite and Sunni
 - b) Ali and Muhammad
 - c) The East and West
 - d) Islam and Muhammad
5. **In the late 600s, wars between which two powers left a power vacuum in the Eastern Europe and allowed the Muslim world to expand into their territories?**
 - a) Roman and Persian
 - b) Byzantine and Persian
 - c) Byzantine and Roman
 - d) Roman and Chinese
6. **Feudalism surrounded the following people?**
 - a) Kings and peasants
 - b) Peasants and knights
 - c) Knights and counts
 - d) Counts and kings
7. **Which of the following descriptions best describes *manorialism*?**
 - a) The process of kings giving land over to the upper class
 - b) The process of peasants giving over claim to their land to the upper class
 - c) The process the upper class used to develop their land and estates
 - d) The process of peasants being forced to give over their land to the upper class

8. **The Articles of Confederation gave the power to whom?**
- a) Individual states
 - b) Congress
 - c) The army
 - d) A newly elected leader
9. **The first political parties in the United States were divided over what issue?**
- a) Stronger national government vs. individual states having power
 - b) Whether a new Constitution was needed
 - c) Both A and B
 - d) None of the above
10. **Which of the following basic sentiments does not describe early policy towards the Native Americans?**
- a) The land is theirs, let them live on it
 - b) Assimilation
 - c) Violence
 - d) Negotiation through treaties
11. **Which of the following is not a reason for the War of 1812?**
- a) America wanted British troops still in America to leave
 - b) America wanted to expand their territory
 - c) The British had been encouraging Indian raids
 - d) Britain had been preventing growth of American commerce
12. **The Monroe Doctrine addressed what?**
- a) Slavery
 - b) Native Americans
 - c) Foreign influence in America
 - d) Industry
13. **In 1855 the largest industry of the South was:**
- a) Agriculture
 - b) Textiles
 - c) Food
 - d) Slavery
14. **What were the effects of the cotton gin in the South?**
- a) Southern economy and growth became tied to cotton
 - b) Slavery was forced to expand to meet demand
 - c) It allowed a new form of cotton to be planted
 - d) All of the above

15. **The Seneca Falls Convention addressed what?**
- a) Slavery
 - b) Expansion West
 - c) Women's rights
 - d) Concerns over industry
16. **A major cause of The Mexican War (1846-1848) was:**
- a) The United States wanted Texas
 - b) Mexico wanted Texas back
 - c) Mexicans wanted to check American influence in Texas
 - d) America wanted to gain more land
17. **The term *popular sovereignty* in 1850 meant:**
- a) Giving everyone the right to vote
 - b) A majority vote
 - c) Giving states the right to accept or abolish slavery
 - d) Voting in individual states
18. **Which of the following was not part of the Compromise of 1850?**
- a) The number of free states now outnumbered the number of slave states
 - b) Slavery was abolished in Washington DC
 - c) Fugitive Slave Act
 - d) The territory of Utah was allowed to choose whether to be a slave or free state
19. **Which of the following was not a view commonly expressed by the North?**
- a) Industry belonged to free men
 - b) Upward mobility
 - c) Equal opportunity
 - d) State-run government
20. **Which of the following was not a view commonly expressed by the South?**
- a) Genteel, ordered society was best
 - b) Individualism
 - c) Aristocratic code
 - d) Emphasis on Social values
21. **Which of the following was not an effect of the Dred Scott decision?**
- a) Slaves had the power to sue their masters
 - b) Blacks were not considered citizens
 - c) Congress did not have the power to ban slavery
 - d) If a slave was moved from a slave-holding state into a free state, that slave was still considered a slave

22. Which of the following did not foreshadow violence would finally end slavery?
- a) John Brown's Raid
 - b) 'Bloody Kansas'
 - c) Congressman beaten to death
 - d) War in Utah
23. During the Civil War, the *Merrimac* and the *Monitor* were:
- a) Battleships
 - b) Battles
 - c) Types of guns
 - d) Battle strategies
24. Which were not battles of the Civil War?
- a) Bull Run
 - b) Gettysburg
 - c) Tecumseh
 - d) Vicksburg
25. What were "Black codes"?
- a) Land promised to freedmen
 - b) Minimal rights given to freedmen
 - c) An economic proposal, which would tie freedmen to their former master
 - d) A measure that promised civil rights to the freedmen
26. What was the 15th amendment?
- a) Abolition of slavery
 - b) Freedmen are United States citizens
 - c) States can no longer break from the Union
 - d) Cannot deny the right to vote because of race or color
27. Sharecropping is what?
- a) A system where blacks and whites would share crops
 - b) A system where whites would share their land with the freedmen
 - c) A group of freedmen would buy individual parcels of land and split crops and profits
 - d) White landholders shared land with poorer white farmers only
28. What was not a part of the Compromise of 1877?
- a) All remaining former Union troops were to leave the South
 - b) Southerners were permitted handle race relations themselves
 - c) Congress was allowed to intervene in race relations in order to ensure civil rights were upheld
 - d) A former Confederate general was named to the Cabinet

29. **Which of the following is not an example of checks and balances?**
- a) Presidential vetoes
 - b) Congressional overrides
 - c) President nominating Supreme Court justices
 - d) Supreme Court declaring a new bill unconstitutional
30. **What does Article IV of the Constitution discuss?**
- a) Voting
 - b) Relationship between state and federal government
 - c) Relationship between United States government and foreign government
 - d) Government organizations
31. **Which branch of government does the elastic clause affect?**
- a) Legislative
 - b) Executive
 - c) Judicial
 - d) Other government organizations
32. **Which of the following was not promised to American citizens through the Bill of Rights?**
- a) Freedom of speech
 - b) Due process of the law
 - c) Unreasonable search and seizure became illegal
 - d) Voting age of 18
33. **Who was the first proponent of the separation of church and state?**
- a) George Washington
 - b) Thomas Jefferson
 - c) John Adams
 - d) James Madison
34. **Which of the following is not a form of government?**
- a) Monarchism
 - b) Republic
 - c) Democracy
 - d) Nationalism
35. **Which is not a quality of liberalism?**
- a) Little taxation
 - b) Equality of classes
 - c) Freedom of assembly
 - d) Ability for citizens to vote
36. **Which country is known for their absolute government?**
- a) Germany
 - b) United States

- c) France
- d) Japan

37. **Which of the following is not a post in local government?**

- a) City Engineer
- b) Treasurer
- c) Secretary of State
- d) Attorney General

38. **What does the *Jacksonian form of government* mean?**

- a) Getting normal citizens more involved in politics
- b) Distrust of strong executive powers
- c) A movement to reform government and purify politics
- d) Desire for strong executive powers

39. **What is the *progressive form of government*?**

- a) Getting normal citizens more involved in politics
- b) Distrust of strong executive powers
- c) A movement to reform government and purify politics
- d) Desire for strong executive powers

40. **What is the difference between Professional and Amateur in relation to state legislatures?**

- a) A professional state legislature is treated like a full-time job
- b) To be in a professional state legislature, you need added qualifications
- c) An amateur state legislature has a much more casual and laid-back environment
- d) A professional legislature takes more tax dollars to run

41. **An example of *initiative* is?**

- a) Voters given the right to accept or reject a raise in property taxes in order to give more money to the local school district.
- b) A mayor getting removed from office by citizen votes
- c) A type of political campaign
- d) Gay activists groups preventing a same sex marriage amendment from getting added to the ballot by the use of a petition.

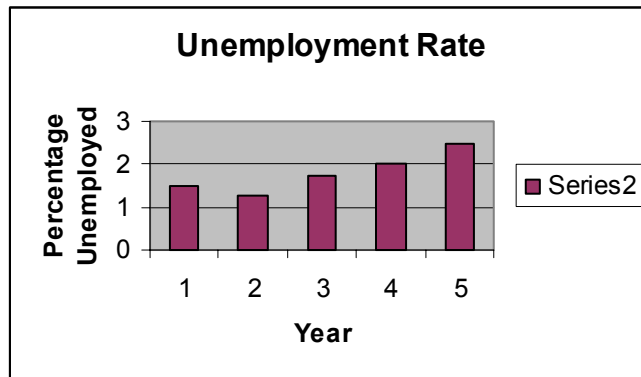
42. **An example of a *referendum* is?**

- a) Voters given the right to accept or reject a raise in property taxes in order to give more money to the local school district.
- b) A mayor getting removed from office by citizen votes
- c) A type of political campaign
- d) Gay activists groups preventing a same sex marriage amendment from getting added to the ballot by the use of a petition.

43. **An example of *recall* is?**
- a) Voters given the right to accept or reject a raise in property taxes in order to give more money to the local school district.
 - b) A mayor getting removed from office by citizen votes
 - c) A type of political campaign
 - d) Gay activists groups preventing a same sex marriage amendment from getting added to the ballot by the use of a petition.

44. **Which of the following is not a criterion for citizenship for foreigners?**
- a) The candidate must have no criminal record or suspected criminal activity
 - b) The candidate must commit to follow the Constitution and the ideals set within
 - c) The candidate must have lived in the United States for ten years
 - d) The candidate must have continuous residency in the United States

45. **Consider the following graph an accurate picture of the economy during a re-election year. According to statistics, whom will voters vote for?**
(Year 1 would be the first year in office for the particular candidate; Year 5 is re-election year, based on a position with a four-year term)



- a) The incumbent
 - b) The challenger
 - c) This graph does not affect the popular vote
 - d) People are less likely to go to the polls
46. **Which of the following are not economic factors relating to politics?**
- a) Economic health of nation
 - b) Amount of government spending
 - c) Level and distribution of taxes
 - d) Wages
47. **England used their mercantilist policies to get the edge on what nation?**
- a) France
 - b) Japan
 - c) Holland
 - d) United States

48. **The Federal Reserve board is responsible for all of the following except?**
- a) Printing of money
 - b) Raising or lowering interest rates
 - c) Circulation of money
 - d) Buying and selling government bonds
49. **The famous economist Adam Smith said?**
- a) Economics should promote free competition
 - b) Population grows faster than food
 - c) Wages will be just high enough to prevent starvation
 - d) Government should always tightly control the economy
50. **The famous social scientist Thomas Malthus said what about economics?**
- a) Economics should promote free competition
 - b) Population grows faster than food supply
 - c) Wages will be just high enough to prevent starvation
 - d) Government should always tightly control the economy
51. **The famous social scientist David Ricardo said what about economics?**
- a) Economics should promote free competition
 - b) Population grows faster than food supply
 - c) Wages will be just high enough to prevent starvation
 - d) Government should always tightly control the economy
52. **What does GNP stand for?**
- a) Gross National Product
 - b) Grave National Projection
 - c) Government's Nature to Produce
 - d) Gained Net Product
53. **Which of the following does not lead to a wealthy nation?**
- a) More available resources
 - b) New technology
 - c) Increases in the division of labor
 - d) Increased production
54. **Which of the following is not considered a major type of resource?**
- a) Businesses
 - b) Land
 - c) Labor
 - d) Capital

55. **What is not a macroeconomic field of study?**

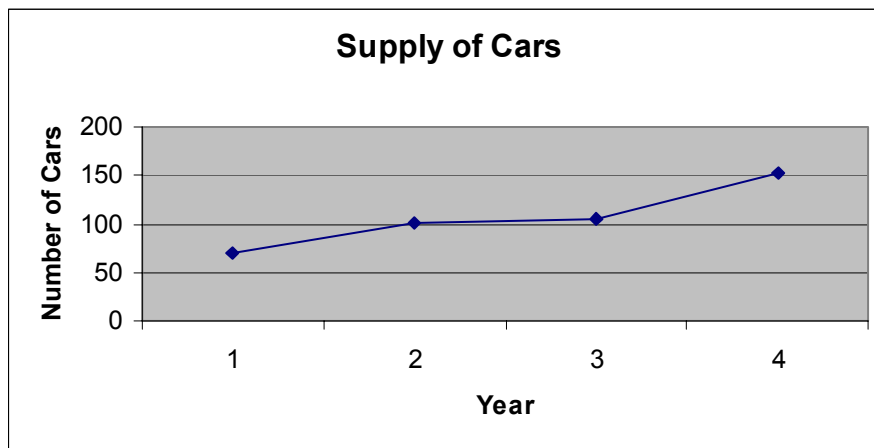
- a) Economic development
- b) Demand for money
- c) Labor
- d) Investments

56. **What is not an element of capitalism?**

- a) Large businesses
- b) Capital
- c) Risk-taking
- d) Increased opportunities

57. **According to the following graph, what can we conclude about the demand of cars in Year 4?**

- a) Demand increases
- b) Demand lessens
- c) Demand unchanged
- d) There is no effect on demand



58. **Throughout history, what united African Americans?**

- a) Church
- b) Family
- c) Secret meetings
- d) Work

59. **What ethnic group typically competed with African Americans for jobs and social status?**

- a) German
- b) Irish
- c) English
- d) Chinese

60. **Who went to work in the late 1800s?**
a) Women
b) Men
c) Freed blacks
d) Children
61. **Which was not characteristic of the urban city?**
a) Crowded housing
b) Large businesses and factories
c) Limited transportation
d) Filth and dirt
62. **In Europe in 1900, a mark of the middle class was?**
a) Children in boarding school
b) Women went to work
c) A hired servant
d) Large homes
63. **In the social hierarchy of Europe in 1900, which was not part of the “Working class”?**
a) Skilled
b) Semiskilled
c) Highly skilled
d) Unskilled
64. **When women went to work, which was not a typical occupation?**
a) Domestic servant
b) Teacher
c) Farmer
d) Prostitute
65. **Which was not a popular new kitchen appliance in the 1930s?**
a) Refrigerator
b) Stove
c) Icebox
d) Radio
66. **What was not a popular leisure activity in America during the 1930s?**
a) Movies
b) Reading
c) Driving
d) Television

67. **The Harlem Renaissance took place when?**
- a) 1920s
 - b) 1930s
 - c) 1940s
 - d) 1910s
68. **What is not an aspect of Social Darwinism?**
- a) Survival of the fittest
 - b) Society will always evolve despite human efforts
 - c) Adaptation is the key to success
 - d) The strong would always climb to the top
69. **What country is not on the Equator?**
- a) Brazil
 - b) Indonesia
 - c) India
 - d) Congo
70. **As a person travels away from the equator, the climate gets?**
- a) Colder
 - b) Warmer
 - c) Unchanged
 - d) Drier
71. **Which country is not in the Western hemisphere?**
- a) Brazil
 - b) North America
 - c) Australia
 - d) Greenland
72. **If it is one pm in New York, what time of day is it in Argentina?**
- a) Afternoon
 - b) Morning
 - c) Noon
 - d) Midnight
73. **If it is seven am in New York City, what time it is Sydney, Australia?**
- a) Eleven pm the night before
 - b) Eleven pm the same day
 - c) Ten pm the night before
 - d) Ten pm the same day

74. **The Prime Meridian has a degree of**
- a) Zero
 - b) Ten
 - c) Twenty
 - d) Five
75. **What is the largest country in Asia?**
- a) Russia
 - b) China
 - c) India
 - d) Australia
76. **The mountain range of the Pyrenees is where?**
- a) Between France and Spain
 - b) On the border of Europe and Russia
 - c) Africa
 - d) United States
77. **The Amazon rainforest is where?**
- a) Brazil
 - b) Peru
 - c) New Zealand
 - d) Papua New Guinea
78. **Which of the following is not a desert?**
- a) Sahara
 - b) Gobi
 - c) Arabian
 - d) Indian
79. **How many time zones are there in United States?**
- a) Four
 - b) Five
 - c) Six
 - d) Seven

Social Studies Answer Key

1. **C:** (The belief of one God)

Monotheism is the belief of one God. **Atheism** is the belief of no God and **polytheism** is the belief of many Gods.

2. **B:** (Judaism)

The Jewish faith began with the Hebrews and developed between 10th and 5th century BC. Christianity and Islam, although examples of monotheism, both developed centuries later.

3. **B:** (Middle East)

Islam started in the Middle East when the Islamic prophet of Muhammad began to have visions sent from God.

4. **A:** (Shiite and Sunni)

In 661, the religious leader of Islam, called a **caliph**, Ali, was murdered. The people who believed Ali was the rightful descent of Muhammad, started their own division of Islam, called **Shiite**. The Shiites believed that because Ali was a direct descent of Muhammad, he also had divine knowledge. The **Sunnis**, however, did not believe in the power of Ali and rested their faith in Muhammad's actual writings and teachings.

5. **B:** (Byzantine and Persian)

The Byzantine and Persian empires had exhausted their resources fighting each other and the Muslims had no problems expanding into their territory. Islam, as a religion, also spread rapidly, into Africa, Asia, and Western Europe.

6. **C:** (Knights and Counts)

Knights began as bodyguards for the king, which increased their social authority. As larger empires were weakened, regional authority increased. Common people were turning their allegiance to local power, the counts. This unbalanced structure of power eventually led to **feudalism**.

7. **B:** (The process of peasants giving over claim to their land to the upper class)

Peasants would give over the rights to land to the elite for protection. Feudalism and manorialism are examples of the growing disparity between the upper and lower class at this time.

8. A: (Individual states)

Under the Articles of Confederation, all power was given to the States. Congress could not do anything without permission by the States. During the war, it proved terribly ineffective and was replaced after the war by a stronger federal government.

9. C: (Both A and B)

The first political parties in America were the Federalists and the Anti-Federalists. The Federalists called for a stronger federal government and aggressively pushed for the ratification of the new constitution. The Anti-Federalists, on the other hand, believed in states having more governmental control and tried to prevent ratification.

10. C: (Violence)

Early Native American policy was more peaceful early on than violent later wars suggest. Politicians believed that through treaties and assimilation, the Native Americans and the United States citizens could live peacefully together. Those beliefs, however, proved false.

11. B: (America wanted to expand their territory)

The War of 1812, against the British, was to curb British influence that still existed in America. The two biggest grievances were the large numbers of British troops still in America and British attacks on American commerce. The Americans were again victorious and the victory secured the nation from outside influence.

12. C: (Foreign influence in America)

After the War of 1812, politicians needed to check foreign influence in their young, yet growing country. Politicians felt America needed time to grow on its own, so President James Monroe issued the famous doctrine that bore his name.

13. A: (Agriculture)

Fueled by cash crops, such as cotton and tobacco, agriculture was the largest, and fastest growing, industry in the South. The importance of agriculture meant slavery in the South would not go away quietly. Many workers were needed to work the fields, and slavery produced cheap and effective labor.

14. D: (All of the above)

The invention of the cotton gin tied Southern industry to cotton. The connection fueled a stronger desire for cotton and new lands, which lead to the expansion of slavery. The cotton gin also allowed a new type of cotton that could be planted anywhere.

15. C: (Women's rights)

There were many conventions at this time addressing slavery, especially with abolitionists. However, the Seneca Falls Convention was the first of its kind to address equal rights for women. Many of the women fighting for abolition

recognized the disparity of their own situation in comparison to the white men. For example, women of high social status could not vote, yet men of equal or lesser status had that right.

16. B: (Mexico wanted Texas back)

American forces had taken Texas in 1835 and Mexico wanted revenge and its territory back. A minor cause, however, was to prevent America of getting more powerful so close to its borders. America was again victorious and further expanded its borders. Mexico never challenged the United States again.

17. C: (Giving states the right to accept or abolish slavery)

The issue of slavery became increasingly heated as more states entered the Union. To prevent the issue from entering national politics, many people thought giving the states the right to choose was the best option. Popular sovereignty became the Southern poster child for states rights.

18. B: (Slavery was abolished in Washington DC)

The Compromise of 1850 added California to the Union as a free state, increasing the number of free states by one. The controversial Fugitive Slave Act forced Northerners to aid in the capture of runaway slaves. The New Mexico and Utah territories were both allowed to use popular sovereignty to decide whether to be a slave-holding state. However, the Compromise of 1850 did not abolish slavery in Washington DC; it only abolished slave trade in the nation's capital.

19. D: (State-run government)

State-run government was actually a strong platform of the South, and it was a major factor leading to the Civil War.

Questions 20 and 21: Differences between North and South prior to the Civil War

North – Qualities based on industry and equality	South – Qualities based on culture and history
Individualism	Social values
Democracy	Gentil, ordered society
Equal opportunity	Society based on aristocratic code
Upward Mobility	State-run government

20. B: (Individualism)

Individualism was a Northern value.

21. A: (Slaves had the power to sue their masters)

Dred Scott was a slave who sued his master for his freedom on the claim that because he was moved from a slave-holding state to a free state, he should be freed. The decision, however, ruled against him. Because the ruling stated that blacks were not citizens, Dred Scott, actually should have never been allowed to sue in the first place.

22. **D:** (War in Utah)

As time progressed, violence over the slavery question made it evident that the slavery question would, in the end, be decided with violence. From John Brown's Raid on slave-holding Virginia, to the Civil War in Kansas, to a Congressman being savagely beaten, violence was rising. However, there was no war in Utah.

23. **A:** (Battleships)

The *Merrimac* was a Southern battleship and the *Monitor* was its counterpart in the North. Although they did fight each other to a stalemate, the North eventually won the naval front of the war.

24. **C:** (Tecumseh)

Tecumseh was a Native American leader who revolted against the United States. The others were important battles. Bull Run was an early victory for the Confederacy, whereas Gettysburg and Vicksburg were decisive, war-changing victories for the North.

25. **B:** (Minimal rights given to freedmen)

Black codes were passed in the South to give minimal rights to the new freedmen. It was a way to appease the North while maintaining white aristocratic dominance.

26. **D:** (Cannot deny the right to vote because of race or color)

The 15th amendment promised the right to vote with regards to race, color, or former servitude.

27. **B:** (A system in which whites would share their land with the freedmen)

After the Civil War, the new freedmen had little options. Freedmen simply wanted their own land, but land was difficult to obtain. There were three main choices for these men: Contract system, tenancy, or sharecropping. In **sharecropping**, the Freedmen would rent a parcel of land from a landholder, often their former master, and it would be theirs to work and maintain. However, the land came at a price, and often the price was set too high to ever fulfill. Sharecropping often led to a cycle of debt for the freedmen.

28. **C:** (Congress was allowed to intervene in race relations in order to ensure civil rights were upheld)

The Compromise of 1877 was a final, crushing blow to the end of the Reconstruction Era. With the North turning from the plight of the new Freedmen, the South could now handle all race relations itself. With racism rampant in the South and the north out of the South completely, the years ahead would be devastating for the black man.

29. **C:** (President nominating Supreme Court justices)

United States government is set up for the three branches to check and balance each other so no branch holds too much power. Examples of check and balances include a presidential veto of a bill or law, Congressional overrides of presidential veto, and Supreme Court declaring a bill or law unconstitutional. A president nominating a new Supreme Court justice is simply using the power bestowed upon him.

30. **B:** (Relationship between state and federal government)

Article IV discusses the power of state government in relation with the federal government.

31. **A:** (Legislative)

The elastic clause gives Congress implied powers to make all laws necessary and proper for maintaining government. It allows Congress to use its law making powers in a broad manner. The elastic clause is one example of how the Constitution is a living document, allowing the government to change and adapt to its present conditions.

32. **D:** (Voting age of 18)

The Bill of Rights promises the American citizens inalienable rights will be upheld. This includes rights such as freedom of religion, speech, and the right to bear arms. However, the voting age of 18 was an amendment added much later to the Constitution.

33. **B:** (Thomas Jefferson)

Neither of the other choices were prominent voices of the need for the separation of church and state. However, when Thomas Jefferson was president, he made it a priority. Jefferson was a strong supporter of limited government, and the separation of church and state was more likely to prevent the government from becoming too entangled in church affairs than vice versa. Our government has been guided by this separation ever since.

34. **D:** (Nationalism)

Nationalism is a strong belief in the nation and has led to the formation of new governments. It is not, however, a form of government, in and of itself. The other three have been forms of government used by nations and politicians for hundreds of years.

35. **A:** (Little taxation)

Many of the tenets of the Constitution, especially the Bill of Rights, are based on liberal ideals. Liberalism is about giving citizens distinct freedom and promoting equality. Liberalism, however, has little to do with taxation.

36. **C:** (France)

Absolutism is a government where sovereignty is embodied in the person of the ruler. The ruler is said to have “divine right to the throne”, appointed to be God on earth to their subjects. France, prior to its revolution, was often called the model of the absolute government.

37. **A:** (City Engineer)

Local government has many different facets and many elected officials are involved. Among these officials are a governor/ mayor, treasurer, secretary of state, and attorney general. State Congress and city councils are also aspects of state and local government.

38. **B:** (Distrust of strong executive powers)

Andrew Jackson was against a strong executive branch, and his brand of politics has been carried on for many years. In state politics, a weak governor and mayor often characterize **Jacksonian democracy**, with the power is split among several organizations.

39. **C:** (A movement to reform government and purify politics)

Although it does not look like a political influence, government at the state level is either decidedly Jacksonian or progressive. **Progressive** government tends to have a stronger executive branch and aims to make government more efficient. This brand of government became popular in 1920, especially in New York, when scandals and corruption raged through the political scene.

40. **A:** (A professional state legislature is treated as a full-time job)

Another difference between states’ governments is whether the state has a **professional** or **amateur** legislature. A professional government becomes a full-time job for the politicians, whereas an amateur legislature is a part-time job. In a professional legislature, the politician is relatively well paid and the meetings last most of the year. Members and committees have a large and year-round staff. The answers C and D may or may not be true in the differences between professional and amateur, but A is the best answer as it is the most striking contrast.

41. **D:** (Gay activists groups preventing a same sex marriage amendment from getting added to the ballot by the use of a petition.)

State and local governments have more opportunities for a citizen to be more directly involved in the issues of politics that shape their daily life. One way to become involved is an initiative, where citizen can get a proposal on the ballot through the collection of signatures. It is also a way of getting something off the ballot. A recent example happened in Minnesota when a petition by gay activists groups prevented a same sex marriage amendment from getting added to the ballot. This policy is allowed in 21 states.

42. **A:** (Voters given the right to accept or reject a raise in property taxes in order to give more money to the local school district.)

Referendum is a policy that allows voters to reject a proposal by their state legislature or city council. This often happens locally when voters have the right to accept or reject new property taxes in order to increase funding for their local schools. This policy is allowed in 37 states.

43. **B:** (A mayor getting removed from office by citizen votes)

Recall is when an elected official is removed by citizens' votes. Although it does not happen often, the same constituents that voted them in can vote an elected official out of office. This policy is allowed in 15 states. Initiative, referendum, and recall are all methods that the average voter can use to check and balance its local government.

44. **C:** (The candidate must have lived in the United States ten years)

Candidates actually must have lived in the United States for five, not ten, years. This qualification is contingent on the United States being their continuous, permanent residence and the additional qualifications must be met as well. The citizenship process often takes years to complete, and includes a test on United States history and politics.

45. **B:** (The challenger)

Economic status of the region is significant during a re-election time. Since Years 2-5 show a steady rate of unemployment, we can assume that the economy as a whole is losing strength. When the economy is down, people tend to vote for the challenger. Worry and fear about losing a job or recently experienced a loss of job often sway votes for the challenger.

46. **D:** (Wages)

Although wages are mostly controlled by individual industries, the government can play a minor role in their determination. However, the other three choices are more directly related to political policy.

47. **C:** (Holland)

In 1800, the Dutch had a hold on the majority of the markets to the East (the Dutch East India Holding Company, for example). The British, however, quickly changed that with strict economic policies known as the Navigation Acts, including only British ships can carry British goods. This policies were directly targeted Holland, but also affected both France and United States. In fact, one of the major causes of the War of 1812 was the Navigation Acts.

48. **A:** (Printing of money)

Many of the economic decisions are not made by the President or Congress, but by the Federal Reserve board. They determine the interest rate level, circulate money, and buy and sell federal government bonds. The Federal Reserve Board must watch inflation, supply and demand, and other important economic factors when

determining their policy. They are not, however, responsible for the printing of money, which is done by the United States Treasury.

49. A: (Economics should promote free competition)

Adam Smith is often called the founder of modern economics, as the first to endorse a free trade system. He believed that free trade and unregulated capitalism would promote economic development for both the rich and the poor. It was a way of spreading wealth to many instead of only a small percentage getting richer. However, many big businesses used his ideas as a way to enhance their own position, while the workers suffered.

50. B: (Population grows faster than food supply)

Malthus, in his *Essay on the Principle of Population*, argued that population always would grow faster than the food supply. Economic liberalists used his ideas to justify a lack of government involvement in the economy.

51. C: (Wages will be just high enough to prevent starvation)

David Ricardo followed the ideas of Malthus by saying that because of population growth, wages would always be low. The demand for jobs would keep wages low, and poverty high. Economic liberalists also used his ideas to prevent government involvement in the plight of the worker.

52. A: (Gross National Product)

Gross National Product is an influential factor in the overall economic health of a nation. A country's number of exports in relation to their imports determines GNP. A more self-sufficient nation will have a larger GNP, which correlates to stronger economic health.

53. D: (Increased production)

There are several important factors of a country's economics that will determine whether the country will have growth or decline in their economy. Some of these factors include increases of available resources, new technology, and the division of labor. Increased production may be an indicator of a nation's wealth, but it is not as significant as the other three, making it the correct choice.

54. A: (Businesses)

Having available resources is important to building a stronger and more profitable economy. The most important resources include land, labor, and capital. Land includes not only soil, but also the natural resources and objects that can be derived from the land. Labor are the workers needed to produce goods and resources (otherwise known as capital).

55. C: (Labor)

Differences between Micro- and Macroeconomics

Microeconomics	Macroeconomics
Industrial organization	Monetary system and the demand for money
Labor	Investments
Agriculture	Inventories
Public utilities and regulation	Economic development
Information industries	Business fluctuations

56. A: (Large businesses)

Because individuals have control in capitalism, characteristics of individuals are the most important elements of capitalism. Individuals obviously need capital and other resources like labor and money. They also need to be able to take risks and advantages of their opportunities (in a sense, be opportunistic). They, however, do not need to own large businesses. Capitalism actually helps smaller businesses grow and thrive despite the presence of big business.

57. B: (Demand lessens)

When supply of an item is up, the price rises and demand lessens because the object (in this case - cars) is easy to get and is more expensive. When supply is down, the price will drop and demand will increase because there the object is more difficult to get and is less expensive.

Supply up → Increased prices → Demand lessens

Supply down → Decreased prices → Demand increases

58. A: (The church)

Throughout history, religion became very popular to the African American community. Church was seen as a way to get away from the hardships of life and for the community to come together in common ground. It is not surprising that the African American church was one of the fastest growing in America.

59. B: (Irish)

After winning freedom, black men and women went into the job market as unskilled laborers. The Irish were also unskilled laborers, and the two groups competed with each other for these jobs. The competition got especially fierce after emancipation. The poor white population, including the Irish, often resorted to violence and white supremacy groups, like the Ku Klux Klan, in order to scare blacks from entering the workforce.

60. D: (Children)

Throughout late 1800s and early 1900s, children entered the workforce in substantial numbers. Many children entered out of necessity, their parents needed the extra money or the family would starve. Children were able to find work in the new factories and mines. It was dangerous work, but it brought much-needed money. Unfortunately, education for the children was not a priority, so there was little opportunity for advancement later in life.

61. B: (Large businesses and factories)

The business section where large businesses and factories were located was separated from the living quarters of city-dwellers. Families were crowded together in small apartments, many filled with filth and dirt. In addition, there was little sanitation and sewage and waste ran down the street. People living in the inner city also had limited transportation options.

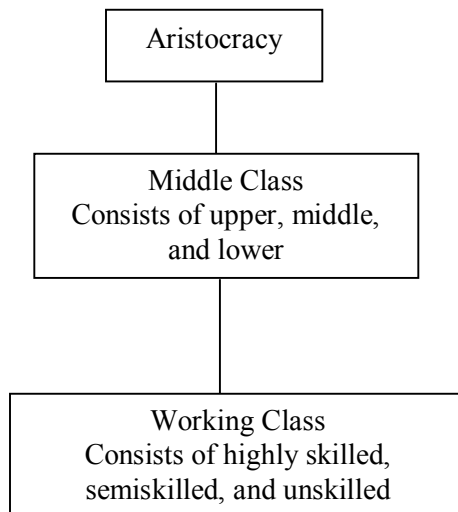
62. C: (A hired servant)

The middle class in 1900 spent their money on two things: food and servants. A family knew they had entered into the ranks of the middle class with the employment of their own servant, and many families had more than one. Education was important to middle class, but not necessarily in boarding schools. Middle class women did not work, but were responsible with the upbringing of the children and running the house.

63. A: (Skilled)

The chart below demonstrates the different social classes in Europe in 1800s. As you can see, 'skilled' or choice A is not a part of the working class.

Hierarchy of the Social Classes



64. C: (Farmer)

Although agriculture was still prevalent at the time when women went to work, many people were leaving the farm life for the city. Unfortunately, women had few options when finding work. Soon, however, typical women occupations began. These included teaching, nursing, and domestic servanthood. Many women also turned to prostitution as a way to survive. Because pay was poor in the typical occupations, prostitution was a profitable option, and was also a way to make money.

65. C: (Icebox)

During the 1930s, the refrigerator replaced the icebox as the popular way to keep food cold. With the addition of the stove, the women's work in the home became arguably easier. However, the new inventions did not make housework less time-consuming. The radio was also very popular during the 1930s as a way to escape from everyday lives.

66. D: (Television)

Although movies were very popular, television did not become a part of mainstream culture until the 1950s. People turned to movies, books, and vacations – much like the radio – as a way to escape. As cars became mass-produced, and available to even the poorer classes, America began to not only buy cars, but also drive them throughout the country.

Popular literature during 1930s:

- *Gone with the Wind*
- *Grapes of Wrath*
- *Sound and Fury*

67. A: (1920s)

The Harlem Renaissance was an intellectual movement among black writers and artists in Harlem during the 1920s. The movement showcased the pride, traditions, customs, and ultimately, the identity of the black American. Another aspect of the movement was the newfound popularity of jazz, a distinctly black American music.

68. B: (Society will always evolve despite human efforts)

Social Darwinism became a popular social ideal in the late 1800s. Social scientists took Darwin's ideas about evolution and applied them to social structure. Just as in the animal kingdom, people will survive in the work world through strength and adaptation. It was especially popular among the American elite who saw the ideals in themselves.

69. C: (India)

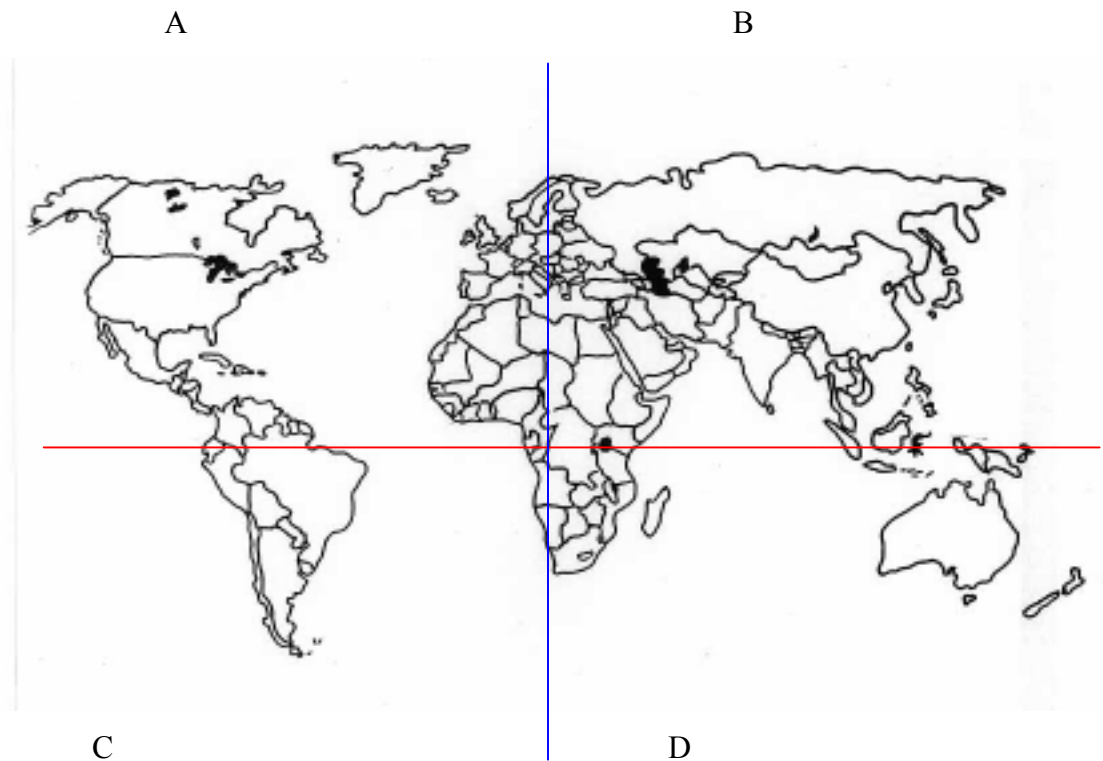
The Equator splits the world in half horizontally. It runs through countries such as Brazil, Indonesia, and Congo. It, however, is south of India.

70. **A:** (Colder)

Countries close to the Equator are known for having hot weather. However, as one gets farther away from the Equator, temperatures become milder. The North and South Poles, as far from the Equator as possible, are known for their cold weather, ice, and snow.

71. **C:** (Australia)

Map of the Four Hemispheres of the World



This map shows four quadrants representing the four hemispheres.

Quadrant A: North and West hemispheres, mostly North America

Quadrant B: North and East hemispheres, Asia, Europe, and parts of Africa

Quadrant C: South and West hemispheres, South America

Quadrant D: South and East hemispheres, parts of southern Africa, Australia

72. **A:** (Afternoon)

New York and Argentina have almost the same latitude, and there is no difference between time in the northern and southern hemispheres. So, when it is 1 pm in New York it would be 1 pm in Argentina.

73. D: (Ten PM the same day)

For this example, we will say the Prime Meridian longitude is a time of zero. About every 10 degrees one travels east or west of the Prime Meridian add or subtract an hour. So, New York, NY is about 75 degrees W of the Prime Meridian, so approximately seven am. Sydney, Australia is about 150 degrees E of the Prime Meridian, making its time about ten pm. So, the trick in time zones is to figure out the location's distance from the Prime Meridian, not in comparison to another location. (Times in this example are approximate.)

74. A: (Zero)

The Prime Meridian cut the world in half vertically. The Prime Meridian represents longitude. The Equator, its horizontal counterpart, represents latitude and also has a degree of zero. The farther one travels from either line, the higher the degree. In the above map, the red line represents the Equator, and the blue line the Prime Meridian.

75. B: (China)

In landmass, China is the largest country in Asia (3690 square miles). Russia is a larger country (5,065 square miles), but it is in Europe, not Asia. Australia (2,966 square miles) is also not in Asia, but in its own continent. So, the choice was between China and India, and China is the best option.

76. A: (Between France and Spain)

The Pyrenees borders France and Spain. There are no real mountain ranges that border Europe and Russia. The United States has two major mountain ranges: the Appalachians and Rockies.

77. A: (Brazil)

Rainforests are known for hot and wet weather, and are typically close to the Equator. All countries are close to the Equator, so one cannot eliminate any answers. The Amazon rainforest, and river, are both in Brazil.

78. D: (Indian)

The Sahara Desert is in northern Africa, the Arabian Desert is throughout Saudi Arabia, and the Gobi Desert is in Mongolia (North of China). India does not have a desert named after it, but it does have an Ocean, just south of India. A desert is known for hot and dry climate.

79 C: (Six)

There are six time zones in the United States (going from east to west): Eastern, Central, Mountain, Pacific, Alaska, and Hawaii. As the chart below shows, as one goes east you lose hours, and as you go west you gain hours.

Time Zones of the United States

Eastern (New York)	Central (Great Plains)	Mountain (Colorado)	Pacific (California)	Alaska	Hawaii
One o'clock PM	Noon	Eleven o'clock AM	Ten o'clock AM	Nine o'clock AM	Eight o'clock AM

Science and Technology/ Engineering

Physical Science

Everything in nature is made up of matter. **Matter** is any substance with mass that takes up space. The Earth, moon, rocks, water, all have matter, as do every day objects such as pens, paper, chairs, and desks. Matter has many different properties that help us to identify and classify it. Some of the properties of matter can be observed. This means we can tell the difference from one object to another just by looking at it. Other properties need to be tested. Despite all of these differences there are some properties that all matter has in common. All matter has mass, volume, and density among others. Every object does differ in the amount of each, though. The table below shows some of the properties of matter, describes them, and lists whether it is an observed property or tested property.

Property	Definition	Type of Property
Mass	The amount of matter an object has	Tested
Volume	The amount of space an object occupies	Tested
Density	The measure of how much mass is in a given volume	Tested
Color	The hue an object displays	Observed
Odor	Smell	Observed
Luster	How shiny a metal is	Observed
Transparency	How well an object can be seen through	Observed
Hardness	How hard an object is	Tested
Resistance to breaking	How easily an object breaks	Tested
Dissolvability	How well a liquid dissolves	Tested
Malleability	The ability to be flattened or bent without breaking	Tested
Thermal conductivity	The ability to transfer heat	Tested
Electrical conductivity	The ability to transfer electricity	Tested

Matter can be in any one of three different phases: solid, liquid, or gas. **Solids** have closely packed together particles, which cause it to form a definite shape. The particles in a solid are still moving, but they cannot move far. A **liquid** has particles that are not packed together as tightly. This allows liquids to take the shape of the container that it is in. **Gases** have no definite shape because their particles are very wide spread. Matter can be broken down into even smaller units called atoms. Atoms are made up of electrons, protons, and neutrons. **Protons** are positively charged and are found in an atoms nucleus, which is at the center of the atom. **Electrons** are negatively charges and are found circling the nucleus. **Neutrons** have no charge and are also found in the nucleus. The positive charge of a proton and a negative charge of an electron “cancel each other out”. If there are more protons than electrons, the atom is positively charged, but if there are more electrons than protons, the atom is negatively charged.

In nature, there are many elements. **Elements** are matter that cannot be broken into smaller units. Some of the common elements are hydrogen, oxygen, iron, and carbon. To organize these elements we have what we call the **periodic table**. The periodic table has all of the elements in it. The following diagram is what the element Sodium looks like on the periodic table.

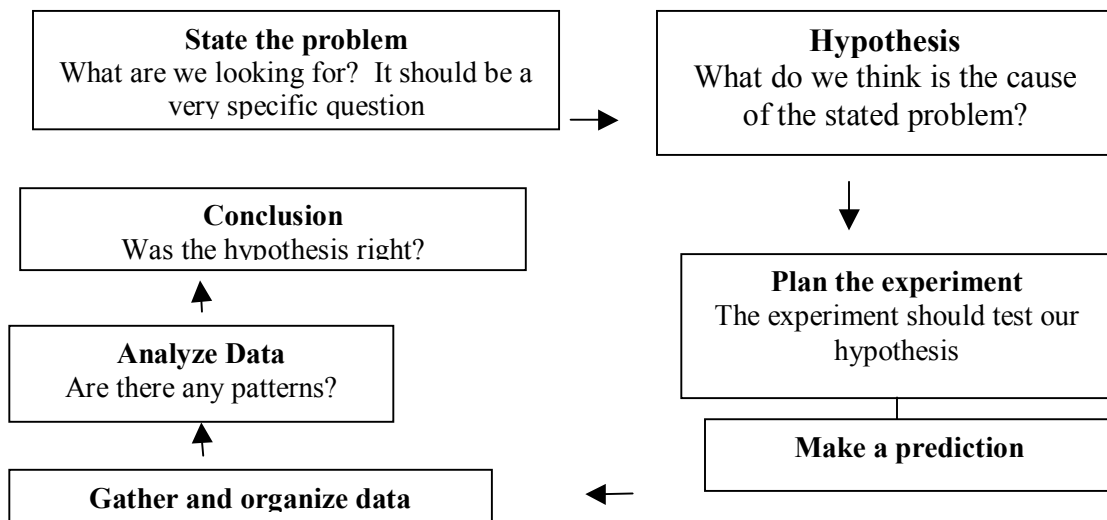
11
Na
Sodium
22.990

The top number is the atomic number. The **atomic number** tells how many protons an element has. The **Na** is the element symbol. All elements have either a one letter or two-letter element symbol. The word under the element symbol is the name of the element. The bottom number is the average atomic mass. All elements on the periodic table have this design. Elements are organized by atomic weight. The lightest elements are at the top of the table.

Energy is the ability to do work. There are two main types of energy that objects can have. The first is called potential energy. **Potential energy** is stored energy. An example of potential energy is a rock sitting on the top of a hill. The rock has potential energy because it has the potential to do work, in this case roll down the hill. Objects that can be burned also have potential energy. A piece of paper will release energy when it is burned in the form of heat. Before it is burned that energy is stored as the paper's potential energy. **Kinetic Energy** is energy in motion. Go back to the example of the rock on the cliff. If the rock would start rolling down the hill, the rock would have kinetic energy because the rock is moving. An important concept when dealing with energy is the law of conservation. The **law of conservation** says that energy cannot be created or destroyed. It can only be changed. The amount of energy the universe had a million years ago is the same as the amount of energy the universe has today. Take a closer look at the rock example. The rock is sitting on the top of the hill with stored potential energy. The potential energy changes into kinetic energy once the rock starts rolling down the hill. On the way down the hill, the rock hits a little tree and breaks a branch. The branch falls off the tree and starts to roll down the hill. The rock may stop once it hits the tree, but the energy from the rock was transferred to the branch. Now the branch has kinetic energy as it rolls down the hill.

Science as Inquiry

Science is a subject of reasoning, theorizing, and proving different facts. There needs to be some way to test a theory for its validity. In science, the method is called the scientific method. The **scientific method** is a method to test ideas, hypothesis, and predictions. There are six steps in the scientific method.



History of Science

As humans began to understand more and more about our world and how it was formed, science has changed. It was once widely believed that the Earth was stationary and all objects, including the sun, stars, and planets, moved around the Earth. Galileo used his telescope to prove otherwise, but his discoveries were controversial. It was also believed that the world was flat. It looked flat and it felt flat. How could it be anything but flat? But this was also shown to be untrue. As our knowledge of the world increases, science will change. Things we believe to be true today might be proved incorrect in the future. Thanks to the scientific method and research of man, science is a process, and it will continue to be a process. Thanks in large part to advances in science, there are few occupations not impacted by science. Science has impacted farming, with new seeds to produce higher yields. New crops have been genetically produced to resist diseases. The medical field has expanded to create new studies of science. Engineers use science as they try to incorporate it into their mechanical designs. Humans are living longer because of the advances in science and personal health. No one has been left untouched by the discoveries and advancements in science.

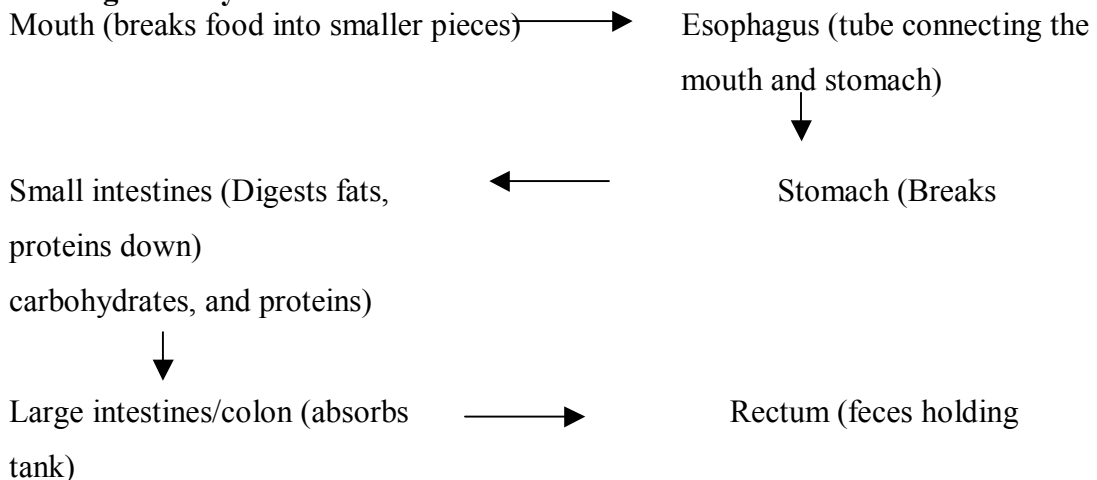
Life Science

All living things are made of cells. Some organisms are single celled, meaning they only have one cell, and others have millions and millions of cells. Each cell has different parts to help the cell function properly. The chart below lists the common parts of a cell and their function.

Cell Part	Function
Nucleus	The “brain” of the cell. Contains the cells DNA.
Plasma membrane	The “wall” of the cell. Controls what enters and exits the cell.
Endoplasmic reticulum	The “canal” of the cell. Responsible for transporting materials throughout the cell.
Golgi apparatus	The “packaging plant” of the cell. It wraps enzymes and proteins so they can be transported.
Lysosomes	The “garbage men” of the cell. Removes waste from the cell.
Mitochondria	The “power plant” of the cell. Provides the energy for the cell.
Nuclear membrane	The “skull” of the cell. Protects the nucleus.
Chloroplast	The site of photosynthesis in plants.
Cell wall (only plants)	Provides plants with a strong structure.

In complex organisms, such as humans, a group of cells make up a tissue. A group of tissue makes up an organ. Finally a group of organs make up an organ system. Two of the main organ systems are the digestive system, and the circulatory system.

The Digestive System



water and passes the waste)

The Circulatory System

Every one thinks of the circulatory system as blood, but the circulatory system uses the blood for very important purposes. Supplies such as proteins, oxygen, and sugars are taken to all parts of the body through the circulatory system. Waste is removed from the body through the circulatory system as well. The circulatory system starts with the heart.

The heart has four main compartments. They are the right and left ventricle and the right and left atrium. The atrium sits above the ventricle and is a smaller in size. This is where the blood enters the heart from all over the body. The blood flows through the atriums and into the ventricles. From the ventricles, the blood is then pumped throughout the body. Blood flows from the heart through arteries. The arteries are responsible for delivering all the needed supplies to the body. Once the blood is on the way back to the heart, it travels through veins. From the veins the blood flows into the atriums before beginning the journey all over again.

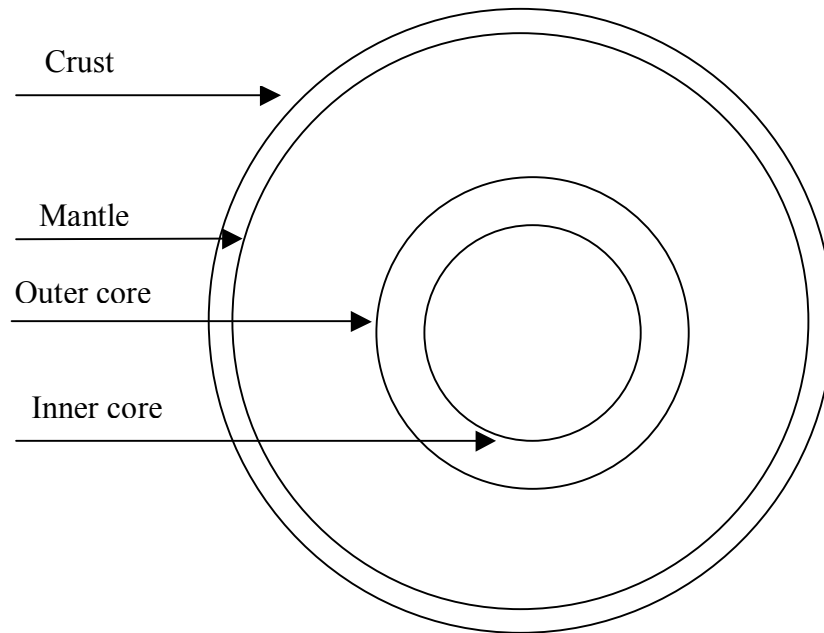
Since there are so many different living organisms, there needs to be a way to classify and identify all of the different organisms. This is called **taxonomy**. There are eight different subgroups to divide each living thing. The different levels of classification are kingdom, phylum, class, order, family, genus, species, and division. Each classification gets more and more specific. There are five kingdoms that all living things can be classified in. The table below shows the five kingdoms.

Kingdom	Examples
Monera	Organisms with no nuclei in the cells
Protista	Animal flagellates
Fungi	Molds and mushrooms
Plantae	Plants
Animalia	Animals

Earth Science

For thousands and thousands of years, humans have been interested in the Earth and the world around us. The study of the earth started with trying to make sense of all of the objects in space, including why the moon, sun, and stars appeared to rotate around the Earth. It then evolved to today's world where we have telescopes that can see millions and millions of miles into space. The Earth is a terrestrial planet meaning it is composed of rocks and minerals. The Earth is seventy percent covered by water with an average ocean depth of two miles! The Earth appears to be solid rock, but this is far from the truth. The Earth actually has four distinct layers. The top layer, or the **crust**, is the layer we walk on. It is made of granite rocks and basalts. The granites are found on the continents and the basalt is found on the ocean floor. The second layer is a solid layer called the **mantle**. The third layer is called the outer core. The **outer core** is a liquid layer. The liquid of the outer core moves around which causes a strong magnetic field. This strong magnetic field is the reason we have our poles (North and South) and why compasses work on our planet the way they do. The last layer is the solid layer of the **inner core**. The diagram below shows a picture of what the Earth's layers look like.

Layers of Earth



For thousands and thousands of years people believe the Earth was flat. Today, we know that the world is a sphere. The Earth is not a perfect sphere. It is actually a little wider at the equator than it is from North Pole to South Pole. This occurs because the Earth is rotating on its axis at a speed of 1037 miles per hour! The **rotation** of the Earth is the spin around its axis. (The Earth's **axis** is an imaginary line that runs through the North and South Pole.) The rotation of the Earth is the cause for night and day. When the Earth is facing the sun, it is daytime, and when the Earth is facing away from the sun, it is nighttime. One **revolution** of the Earth is the time it takes the Earth to travel around the sun, which happens in a year. The Earth and other planets in the solar system travel around the sun in an ellipse. An **ellipse** is flattened circle, much like an oval. Many people believe that the revolution of the sun is the cause of our seasons, but the cause of our seasons is the tilt of the Earth's axis. When the Earth is tilted away from the sun, it is winter because the heat of the sun is farther away. Summer occurs because when the Earth is tilted toward the sun. This is why the Northern Hemisphere and the Southern Hemisphere have opposite seasons. When the sun is tilted so the Northern

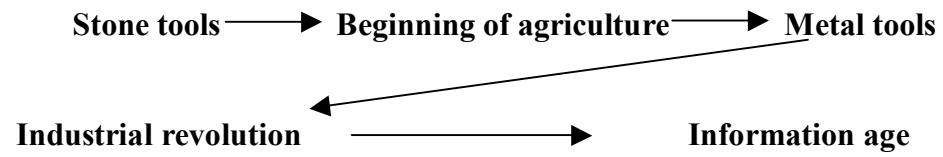
Hemisphere is facing the sun, the Southern Hemisphere is facing away from the sun and vice versa. When the Earth is not tilted on its axis (it is sitting straight up and down), it is either spring or fall.

So what caused people to change their view of the world from a flat piece of land to a sphere? Many people believe that it was Christopher Columbus's voyage, but there were many other details to indicate that the Earth was round. One of them was the shape of a lunar eclipse. A lunar eclipse occurs when the Earth is directly between the sun and the moon. During a lunar eclipse the curve of the Earth appeared as a shadow on the moon. Another observation that showed the Earth was round was the disappearing of ships as they sailed away. As the ships sailed away, a person could see only the top of the ships because the ships were traveling over a curve. The third observation was the altitude of the North Star Polaris. As a person traveled toward the Southern Hemisphere, the North Star would lower in the sky finally disappearing at the equator.

Science in Personal & Social Perspective

Technology has changed the way we live. We may think of technology as a faster computer or a car that runs on both gasoline and hydrogen. Humans have used technology to improve life for millions of years. The first technology known to man is the use of stone tools. This made it easier for man to get food. Stone tools started out very rudimentary. As time went on new technology was created. One of the greatest technological advances is the development of agriculture. This allowed man to stay in one spot and not have to move around following herds of animals for food. At first tools were made from stone, wood, or animal bones. Eventually humans developed tools out of metals like bronze and iron. This marked the beginning of the Iron Age. Humans were now able to make much better tools for farming. The world would eventually take a dramatic change with the advent of the industrial revolution. Products were now being created at an unbelievably fast pace. The engine was created making it easier for people to move from place to place with steam powered trains, automobiles, and, eventually, planes. We are currently in the information age. Humans are learning more and more about health,

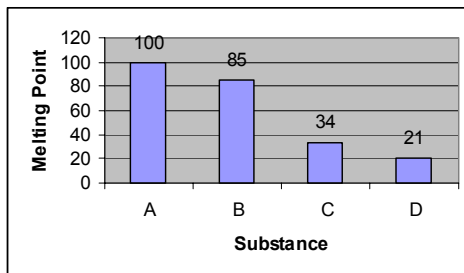
the human bodies, and the world. Microscopes make it possible to see the smallest parts of the human body. The diagram below shows some important ages and technological advances in mankind.



Science Sample Questions

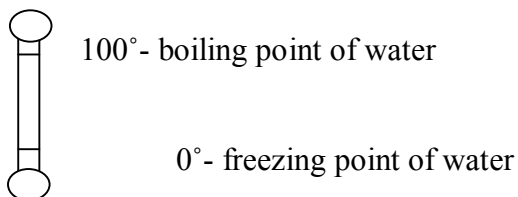
1. **A wheelbarrow is an example of what simple machine?**
 - a) Incline plane
 - b) Lever
 - c) Pulley
 - d) Work
2. **The difference between speed and velocity is...**
 - a) Velocity has direction
 - b) Speed has direction
 - c) Speed is the rate at which velocity changes
 - d) Velocity is the rate at which speed changes
3. **What is displacement?**
 - a) How fast an object moves
 - b) When energy is changed from potential to kinetic energy
 - c) The volume of a liquid as weight is added
 - d) When energy is lost in transfer
4. **When a gas changes to a liquid, what is it called?**
 - a) Melting
 - b) Freezing
 - c) Evaporation
 - d) Condensation
5. **Using the periodic table, find what element has the element symbol Fe.**
 - a) Hydrogen
 - b) Fluoride
 - c) Iron
 - d) Femur
6. **Which of the following is not true of acids?**
 - a) It turns blue litmus paper red
 - b) It tastes sour
 - c) It reacts with metal to produce hydrogen gas
 - d) Tomatoes are an example of an acid.
7. **What number on the pH scaled is considered neutral?**
 - a) 1
 - b) 5
 - c) 7
 - d) 14

8. The graph below shows the melting point of four substances. At what temperatures would all of them be solids?



- a) Above 21
 - b) Below 21
 - c) Below 100
 - d) Above 100
9. If two magnets are held so their positive poles are together, what will happen?
- a) Repulsion
 - b) Attraction
 - c) Cancellation
 - d) Nothing
10. A rock is pushed off of a cliff. What force is not acting on the rock before it hits the ground?
- a) Gravity
 - b) Friction
 - c) Magnetic
 - d) Horizontal force
11. An oven is an example of what heat transfer?
- a) Convection
 - b) Radiation
 - c) Conduction
 - d) Fusion

12. Dr. Smith found a thermometer in his lab, but the thermometer does not tell what scale the temperatures are in. By looking at the thermometer below, what is the scale of the thermometer?



- a) Fahrenheit
 - b) Celsius
 - c) Kelvins
 - d) Newtons
- 13. What part of the eye adjusts the size of the pupil to control the amount of light entering the eye?**
- a) Retina
 - b) Cornea
 - c) Optical nerve
 - d) Iris
- 14. How does a mirror reflect an image?**
- a) It makes a copy of the image and displays the copy
 - b) Light is reflected from the mirror
 - c) Heat is reflected from the mirror
 - d) Energy is reflected from the mirror
- 15. Which of the following is not a chemical reaction?**
- a) Forming of ice
 - b) Burning of wood
 - c) Chopping wood into smaller pieces
 - d) Putting salt in water
- 16. What causes incandescent light?**
- a) Heating an object until it glows
 - b) Light from the sun
 - c) Chemicals reacting in light bulbs
 - d) Passing electrons through gasses
- 17. Which of the following is true?**
- a) High pitch sounds have smaller frequencies than low pitch sounds
 - b) Low pitch sounds have smaller frequencies than high pitch sounds
 - c) High pitch sounds and low pitch sounds have about the same frequency

- d) Frequency has nothing to do with pitch
18. **The first step in the scientific method is to state the problem. Which of the following is true of stating the problem?**
- a) It should not to be in the form of a question
 - b) It should be as broad as possible
 - c) It should be specific
 - d) There are no guidelines for stating the problem
19. **If our hypothesis is wrong, what is the best thing to do?**
- a) Stop the experiment, we were wrong
 - b) Find a new hypothesis and test it
 - c) Finish with the hypothesis we have
 - d) Change the data so our hypothesis is correct
20. **If we wanted to test to see what effect caffeine had on mice, which of the following is true?**
- a) The control group should get water, the other group soda
 - b) The control group should get soda, the other group twice as much
 - c) The control group should get more food than the other group
 - d) Both groups should get the same amounts of everything
21. **Which of the following is not true about “survival of the fittest”?**
- a) The most muscular animals will survive better in their environment.
 - b) The species most fit for their environment will survive.
 - c) It is also called natural selection.
 - d) The species that adapt to their environment will survive better.
22. **Which of the following is not true about Darwin’s theory of evolution?**
- a) It involves the theory of natural selection
 - b) He published his theory in *Origin of Species*
 - c) He made the theory after studying apes and monkeys
 - d) He made his theory after studying in the Galapagos Islands

23. Look at the Punnett Square below. If tall was dominant in plant and short was recessive, what is the probability that an offspring from the two peapods will be short?

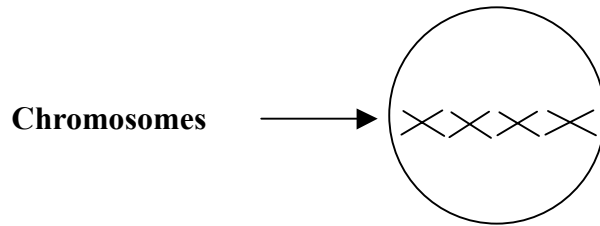
	R	r
R	RR	Rr
r	Rr	rr

- a) 25%
 - b) 50%
 - c) 75%
 - d) 100%
24. What was the Human Genome Project trying to do?
- a) Map human DNA
 - b) Change human DNA
 - c) Copy human DNA
 - d) Place human DNA in apes
25. Which of the following is true about fossil records?
- a) Older fossils are found closer to the surface of the Earth
 - b) It is impossible to tell the age of older fossils
 - c) Older fossils are less complex than new ones
 - d) The study of fossil records is known as biology
26. Cell division is called ...
- a) Meiosis
 - b) Mitosis
 - c) Photosynthesis
 - d) Asexual reproduction
27. What is the process used by plants to convert energy from the sun into glucose called?
- a) Ecosystem
 - b) Food chain
 - c) Mitosis
 - d) Photosynthesis

28. In George Mendel's research on genes, he discovered all of the following except which one?

- a) Two inherited factors govern each trait
- b) The dominant parent passes the trait
- c) There is one factor from each parent
- d) The dominant traits hides recessive traits

29. The diagram below shows which phase of mitosis?



- a) Prophase
- b) Metaphase
- c) Anaphase
- d) Telaphase

30. What is the difference between a phenotype and a genotype?

- a) The phenotype is the gene combination, the genotype is the physical appearance
- b) The genotype is the gene combination, the phenotype is the physical appearance
- c) The genotype is the male parent's genes, the phenotype is the female parent's genes
- d) The phenotype is the male parent's genes, the phenotype is the female parent's genes

31. Which of the following is not true about DNA?

- a) It has nitrogen bases with hydrogen bonds
- b) It looks like a twisted ladder
- c) It is where the genetic information is stored
- d) It is usually found in the cytoplasm of a cell.

32. Which of the following is the correct bonding of the nitrogen bases in DNA?

- a) Adenine – Guanine and Thymine – Cytosine
- b) Adenine – Cytosine and Thymine – Guanine
- c) Adenine – Thymine and Cytosine – Guanine
- d) Each nitrogen base pairs with itself

33. **During which stage of mitosis does the cell start to lose its nucleus?**
- a) Interphase
 - b) Prophase
 - c) Metaphase
 - d) Anaphase
34. **Which of the following is not an example of asexual reproduction?**
- a) Cutting a piece off of a plant and replanting it
 - b) A single cell organism splitting
 - c) A tree producing new trees
 - d) Algae producing zoospores
35. **What part of a plant is responsible for photosynthesis?**
- a) Cell wall
 - b) Nucleus
 - c) Cytoplasm
 - d) Chloroplast
36. **Which of the following is not required for plants in photosynthesis?**
- a) Oxygen
 - b) Carbon Dioxide
 - c) Water
 - d) Sunlight
37. **What sugar is the energy all plants use to survive?**
- a) Fructose
 - b) Glucose
 - c) Sugar Cane
 - d) Lactose
38. **Why is carbon so important to the structure of organisms?**
- a) It is able to bond with four elements
 - b) Organisms use the carbon as fuel
 - c) Organisms use the carbon to help transport nutrients
 - d) Organisms use carbon to help fight off infections.
39. **What is the study of how many organisms can live in a certain area?**
- a) Population
 - b) Community
 - c) Density
 - d) Ecology

40. **What is wrong with the food chain below?**

Sunlight → primary consumers → secondary consumers → tertiary consumers

- a) Secondary consumers come before primary consumers
- b) It is missing primary producers
- c) There are not any tertiary consumers
- d) Sunlight is not needed in the food chain

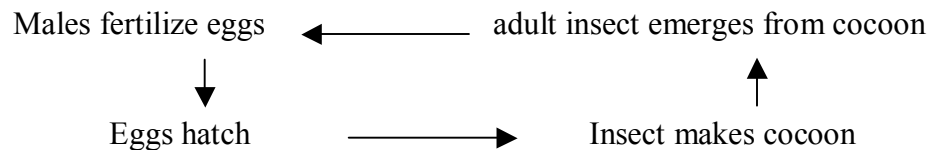
41. **Which of the following is not true of the water cycle?**

- a) Water is evaporated before it is released by precipitation
- b) Animals and plants consume water, taking it out of the water cycle
- c) Water goes from lakes into ground water
- d) Water is evaporated from lakes and rivers and then becomes precipitation

42. **The state at which both sides of a reaction are stable is called...**

- a) Equilibrium
- b) Collision theory
- c) Reactions
- d) Stabilization

43. **What is wrong with the diagram below of the life cycle of an insect?**



- a) Insects do not lay eggs
- b) Only caterpillars have cocoons
- c) This is not the life cycle of insects, but rather amphibians
- d) Insects have a larvae stage between their hatching and cocoon making

44. **Where does fertilization in humans occur?**

- a) Uterus
- b) Fallopian tubes
- c) Vagina
- d) Ovary

45. **What is the last six months in human pregnancy called?**

- a) Ovulation
- b) Fertilization
- c) Embryo Period
- d) Fetal Period

46. **The equator is what kind of line?**
- a) Latitude
 - b) Longitude
 - c) Tropic
 - d) Vertical
47. **Tides are most caused by which object in space?**
- a) Moon
 - b) Sun
 - c) Mars
 - d) Venus
48. **Which of the following is not true of minerals?**
- a) They are naturally occurring
 - b) They are inorganic
 - c) They are rare
 - d) They have a definite pattern
49. **Minerals can be classified by all of the following except...**
- a) Color
 - b) Luster
 - c) Magnetic
 - d) Sediment
50. **What is true about igneous rocks?**
- a) They are formed by molten rocks
 - b) They are formed by accumulation of sediments
 - c) They are formed by a change caused by heat and pressure
 - d) They are formed by a chemical change caused by oxygen
51. **What is the difference between physical and chemical weathering?**
- a) Only physical weathering occurs because of nature
 - b) Physical weathering is caused by weather, chemical is caused by a chemical change
 - c) Humidity affects only chemical weathering
 - d) Chemical weather occurs faster than physical weather
52. **Which of the following is not true of chemical weathering?**
- a) Oxidation is an example of chemical weathering
 - b) Carbonation is an example of chemical weathering
 - c) Erosion is an example of chemical weathering
 - d) Caves are often formed by chemical weathering in limestone

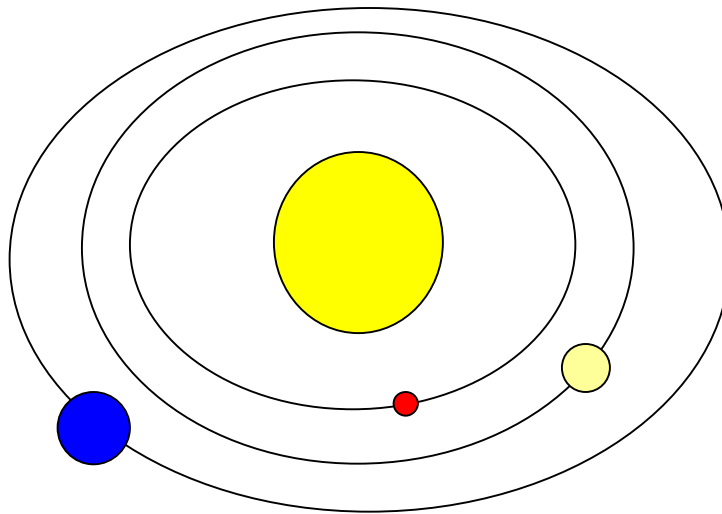
53. **What test measures the intensity of an earthquake?**

- a) Focus Scale
- b) Damage Scale
- c) Focus Scale
- d) Richter Scale

54. **Where do earthquakes usually occur?**

- a) Ocean floors
- b) The equator
- c) Fault lines
- d) Mountains

55. **If the Sun is the yellow object and Earth is the blue, what is the white object?**



- a) Moon
- b) Venus
- c) Mercury
- d) Mars

56. **Which of the following is not caused by Tectonic Plates?**

- a) Continental drift
- b) Volcanoes
- c) Erosion
- d) Earthquakes

57. **What is true about the planets in our solar system?**

- a) The inner planets are gaseous planets; the outer planets are terrestrial planets
- b) The inner planets are terrestrial planets; the outer planets are gaseous planets
- c) The largest planets are terrestrial planets

- d) Earth is the only terrestrial planets

58. An object that passes through the Earth's atmosphere and strikes the Earth's surface is called what?

- a) Meteorite
- b) Comet
- c) Meteor
- d) Nebula

59. Which of the following is not about stars?

- a) They start as a star nebula
- b) They are a big ball of gas
- c) They use nuclear fusion to produce energy
- d) They last forever

60. Which of the following is not a classification of stars?

- a) Size
- b) Temperature
- c) Solar system
- d) Brightness

61. Where is most of the Earth's fresh water located?

- a) Glaciers
- b) Oceans
- c) Ground water
- d) Lakes and rivers

62. What layer of the atmosphere is responsible for the Earth's weather?

- a) Thermosphere
- b) Mesosphere
- c) Stratosphere
- d) Troposphere

63. Which of the following is an example of a renewable resource?

- a) Coal
- b) Lumber
- c) Natural gas
- d) Oil

64. What does the ozone layer do?

- a) Protects the Earth from ultraviolet radiation
- b) Helps keep the precipitation on Earth constant
- c) Prevents oxygen from leaving the Earth's atmosphere
- d) Converts the sun's energy into light

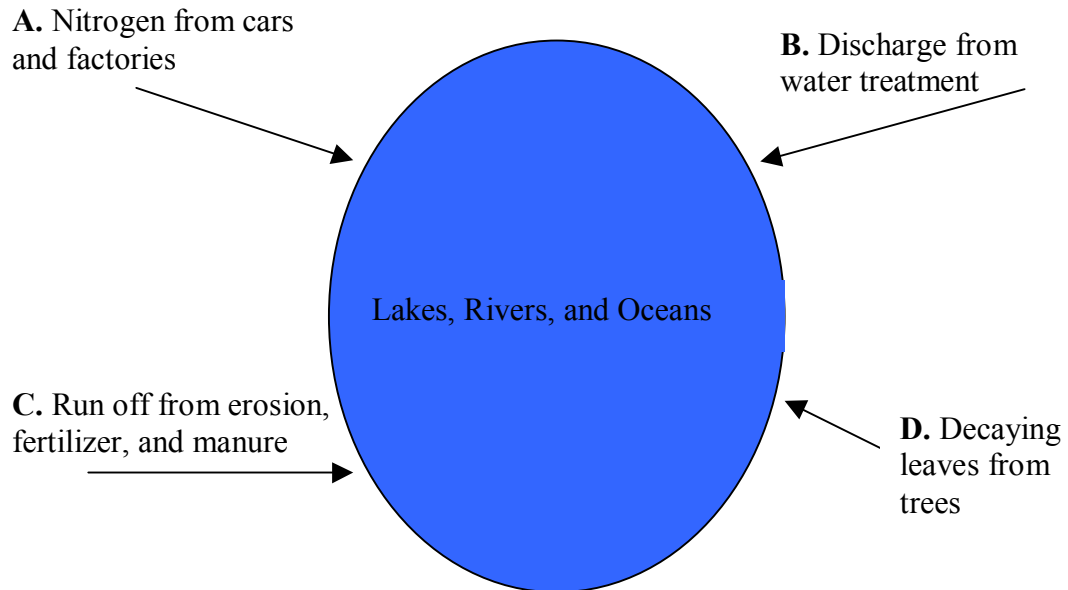
65. Which of the following is not an effect of the depletion of the ozone layer?

- a) Weakens the immune system
- b) Causes skin cancer
- c) Causes the Earth to be too bright
- d) Causes mutation in amphibians

66. Which of the following is not a cause of the greenhouse effect?

- a) Burning of fossil fuels
- b) Use of CFC's
- c) Methane produced by livestock
- d) Erosion of the top soil

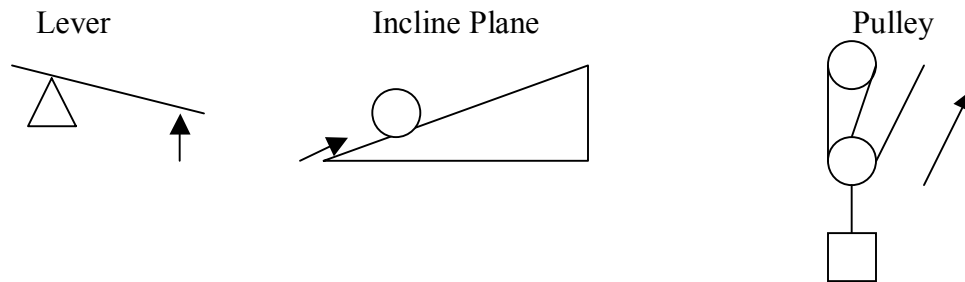
67. Look at the diagram below. Which is not a major cause of water pollution?



Science Answer Key

1. B: (lever)

The first three options are all simple machines. Work is not a machine – it is force acting on an object. An example of an incline plane would be a ramp. A pulley system involves a string being wrapped around a wheel. A lever has straight parts that move when a certain force is applied. The following diagrams show examples of the three simple machines.



2. A: (velocity has direction)

Both speed and velocity measure how fast an object is going. The distance traveled divided by time is the way to find speed. Velocity indicates what direction the object is moving. For example, if a car is in reverse and traveling at 10 mph, the speed is 10 mph, but the velocity is -10 mph because the direction is backwards.

3. C: (the volume of a liquid as weight is added)

This problem can be solved in two different ways. The first way is to use a process of elimination. How fast an object is moving is speed or velocity. Energy cannot be destroyed so *d* is not the correct answer. Energy has nothing to do with displacement, as displacement would be how volume changes as weight is added. An example of displacement can be seen when a person takes a bath. As the person gets into the tub (as weight is added), the water level rises. This is called displacement.

4. D: (condensation)

The table below shows some of the definitions for the changes in phases of matter.

Name	Beginning phase	Ending phase	Example
Melting	Solid	Liquid	Snow melting to water
Freezing	Liquid	Solid	Ice forming
Evaporating	Liquid	Gas	Steam from boiling water
Condensation	Gas	Liquid	Water drops on a pop can

5. **C:** (Iron)

The easiest way to find this answer is to find a periodic table. They can be found in a science textbook, on the Internet, or in an encyclopedia. The element symbol is a one or two letter symbol for the element. Looking at a periodic table, the largest letters in the table are the element symbols. Find Fe (It has a periodic number of 26). Once you find the Fe symbol, under the element symbol is the name of the element. In this example, it is iron.

6. **A:** (it turns blue litmus paper red)

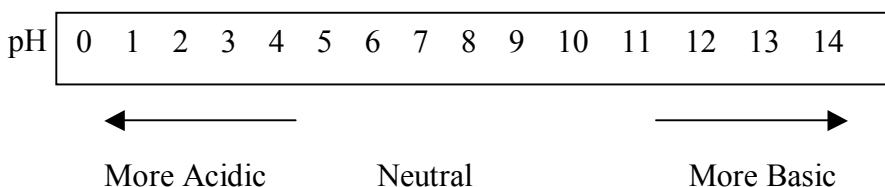
A base turns blue litmus paper red, but acids actually turn red litmus paper blue.

The chart below shows some common characteristics of acids and bases.

Properties of Acids	Properties of Bases
Sour taste	Bitter taste
Turns blue litmus paper red	Turns red litmus paper blue
Has a pH below 7	Has a pH above 7
Reacts with metals to produce hydrogen gas	Ex: oven and drain cleaners
Ex: Sulfuric acid, citrus fruit, tomatoes	

7. **C:** (7)

The diagram below shows an example of a pH scale.



8. **B:** (Below 21)

Melting is when a solid becomes a liquid. Since the lowest melting point is 21, substance D becomes a liquid once the temperature reaches 21. All of the other substances would still be solid. If the temperature is below 21, substance A has not yet reached its melting point so it is still a solid.

9. **A:** (repulsion)

If two magnets are held together, so the same pole face each other, whether they are either both positive or they are both negative, they will push away from each other (repulsion). If the opposite poles are facing each other, they will attract together (attraction). The same concept is true of any two objects that are positively and negatively charged.

10. **C:** (magnetic)

The other three forces are acting on the rock. Gravity acts on all objects on Earth. It is keeping the rock from floating away before it starts to fall, and the fall is caused by gravity. Friction is caused by any two objects whose surface pass over each other. The friction in this example is the air resistance. As the rock is falling, air is pushing on the rock from below. A horizontal force is involved as well. The horizontal force is from the push of the rock. Therefore, magnetic is the only force not involved in this example.

11. **A:** (convection)

Convection is the transfer of heat energy by fluids or gases. In the case of a stove, the fluid is the air in the stove. **Radiation** is the transfer of heat energy through infrared waves, and **conduction** is the transfer of heat energy through a substance or from two substances in contact with each other. An example of conduction would be if someone with warm hands would shake hands with someone with cold hands. The heat would transfer from the warm hands to the cold hands. **Fusion** involves a nuclear reaction.

12. **B:** (Celsius)

First, Newtons is not a unit for temperature, it is a unit for force. The chart below shows the boiling points and freezing points for water of the other three scales.

Scale	Boiling Point	Freezing Point
Fahrenheit	212°	32°
Celsius	100°	0°
Kelvin	373 K	273 K

13. **D:** (iris)

The retina converts the light that passes into the eye to an image. The cornea is the outside layer of the eye that protects and covers the eye. The optical nerve carries signals from the retina to the brain. Thus the iris is the part of the eye that adjusts the eye to control the amount of light coming into the eye.

14. **B:** (light is reflected from the mirror)

All objects reflect light. Different objects reflect different colors of lights. This is how we get our color. When an object is places in front of a mirror, the mirror reflects the light from the object back to the person looking into the mirror.

15. **B:** (burning wood)

A chemical reaction is a reaction that causes chemical change. Ice formation does not involve a chemical change. It is changing the state of a chemical (from a liquid to a solid). Chopping wood does not cause a chemical change. When all is done,

the wood is still wood. Adding salt to water is not a chemical reaction because no new chemical is formed. But, burning wood does cause a chemical change. The wood is changed into heat and smoke.

16. **A:** (heating an object until it glows)

The table below explains how we get our light.

Light	How is it created?
Incandescent	Heating an object until it glows
Bioluminescence	Light given off by animals and plants (fireflies)
Fluorescent, halogen, neon, and sodium vapor	Using gasses by passing electrons through or exciting the gasses
Solar	Light from the sun

17. **B:** (low pitch sounds have smaller frequencies than high pitch sounds)
Frequency is what determines the pitch of a sound. The greater the frequency, the higher the pitch.

18. **C:** (it should be specific)

The more specific the problem, the easier it will be to state a hypothesis. If the problem stated is very broad, it will be very difficult to find an experiment that can be tested because there are way too many variables. The problem **should** be in the form of a question. If it is, we have a problem we can try to answer.

19. **B:** (find a new hypothesis and test it)

There are many times in science, our first hypothesis is incorrect. Do not think of this as a failure; we have just found an idea that is not the hypothesis. If the data is leading you to a new hypothesis, go with it. The scientific method is designed to weed out the bad hypothesis until only one is left. Under no circumstances should any one change the data of an experiment so their hypothesis is correct. There would be no point to finish with the original hypothesis if we know it is incorrect.

20. **A:** (the control group should get water, the other group soda)

There should only be one difference between the control group and the experiment group. It should be something that can help to check the hypothesis. In this example, we want to see what effect caffeine has on mice. The only thing that should be different from the two groups is the caffeine. The control group should not get any caffeine. Otherwise it could be difficult to tell if the caffeine made any difference at all.

21. **A:** (The most muscular animals will survive better in their environment.)

Survival of the fittest, also known as natural selection, states that species that are not fit for their environment, or who do not adapt to their environment, will not survive. Think about rabbits. If there are some rabbits that change white in winter

and some that do not, which ones will have a better chance of surviving? The white ones will because they will be more camouflaged from their predators.

22. C: (He made the theory after studying apes and monkeys)

All of the choices are correct except *c*. Darwin did not study apes and monkey on the Galapagos Islands, but he study tortoises and finches. The theory of evolution does involve natural selection, and he did publish them in his book *Origin of Species*.

23. A: (25%)

To understand this problem, we need to understand a little about genes. Genes are passed from the parent to the offspring. Each parent has two sets of each gene. Capital letters means the gene is dominant. Lower case letters mean the gene is recessive. If the offspring has at least one dominant gene it will carry the traits of the dominant gene. The only way for the gene to show the recessive trait is if both letters are lower case. The Punnett Square shows all the possible gene combinations for the offspring. There is only one square that has both lower case *r*'s. Thus it is the only one that would show the recessive trait, in this case being short. Since there are four possible choices and only one is recessive, the probability is 25%.

24. A: (map human DNA)

The human genome project was a project involving doctors from around the world. These doctors were trying to find what part of the human DNA was responsible for what genes. By doing this, they were hoping to find what genes caused different diseases. If this was accomplished, doctors could tell who was more susceptible to different diseases as soon as a child was born.

25. C: (older fossils are less complex than newer ones)

The first choice might seem correct, but it is actually backwards. Newer fossils are found closer to the surface. While it is impossible to determine one hundred percent the age of a fossil, it is possible to be accurate within a small range. The study of fossils is not biology but anthropology. Thus older fossils are less complex than newer ones. Some people believe this is evidence to show animals evolve over time.

26. B: (mitosis)

Meiosis may look like the correct answer, but it is the division of the sex cells. Photosynthesis and food chain have nothing to do with the division of cells. The food chain is involved with ecosystems and ecology. Photosynthesis is the process plants use to convert sunlight into glucose. Thus, mitosis is the only option left and it what cell division is called.

27. D: (photosynthesis)

Photosynthesis is the process plants use to convert sunlight into glucose. If you fail to remember this, look at the two base words of photosynthesis. Photo means light and synthesis means to make. Put them together and it means, “to make from light”. (See number 26 for further description.)

28. **B:** (The dominant parent passes the trait)

All of the choices are true except *b*. The dominant parent does not pass on the trait. In fact, each parent passes on one of its genes to the offspring. From the combination of those genes, it is determined if the offspring will have dominant or recessive genes. Dominant genes do mask recessive genes so in order for an offspring to show a recessive trait it needs to get a recessive gene from both parents.

29. **B:** (metaphase)

There are five different phases in mitosis. They are interphase, metaphase, anaphase, prophase, and telophase. The chart below explains what happens in each phase.

<u>Phase</u>	<u>What happens?</u>
Interphase	Cell gets organized. Phase between each cell division
Prophase	Nucleus starts to disappear, chromosomes are preparing for division
Metaphase	Chromosomes line up in the middle of the cell
Anaphase	Chromosomes separate. Cell starts to split
Telophase	New nucleus is formed in each cell. Two cells split

30. **B:** (The genotype is the gene combination, the phenotype is the physical appearance)

Genotype is the gene combination of a trait. It might have two dominant genes (RR), two recessive genes (rr), or one gene of each (Rr). The phenotype is the actual physical appearance of the gene. Is it tall, short, strong weak, red, white, etc. If R is tall and r is short, a plant can have two different genotypes (RR or Rr), but still have the same phenotype (the plant will be tall).

31. **D:** (it is usually found in the cytoplasm of a cell)

The first three options are all true about DNA. The fourth one is the incorrect statement. DNA is not found in the cytoplasm. It is found in the nucleus. The cytoplasm is the area outside of the nucleus.

32. **C:** (Adenine – Thymine and Cytosine – Guanine)

Adenine, thymine, cytosine, and guanine are the four nitrogen bases in DNA. Adenine and thymine are always bonded together and cytosine and guanine are always bonded together.

33. **B:** (prophase)

See number 29 on this answer key for the explanation.

34. **C:** (a tree producing new trees)

Asexual reproduction is reproduction by cell division. Single cell organisms, algae and cutting a piece off of a plant and replanting it are all example of asexual reproduction. Trees actually reproduce sexually. Trees have both male and female sex organs. Our human perception of sexual reproduction is a little inaccurate.

35. **D:** (chloroplast)

Photosynthesis starts with the chlorophyll in the chloroplast absorbing energy from the sun. The chlorophyll will take in carbon dioxide and water. The energy from the sun is used to split the water and hydrogen molecules from the water. The oxygen is released into the air and the hydrogen is used to produce glucose, which the plant uses for fuel. This process occurs in the chloroplast.

36. **A:** (oxygen)

Oxygen is actually produced as a by-product of photosynthesis. Carbon Dioxide, water and sunlight is all needed to complete the process. See number 35 for a more complete explanation.

37. **B:** (glucose)

Fructose is produced in fruits, sugar cane is the plant that produces the sugar used by humans, and lactose is the sugar produced in milk. Glucose is the fuel plants use. It is also know as starch.

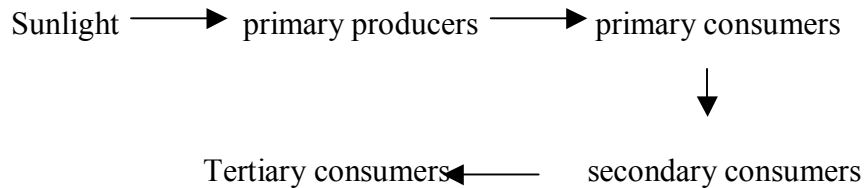
38. **A:** (It is able to bond with four elements)

The element carbon has four bonds meaning it can bond four other elements to it. It is because of these four bonds that carbon can produce long strings of bonds. The longer a bond is the less reactive it is. The carbon strings found in humans are very long, thus they are not very reactive. This allows our bodies to stay in a pretty stable state.

39. **D:** (ecology)

Ecology is the study of how many organisms can live in a certain area. The other tree options are all important parts of ecology. A **population** is a group of a species living in the same area. **Community** is all of the populations together. **Density** is how many species live in a given area (people per square miles). All of the choices are part of ecology, but ecology is the study of how many organisms live in a certain area.

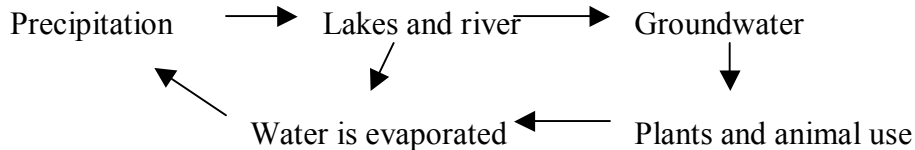
40. **B:** (It is missing primary producers)
The food chain should look like this ...



A real life food chain may look like this ...



41. **B:** (Animals and plants consume water, taking it out of the water cycle)
Water is never taken out of the water cycle. Animals and plants may use the water, but it is released back into the water cycle through sweat and other human waste products. The water cycle looks like the following.

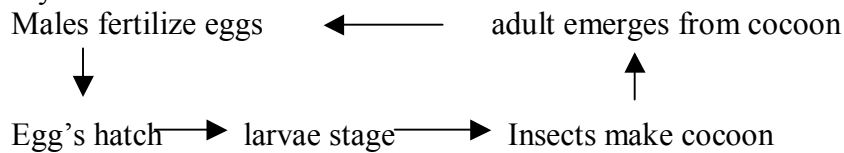


42. **A:** (equilibrium)

Equilibrium is the state where everything is equal. In a chemical reaction, the reaction moved back and forth from the reactants to the products. The reactants are the beginning chemicals that cause the reaction and the products are the end result. Once the reactants and the products are equivalent, equilibrium has been reached.

43. **D:** (Insects have a larvae stage between their hatching and cocoon making)
Most insects do lay eggs, and most insects make a cocoon. This is the life cycle of an insect, but it is missing the larvae stage. This occurs after the egg is hatched and before it makes a cocoon.

The life cycle should look like this ...



44. B: (Fallopian tubes)

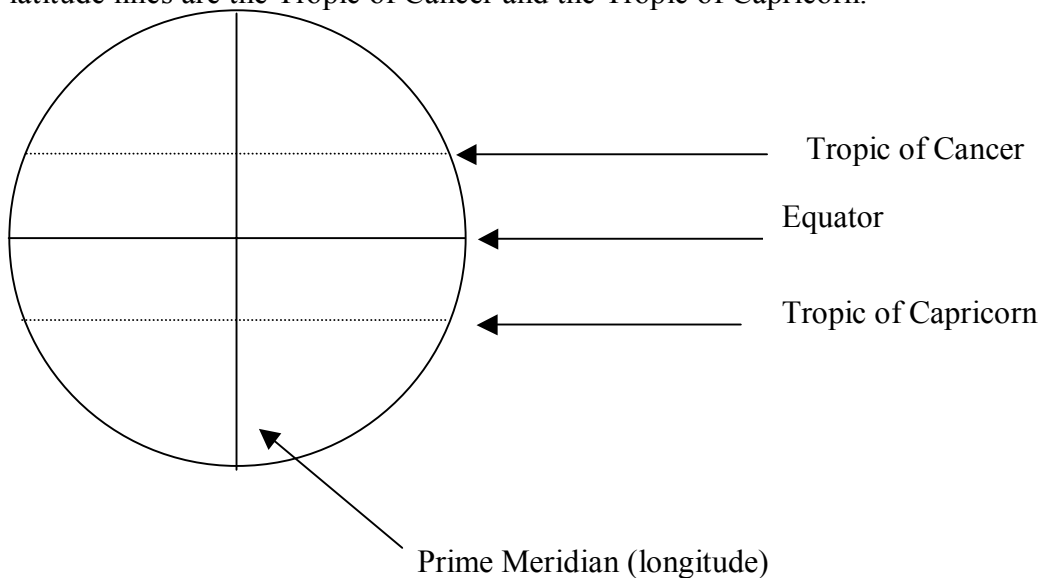
Fertilization begins with sperm being ejected into the women's vagina. The sperm travels through the cervix into the uterus and into the fallopian tubes. This is the point of fertilization. Once the women's egg is fertilized, it is called a zygote. The zygote travels down the fallopian tube and into the uterus. If the zygote implants onto the wall of the uterus, conception occurs.

45. D: (Fetal period)

Ovulation is the process that the egg in the females become ready to be fertilized. This occurs before fertilization. Fertilization occurs in the fallopian tubes shortly after sex. The fertilized egg becomes an embryo at conception. This occurs when the egg becomes implanted into the wall of the uterus. It lasts the first twelve weeks pregnancy or the first trimester. The Fetal period is the last six months of pregnancy or the last two trimesters.

46. A: (latitude)

The equator is the imaginary line that runs horizontally across the middle of the Earth. One way of remembering the difference between longitude and latitude is latitude sounds like ladder and a ladder has rungs that go horizontal, so lines of latitude run horizontal. Lines of longitude run vertical. Two other important latitude lines are the Tropic of Cancer and the Tropic of Capricorn.



47. A: (moon)

While it is true that the sun does impact the tides of the ocean, the moon has a more significant impact because it is closer to Earth. Gravitational forces cause tides.

All objects have a gravitational force, but the larger the object, the larger the object's gravitational force. As the moon travels around the Earth, the water in the ocean follows the moon. This causes water to be high in some places closer to the moon and lower in places farther away from the moon. When the sun and moon act together, greater tides are created.

48. **C:** (They are rare)

It is true that some minerals are rare, but it is not true of minerals in general. Minerals are naturally occurring. They are inorganic, which means they are not living, and they have a definite pattern. This definite pattern is called **crystalline**.

49. **D:** (sediment)

The chart below shows some of the characteristics of minerals.

Characteristics	Definition
Color	
Luster	How well a mineral reflects light
Streak	Does the mineral leave a mark when rubbed?
Hardness	How hard is a mineral
Cleavage	The tendency for the mineral to break apart
Magnetic	Does the mineral have a magnetic force?
Density	How tightly packed are the atoms in the mineral?

50. **A:** (They are formed by molten rocks)

There are three main types of rocks. They are igneous, sedimentary, and metamorphic. The cooling and solidifying of molten rocks form **igneous rocks**. **Sedimentary rocks** are the accumulation of sediments. Sediments are tiny particles that are removed from other rocks by weather or chemical changes. These sediments are deposited and settle at the bottom of bodies of water. Once enough sediment collects, a new layer of rock has formed. Metamorphic rocks are preexisting rocks that undergo a change from intense heat and pressure.

51. **B:** (Physical weathering is caused by weather; chemical is caused by a chemical change)

Weathering is the breakdown of rocks into smaller parts. Both physical and chemical weathering is caused by nature. Humidity affects both physical and chemical weathering by speeding up the process. There are many causes of weathering. Therefore, it is impossible to say weathering occurs faster when it is chemical weathering. Physical weathering is caused by weather and chemical weathering is caused by a chemical change so *b* is the correct answer.

52. **C:** (Erosion is an example of chemical weathering)

Oxidation is an example of chemical weathering where the minerals in the rock mix with the oxygen in the air. Carbonation is also an example of chemical weathering, but carbonation is when carbon dioxide and water mix to create carbonic acid,

which causes rocks to break down into smaller parts. A chemical weathering in limestone also forms caves. Thus, erosion is the only one that is not a chemical weathering. It is actually a physically weathering.

53. **D:** (Richter Scale)

The Richter scale is the scale used to measure the intensity of earthquakes. It is a scale from zero to nine with nine being the most intense earthquake and zero being the smallest earthquake. Another less popular scale used to measure earthquakes is the Mercalli scale. This scale measures the destruction caused by the earthquake.

54. **C:** (fault lines)

Earthquakes can occur on the ocean floor, but they do not always occur there. The reason they occur on the ocean floor is because of a fault line.

55. **B:** (Venus)

The white object cannot be the moon because the moon revolves Earth, not the sun. So it has to be a planet. The planet before the Earth is Venus, so Venus would be the correct answer. A nice way to remember the order of the planets is the phrase “My very educated mother just served us nine pizzas”. The first letter tells us the letter that the planet starts with. So the order of planets starting from the sun is Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune, and Pluto.

56. **C:** (erosion)

Continental drift is the movement of the continents over time. Evidence of the continental drift can be found by comparing fossils in Africa and South America. The same fossils found in Africa have been found in and South America, which leads to the conclusion that they use to be one big continent. Evidence can also be found in comparing the shape of Africa and South America. They appear to fit together like a jigsaw puzzle. Volcanoes occur because the tectonic plates push together and cause pressure. Earthquakes occur because of the same reason. On the other hand, erosion is caused by weather.

57. **B:** (the inner planets are terrestrial planets; the outer planets are gaseous planets)

Terrestrial planets are planets made out of rocks. The inner planets are Mercury, Venus, Earth, and Mars. All of these planets are terrestrial planets. Gaseous planets are planets made out of gas. The outer planets are Jupiter, Saturn, Uranus, Neptune, and Pluto and these are all gaseous planets.

58. **A:** (meteorite)

A nebula is the first stage of a star. A meteor is a chunk of rock that enters the Earth’s atmosphere. When it burns up it appears as a shooting star. A comet is an object made of rocks and ice that revolve around the sun. A meteorite is a meteor

that hits the Earth's surface. They can range in size from a tiny rock to an object capable of destroying the Earth, as we know it today.

59. **D:** (they last forever)

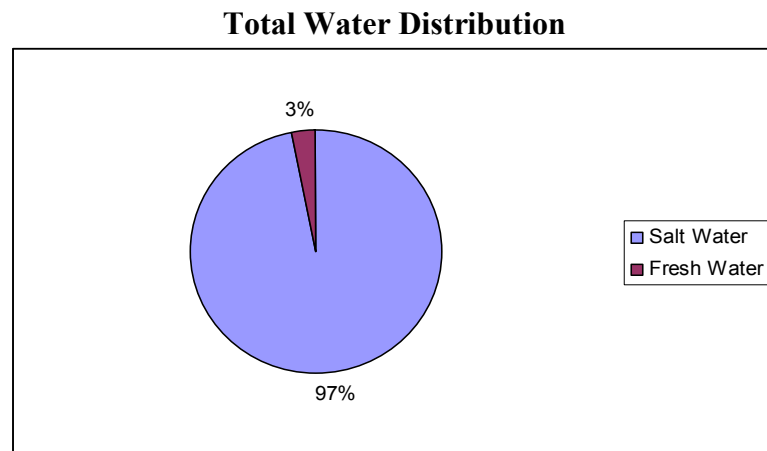
The first stage of the life of a star is a star nebula. Stars are big balls of gas, and they use nuclear fusion to create energy. Stars **do not** last forever. They will eventually run out of energy. They then collapse and become a black hole.

60. **C:** (solar system)

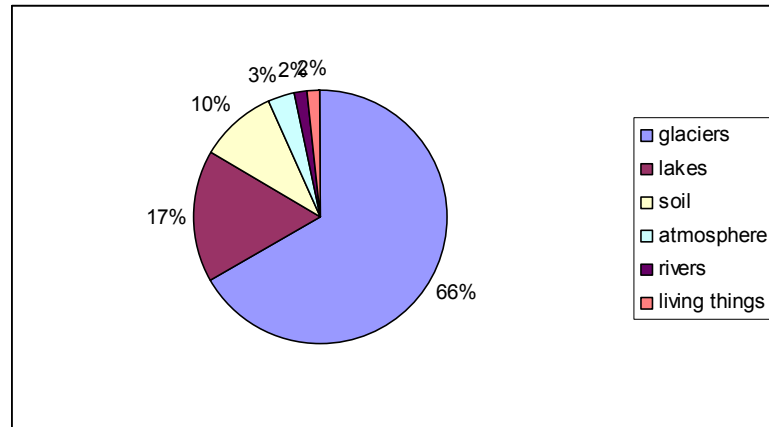
Stars are classified by size, temperature, brightness, and color. A scale used to classify stars is the Hertzsprung-Russell diagram. Stars are not classified by the solar system that they are located in.

61. **A:** (glaciers)

Most of the Earth's water is in the oceans (97%), but ocean water is salt water, not freshwater. Of all the fresh water, two-thirds is located in glaciers.



Fresh Water Distribution



62. D: (troposphere)

There are five layers to the Earth's atmosphere. From the closest to the Earth's surface to the farthest away they are the troposphere, stratosphere, mesosphere, thermosphere, and the exosphere. The troposphere is the first seven miles of the atmosphere and it is where all of our weather occurs. It also contains ninety percent of the gases in the atmosphere including all of the oxygen.

63. B: (lumber)

A renewable resource is a resource that can be created. We can make more of it. Some examples of renewable resources are corn, lumber, and other plants. We can plant more trees and thus lumber is a renewable resource. Nonrenewable resources are resources that we cannot create any more of. Fossil fuels like coal, natural gas, and crude oil are nonrenewable. Once they run out, they are done. It is important to use nonrenewable resources as much as possible so our fossil fuels do not run out.

64. A: (protects the Earth from ultraviolet radiation)

The ozone layer is a layer in the stratosphere where ozone gas protects the Earth from the sun's ultraviolet rays. It acts as a natural shield from the deadly ultraviolet rays.

65. C: (causes the Earth to be too bright)

The dangerous ultraviolet ray weakens the immune system in humans as well as causing skin cancer. Scientists believe that mutations found in frogs and salamander is from the depletion of the ozone layer. The depletion of the ozone layer is caused by several factors. One of them is CFC (chlorofluorocarbon) gas, a synthetic gas used in aerosol cans and refrigerators.

66. D: (erosion of the top soil)

The greenhouse effect is believed to be a cause of the warming of the Earth. It works much like a greenhouse, hence why it is called greenhouse effect. Fossil fuels cause the greenhouse effect by producing carbon dioxide. Carbon dioxide is a greenhouse gas. CFC is also a greenhouse gas. Believe it or not methane produced by livestock manure produces greenhouse gases. Even rice patties produce greenhouse gases. Therefore, the one that is not true is the erosion of the topsoil. It does not affect the greenhouse effect.

67. **D:** (decaying leaves from trees)

Nitrogen from cars and factories pollutes the water through acid rain. Nitrogen enters the air from cars, which causes acid rain. Acid rain pollutes the water. Water treatment plants pollute the water when they release sewage water back into lakes and rivers. Run off from erosion, fertilizer, and manure causes pollution as well. Leaves do not pollute the water because they are biodegradable and will decay.

Child Development

Mental Development

There are many theories that try to explain how we learn. Howard Gardner developed one of the most popular theories called the theory of multiple intelligences. In the theory of multiple intelligences, there are eight different intelligences. A person may be gifted at one, but lack another one. The chart below shows the eight intelligences, what they are, and how to teach each factor of intelligence.

Intelligence	Definition	How to teach
Linguistic	Good use of words	Read
Logical-mathematical	Good use of numbers and reasoning	Use reasoning and numbers
Spatial	Good visual perception	Use pictures and diagrams
Bodily-kinesthetic	Good use of body (athletic)	Develop an activity to get the students moving around
Musical	Musically talented	Write a song to teach a concept
Interpersonal	People smart	Work in groups
Intrapersonal	Self smart	Have self-reflection

Naturalist	Nature smart	Incorporate the outside world (nature walks)
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Physical Development

Every person will develop at different rates throughout their lives. Some examples include children walking much earlier than others and puberty occurring at the different times for each person. When looking at human development, it is important to remember these different timings for each person.

There are many factors that determine how soon a person will develop physically, emotionally, or socially. One of the factors is genetic. Each body is built differently; this is what makes us unique. This difference is a large factor in why some children will walk at nine months and other fifteen months or why some boys will go through puberty at thirteen and others at fifteen. We all have a built-in time clock that controls when and how we develop.

Development, however, is not all natural. There are outside factors that also can help or hurt our development. If a child grows up in a loving family where the needs of the child are met, the child will develop more fully. If parents read to their child every night before bed and help the child learn the ABC's, the child will develop his or her cognitive reading skills much earlier than a child who watches television every night with their parents. Unfortunately, there are many children who grow up in abusive homes that can severely affect development. Abuse comes in many forms. It can be physical, neglect (not providing the proper food, clothing, or shelter), or emotional. Typically a well-known person, including a family member, is the person that can cause the most abuse. The scary man jumping out of a bush and attacking our children is not very common. Abuse is higher when the family is in poverty, the parents were abused as children, or the parents are teenage parents.

Abuse can affect development in many ways. If the abuse is physical or neglect, physical development of the child can be hampered. Broken bones at a young age can affect how the body grows. If a child does not get the proper nutrition, bones and muscles may develop more slowly. But an even more devastating consequence of abuse can occur to a child - many children who are

abused may not develop emotionally. This can occur whether the abuse is physical, neglect, or emotional. Children need love and affection, especially at a young age. There are additional consequences of abuse. Children who are abused are often depressed and have suicidal thoughts. They tend to withdraw and display anti-social behavior. They can be violent and start using drugs. These consequences do not always occur, but abused children have a much higher chance of these things happening.

Despite all of these variables in development, there are still certain milestones that children should reach at certain ages. Every child will be different, but the table below shows a guide of what should typically happen at what age in cognitive development.

Age	Milestone
4 months- 7 months	Cause and effect should start to develop. They can find partially hidden objects, and explore with their hands.
8 months – 12 months	Children can name objects and use them correctly. They can find hidden objects easily.
1 year – 2 years	They can sort shapes and colors, play make believe, complete small puzzles, make mechanical toys work, and understand the idea of “two”.
2 years – 3 years	They can identify common objects and use small sentences.
3 years – 5 years	Children should be able to name colors, count to ten, understand time, and understand the idea of same and different
5 years – 11 years	They can start to learn to play an instrument or learn a foreign language.

Child Development Sample Questions

1. **What should be a parent's attitude about exercise for a child in the first three months?**
 - a) Children this young do not need exercise yet.
 - b) Signing up for baby exercise classes is a good idea
 - c) Try and stimulate your child's muscles when you play together
 - d) Try to restrict the child's movement so they do not get hurt
2. **At what age does the brain develop fastest?**
 - a) The first year
 - b) 2-3
 - c) 5-6
 - d) 11
3. **Which of the following is not true about a child's development of language?**
 - a) Children first hear language in the mother's uterus before they are born.
 - b) A solid foundation for language has been developed at six months
 - c) Talking to your baby and making eye contact is important
 - d) Let your child watch television to develop language faster
4. **When should you start to discipline your child?**
 - a) From birth
 - b) When the child starts walking and can get hurt
 - c) When the child learns to talk
 - d) At about age three
5. **What is the best way to prevent children from using drugs?**
 - a) If a child becomes friends with children of questionable character, do not allow them to spend time together.
 - b) Let children know that if they use drugs or alcohol, you will punish them severely.

- c) Talk to children at a young age about the dangers of drugs and set rules.
 - d) If you are a good role model about not using drugs, children will not use drugs.
6. **When does a child's egocentric ideas start to diminish?**
- a) As an infant
 - b) As a toddler
 - c) Elementary school
 - d) As an adult
7. **When and why do children start to feel peer pressure?**
- a) Age 8, because they need to feel membership in a group
 - b) Age 8, because kids are being split into groups such as sports teams and classes
 - c) Age 12, because they need to feel membership in a group
 - d) Age 12, because kids are being split into groups such as sports teams and classes
8. **Why is it important for children to play?**
- a) It helps them develop physically
 - b) It helps them develop socially
 - c) It helps them develop cognitively
 - d) All of the above.
9. **Which of the following is not true about puberty?**
- a) Boys go through puberty earlier than girls
 - b) It causes a dramatic growth spurt
 - c) During puberty, adolescents become reproductively mature
 - d) Sex hormones increase during puberty
10. **How do special education children develop differently from other children?**
- a) They will not develop physically
 - b) They may not develop as well socially or emotionally
 - c) They need extra help in all areas of development
 - d) Development is always the same, but learning is different
11. **At what age should children begin to walk with no assistance?**
- a) 4 months
 - b) 8 months
 - c) 18 months
 - d) 3 years

12. **When a child is going through puberty, what is the best thing to do?**
- a) Ignore it, they will learn as they go. There is no use making the child feel uncomfortable.
 - b) Just tell the child that it is normal.
 - c) Educate the child about the changes that will occur.
 - d) Rent a video or have them read a book.
13. **What is not the best idea to help foster a child's self-esteem?**
- a) Have realistic goals
 - b) Condemn their bad decisions such as hairstyle and clothing
 - c) Respect and encourage their talents
 - d) Let them have their space
14. **Which of the following would be a good way to help a student with special needs develop?**
- a) Teach them in a small setting one-on-one so they can learn better.
 - b) Mainstream them in the classroom so they can develop socially with their peers.
 - c) Most special needs students will not need help developing.
 - d) Incorporate one-on-one activities as well as mainstream time.
15. **Which of the following is not true of teenager's nutritional needs?**
- a) They should try to eat between 2,000 and 2,500 calories a day.
 - b) Snacking for teenagers is acceptable.
 - c) Boys generally need more calories than girls do.
 - d) Calcium is especially important because of teenagers' growing bones.
16. **How would a child's socioeconomic status effect their development?**
- a) Children from poverty are at a greater risk of being abused, leading to emotional problems
 - b) Poor children often lack the nutrition to develop properly physically
 - c) The higher the socioeconomic status, the more opportunities for education
 - d) All of the above

Child Development Answer Key

1. **C:** (Try and stimulate your child's muscles when you play together)

Exercise is as important for babies as it is for everyone else. There is no need to go overboard and try to excessively give your child a work out, but when playing together, get the child to move his or her legs and arms. Move the legs in a bicycle motion until the child gains its own control of legs and arms. Help the child to roll over. This will allow your child to roll over and walk earlier.

2. **A:** (The first year)

The brain grows faster during the first year of life than it will at any period. It may not seem like it because the baby is not "doing much". But in reality, they are learning how to communicate, how to walk, and learning about everything around them. Babies soak up everything from their surroundings, much like a sponge. This continues until about age twelve, but the first three years, especially the first year, the brain is really developing. This is why it is important to give a child as much stimulation as possible at a young age.

3. **D:** (Let your child watch television to develop language faster)

The first three are all true, which makes *d* the only one that does not help the development of language. Children can recognize their mother's voice at birth because they can hear even before they are born. Even though a child is a long way from speaking, the foundation for language has been set by six months. Children learn best when they can see the facial expressions of the person talking. This is why watching the television will not work. Watching the television at such a young age can also negatively affect other areas such as vision and attention spans.

4. **B:** (When the child starts walking and can get hurt)

There is no reason to discipline a child when they are newborns. They have not developed enough to walk which means they will not get into trouble. Discipline should start as soon as the child is in a situation that would need correction. This usually occurs when they can walk and get into a situation where they can hurt themselves. Discipline should be used to teach your child, not to punish. Children

can understand you before they can speak to you so discipline can be effective even before a child learns to talk.

5. **C:** (Talk to your child at a young age about the dangers of drugs and set rules.) It is important to talk to children about the negative effects of drugs at a young age, even as early as five years old. But do not stop there. Keep talking to them about it. Set and enforce rules so children know how to follow rules. It is important to be a good role model when it comes to drugs by not using them, but simply not using them yourself is not enough. Children need to hear about the negative affects of drugs.

6. **C:** (Elementary school)

Egocentric thought is when children only think about themselves. They do not think about how their actions affect other people. Newborns obviously think this way because they do not have the cognitive development to understand any other thinking. They need to be egocentric and cry when they need something in order to survive. Toddlers have the same thought processes. While it is true that some people really never stop thinking about themselves, elementary school is the period when children start to see how their actions affect other people and how other people think.

7. **A:** (Age 8, because they need to feel membership in a group)

Peer pressure starts to kick into high gear at this stage because children are developing socially. They have the need to be part of a group and fit in. The chart below shows social “milestones” in a person’s life.

Age	Social Milestone
1 month – 3 months	Listens and watches other people, first smile
4 months – 7 months	Personality starts to develop, becomes more outgoing, enjoys social play
8 months – 12 months	Shy with strangers, imitates, shows preferences for certain toys, tests parental response
1 year – 2 years	Enthusiastic about playing with other children
2 years – 3 years	Shows affection, more playmates, understands concepts of mine and his or her
3 years – 5 years	Wants to please friends and be liked, shows more independence
5 years – 11 years	Starts to develop a few best friends and joins a group. Peer pressure starts to develop
11 years- 14 years	Develop independence from parents; explore different music, clothes, etc.

8. **D:** (All of the above)

Play is vital for the all around development of a child. During play, children get good exercise, which helps the physical development. Children learn best through play. This helps develop the cognitive development. When children play together, they learn to share and how to interact appropriately with other people. This helps them develop socially.

9. **A:** (Boys go through puberty before girls)

The age at which puberty begins will vary dramatically from child to child. On average, however, girls go through puberty before boys. Girls can start puberty as early as eight and boys as early as nine. It can start as late as thirteen for girls or fourteen for boys. During puberty, adolescents have a large growth spurt, they become reproductively mature, and sex hormones increase.

10. **B:** (They may not develop as well socially or emotionally)

The key word in this sentence is *may*. Every special education student has some special needs. That is why they are receiving special education. But every student has different needs. Some will be physically as developed as other kids their age. Some may only need help in one area of development. Every student differs and the development of students with special needs is no different.

11. **C:** (18 months)

It is hard to say when a baby should do what because every child develops at different rates. However, four months is way too early for children to be walking. At eight months, some children may start to stand and walk with the assistance of furniture or a person, but few will be able to walk. This should occur at about eighteen months. If a child is not walking at three years, help is definitely needed. The following table below shows physical milestones for children.

Age	Physical Milestone
4 months – 7 months	Roll over, sit without support
8 months – 12 months	Sit without assistance, crawl, be on hands-and-knees
1 year – 2 years	Walk alone, begin to run, kick a ball
2 years – 3 years	Climb well, walk up and down stairs, run easily
3 years – 5 years	Hop, throw ball overhand, catch bouncing ball, move with agility
8 years – 14 years	Enter puberty, start to mature into adult

12. **C:** (Educate the child about the changes that will occur)

The first solution is not acceptable at all. Not talking about it will leave adolescents confused and worried. If they do not hear it from adults, they will find out about it from other people, such as their friends. While explaining what is normal and renting a video might be a good idea, more needs to be done. Dialogue needs to be made so questions from the adolescence can be asked and answered.

13. **B:** (Condemn their bad decisions such as hairstyle and clothing)

It is important to let children know when you disapprove of their lifestyle or behavior, but condemning it may only make matters worse. Talk about it and explain the reasoning, but be careful to not make the child feel as if they are being condemned.

14. **D:** (Incorporate one-on-one activities as well as mainstream time.)

Each child develops differently, and special needs students are no different. To link all special needs students into one category would be inaccurate. But most special needs students will need time in the mainstream class, as well as one-on-one time. If they are left in the classroom all of the time, their cognitive development may be hampered. If they are taken out of the classroom, the social development will suffer. Finding the balance between the two is the tricky part. It needs to be evaluated on an individual level and reevaluated as time goes on.

15. **A:** (They should try to eat between 2,000 and 2,500 calories a day)

Teenagers who are done growing, especially girls, will eat far less calories than boys. Some may need to eat as little as 2,000 calories a day depending on physical activity. However, boys who are in a growth spurt often need up to 4,000 calories a day, especially if they are physically active. Snacks are acceptable and appropriate as long as they are healthy. Bones are growing to their full adult length during the teenage years so it is vital to get enough calcium to build strong bones.

16. **D:** (all of the above)

While it is true that children are abused from all backgrounds, children are more likely to be abused if they are below the poverty line. Families living in poverty often lack the resources to feed their children properly. If a child is from a high-income family, they will get more opportunities for furthering education including tutors, summer classes, private schools, and eventually college.

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