

# Webster County Schools

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Office of Curriculum

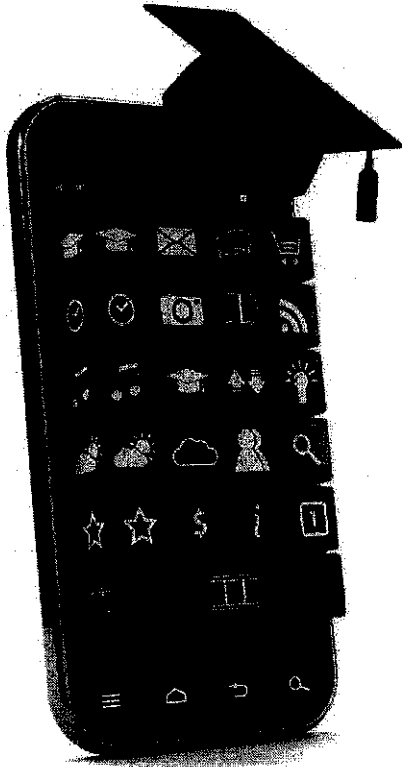
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# 9<sup>th</sup> – 12<sup>th</sup> Grade

## Packet 6

# Algebra



**To Proficiency and  
Beyond!**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-REI. 10

### Drill Questions

1. Dr. Frankenstein thinks he knows more than you about what is true and false world just because he's a doctor. (Just because he brought a corpse back to life, he thinks he's hot stuff.) He says that the equation  $y = 17x + 1$  also includes the point (1, 8). Is Dr. Frankenstein right or wrong? **No!**
2. You talk on the phone  $y$  minutes on day  $x$  of every month according to the equation  $y = 2x + 1$ . The cell phone company claims you talked 12 minutes on the phone on the fourth day of the month. Are they right? **No, you talked on the phone for 9 minutes on the fourth of the month.**
3. The speed of a snowboarder changes from uphill to downhill at a speed of  $y = x^2 + 1$  where  $x$  is in minutes. The snowboarder's speed at time 0 is 1 and is 2 at time 1. The snowboarder claims that this proves his speed increases linearly. Is he right? **No. Such an equation is not linear. It is quadratic.**
4. The rate at which humans breathe oxygen aboard the International Space Station is pretty steady. The equation  $y = x - 12$  shows this to be the case, where  $x$  represents the number of people and  $y$  represents the relative danger of the oxygen supply. What is the maximum number of people allowed aboard the space station before the oxygen supply becomes dangerous ( $y > 0$ )? **12**
5. Which of the following two-variable equations, when plotted on a graph, would be a curve (rather than a line)?  **$y = x^2$**

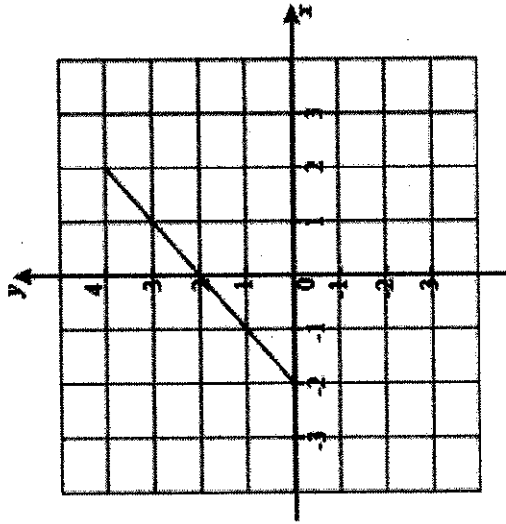
Sample Items: MS Questar Practice Test

#36 and #49

# Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

## F-IF.1 and F-IF.5 Drill Questions

1. Given the ordered pairs  $(-12, 0)$ ,  $(-6, -1)$ ,  $(2, 3)$ ,  $(8, 5)$ , and  $(-3, 4)$ , identify the domain.  $\{D: -12, -6, -3, 2, 8\}$
2. Identify the domain and range of the following graph.  $D: [-2, 2]$ ;  $R: [0, 4]$



3. Which point could not be part of a function that includes  $(-1, 6)$ ,  $(2, 2)$ ,  $(3, 4)$ ,  $(0, -4)$ , and  $(1, -2)$ ?  $(1, 4)$
4. Given the ordered pairs  $(0, 3)$ ,  $(-2, 11)$ ,  $(1, 5)$ ,  $(2, 11)$ , and  $(-1, 5)$ , identify the range.  $\{3, 5, 11\}$
5. Sketch a graph that is not a function. Explain. See student's work.

Sample Items: MS Questar Practice Test

#26

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-IF.2

### Drill Questions

1. If  $f(x) = 2x - 12$ , what is the ordered pair when  $x = -1$ ? **(-1, -14)**
2. If  $f(x) = 3x^2 + 6$ , what is the ordered pair when  $x = 3$ ? **(3, 33)**
3. If  $f(x) = -x$ , which is the correct function notation when  $x = 1$ ? **-1**
4. You choose to rent a car. The car rental company charges a flat rate of \$20 plus \$0.22 per mile driven.  
Which function rule applies to this scenario?  **$f(m) = 20 + 0.22m$**
5. Which statement best describes the function notation  $f(x + 1) = 5$ ? **The output is 5 when the input is  $x + 1$**

**Sample Items: MS Questar Practice Test  
#33 and #53**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-IF.3

### Drill Questions

1. What is the tenth number of the Fibonacci sequence (1, 1, 2, 3, 5, 8, 13...)? **55**
2. A sequence has  $f(1) = 12$  and  $f(3) = 34$ . If  $f(2)$  is the average of  $f(1)$  and  $f(3)$ , which function correctly describes the sequence?  **$f(n) = 1 + 11n$**
3. What is the seventeenth term of the series 1, 3, 7, 15, 31...? **131, 071**
4. What are the next two terms in the sequence 1, 4, 7...? **10, 13**
5. What are the next two terms in the sequence 12, 48, 192...? **768 and 3072**

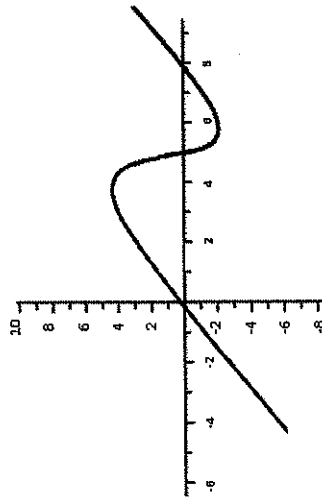
Sample Items: MS Questar Practice Test

#10

# Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

## F-IF.4 Drill Questions

1.



- For the range from  $-\infty \rightarrow +3$ , the function is  increasing  decreasing  constant  I
- For the range from  $+4 \rightarrow +5$ , the function is  increasing  decreasing  constant  D
- For the range from  $+6 \rightarrow +\infty$ , the function is  increasing  decreasing  constant  I

What is a relative minimum value for this function? +6

How many x-intercept values this function has? 3

Sample Items: MS Questar Practice Test

#46

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-IF.6

### Drill Questions

1. Find the slope of the points  $(-4, 9)$  and  $(6, -2)$ .  $-\frac{11}{10}$
2. The height of a tree is 3 feet long. After 2 years it was 6 feet long. What does the slope of the line of this situation tell us about the tree's growth (negative or positive)? **The average growth rate is 2 feet per year.**
3. Let  $y=y^2-2$ . Find the average rate of change over the interval of  $y$  with respect to  $x$  over the interval  $[8,12]$ .  
**80**
4. Describe how slope and average rate of change are the same. How are they different? **See student response.**
5. Describe the slope in words for the points  $(-7,-3)$  and  $(2,-7)$ .  **$-4/9$  Slope is negative and decreases by 4 units vertically for every 9 units horizontally.**

Sample Items: MS Questar Practice Test

#21



## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-IF.7

### Drill Questions

1. Determine the  $x$  and  $y$  intercepts:  $7x - 2y = 14$  ( $x$  int = 2,  $y$  int = -7)
2. Sketch the graph of:  $y = 2x - 3$ . See students' work.
3. Sketch the graph of:  $f(x) = \sqrt{x + 2} + 3$  See students' work.
4. Compare and contrast the graph of:  $y = x^2 - 2x + 6$  vs the parent function. See students' work.
5. Graph of the function of:  $y = |x - 3|$  See students' work.

Sample Items: MS Questar Practice Test

#17

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-LE.1

### *Drill Questions*

1. A senior executive at a local bank wants you to prove to a customer out in the lobby that her bank account, with \$100,000 in it, will be growing every year, thanks to a 5% interest paid out once a year. The woman will not be withdrawing any money from the account. The woman however, wants to know whether or not the difference between each year will be steady or not. Explain why or why not. **No, this is an exponential growth problem.**
2. A sugar processing plant is able to process 10 tons of sugar per month. Assuming that this process stays steady, write an equation to model the sugar production?  **$y = 10x$**
3. Exercise biologists have discovered that, to reduce soreness, people should start biceps curls at 10 pounds. Then, progress weekly to 11 pounds, 14 pounds, 20 pounds, 32 pounds, 56 pounds, and so on. This implies what kind of growth? **Exponential.**
4. A biologist works in a lab where bacteria produce an awful smelling gas called ammonia. Even though the amount of bacteria remains the same, the amount of ammonia produced increases with time. The scientist believes this can be modeled with which kind of function? **Exponential.**
5. An exponential function will always surpass a linear function's dependent variables ( $y$  values) eventually. Is this statement true or false? **False.**

**Sample Items: MS Questar Practice Test**

#38

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-LE.2

### Drill Questions

1. What kind of sequence is 2, 5, 8, 11, 14, 17...? **Arithmetic.**
2. What kind of sequence is 10,20,40, 80...? **Geometric.**
3. How is an exponential function different than a linear function? **Exponential function have variables as exponents. Linear functions always have a highest exponent of 1. Also, EF increase/decrease by constant factor while LE increase/decrease by equal differences.**
4. With every minute that your sister runs, her heart rate (per minute) starts at 50, then becomes 60, then 70, then 80, and then 90. Find a function that models this?  **$F(x) = 10x + 50$**
5. Which function will have a faster growth rate:  **$y = 3x$  or  $y = 3^x$**

**Sample Items: MS Questar Practice Test**

#56

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

### F-LE.5 Drill Questions

1. A pizza bakery notices that the temperature in the oven it uses increases at a rate of  $f(x) = 1^x$ . What does this really mean? **The temperature doesn't change.**
2. Comcast network has noticed that its ad campaign has been paying off. It's been gaining  $y$  customers over  $x$  days since the ads started as modeled by  $y = 500x + 5000$ . How many customers did Comcast have before the ads started playing? **Comcast had 5000 customers.**
3. A vegetarian rock and roll group, has hired a contractor to build their very own stage. The contractor has estimated that the stress on the stage will increase according to the function  $f(x) = 3^x$  where  $x$  is the number of people on stage. Assuming each person weighs exactly the same, what does this function indicate? **Each additional person on stage adds a disproportionate amount of stress.**
4. You're caught in the middle of Life or Death III, a brutal first person shooter, when suddenly you realize your in-game health is currently being modeled as  $y = 25 - 3x$ , where  $x$  is in minutes. What does this mean? **Your health steadily decreases with every passing minute.**
5. A function spits out dependent variables that are constantly increasing for every independent variable. In other words, for every  $x$  we put into  $f(x)$ , we get values that are further and further apart. What kind of function could  $f(x)$  be? **Exponential.**

**Sample Items: MS Questar Practice Test**

**#28**

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

S-ID.1

### *Drill Questions*

1. The following data represents the height, in inches, of the Golden State Warriors Basketball Team.

84, 84, 75, 83, 79, 75, 81, 75, 84, 69, 78, 78, 79, 82, 81

What is the median height of the Warriors? 79.

2. The following represents test scores from a recent geometry quiz. What is the upper quartile for the data? 90.5

70, 73, 77, 82, 82, 85, 86, 88, 90, 91, 93, 99

3. If a data set has 20 values, how many values are in the lower quartile? 5.
4. The height, in inches, of the pitchers for the 2012 San Francisco Giants is listed below. What is the median height of this pitcher's roster? 73.5

76, 77, 75, 72, 74, 71, 71, 76, 72, 70, 74, 73

5. Explain the mathematical difference between the lower and upper quartile and how to determine them. **See student's work.**

**Sample Items: MS Questar Practice Test**

**#37**

# Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

S-ID.2

## Drill Questions

1. The mean and median of data sets are calculated for what reason? Compare the center location of that data.
2. The interquartile range of a set of 18 data points will contain how many of the data points? 9
3. The time it takes you to get to school in the morning follows a normal distribution. The following table lists the number of minutes it took you to drive to school. On average, how long does it take you to drive to school? 24.  
  
25, 32, 20, 16, 22, 27, 28, 24, 21, 25
4. What is the interquartile range (IQR) of the data set above: 7.
5. Billy-Joe Bob and Bobby-Joe Bill are having a contest to see whose chickens provide more eggs. Over the course of 10 days, the farmers each count and record the number of eggs they collect. The data sets do not follow a normal distribution. Which farmer has a greater median number of eggs? **Bobby-Joe Bill**  
  
**Billy-Joe Bob:** 28, 21, 8, 15, 6, 18, 16, 30, 25, 17  
**Bobby-Joe Bill:** 27, 28, 15, 28, 28, 23, 20, 8, 14, 8

Sample Items: MS Questar Practice Test

#6

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

S-ID.3

### Drill Questions

1. The mean of a data set is 12 and the median is 12. What are the possible shapes for this data set? **Mound or symmetric.**
2. The mean of a data set is 12 and the median is 10. What shape is the data? **Skewed right**
3. The median price of a home in your neighborhood is \$212,000. One fourth of the homes are less than \$200,000 and one fourth are greater than \$238,000. Which of the following home prices would be considered an unusually good deal? **Anything less than 134,000.**
4. Given the data points 18, 14, 12, 14, 11, 19, 20, 16, and 11, which values would be considered outliers? **Less than 0.5 or greater than 28.5**
5. The following data represents the highest temperatures on June 21 for the last 10 years. Next year, another temperature will be added to the data. Which temperatures would not be outliers? **103°F, 77°F**  
**Temperature (°F): 90, 94, 89, 92, 89, 103, 77, 92, 97, 90**

Sample Items: MS Questar Practice Test

#40

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

S-ID.5

### Drill Questions

1. Of the following (height, weight, shoe size, hair color) which is categorical data? **Hair color.**
2. The following table summarizes the hair color of a baseball team. What is the probability that a player has brown hair? **0.48**

**Blonde: 5, Brown: 15, Black: 10, Gray: 1**

3. The following table summarizes the hair color of a baseball team. What is the probability that a player does not have gray hair? **0.97**

**Blonde: 5, Brown: 15, Black: 10, Gray: 1**

**Sport      Boys Wins      Girls Win**

Volleyball		
Cricket	40	10
Soccer		

4. How many total wins did the school's volleyball teams register? **41**
5. How many more wins did the boys' teams have than the girls' teams? **25**

**Sample Items: MS Questar Practice Test**

**#54**



# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

S-ID.6

### Drill Questions

1. For 10 days, Romero kept a record of the number of hours he spent listening to music. The information is shown below. Construct a table to describe the correlation. **No correlation.**

**Days**    1 2 3 4 5 6 7 8 9 10

**Hours**    9 3 2 6 8 6 10 4 5 2

2. A school is selling sweatshirts, each sweatshirt sold results in a cheaper price for each additional sell. What type relationship is being described? **Negative correlation.**

3. Write a linear regression equation for the set of data points relating minimum hourly wage and years since 1955.  $y = 0.098x + 0.402$  high, positive correlation

**Years Since 1955, (x)**    0    5    10    15    20    25    30    35    40    45    50

**Minimum Wage (y)**    0.75    1.00    1.25    1.45    2.00    3.10    3.35    3.80    4.25    5.15    5.15

4. State the linear regression equation represented by the data table when  $x = 0$  is used to represent the year 2007 and  $y$  is used to represent the attendance. State the correlation coefficient and determine whether the data suggest a strong or weak association.  $y = 0.16x + 8.27$ ;  $r = 0.97$
5. Describe, in words, the similarities and differences between strong positive correlation and positive correlation. **See student's response.**

**Sample Items: MS Questar Practice Test**

#18

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

S-ID.7

### Drill Questions

1. What is the slope of the linear model  $y = 2.0x - 12$ . **2.0**
2. Give an example of a nonlinear function. Explain, in words, why it is nonlinear. **See student's response.**
3. What does the slope of a linear model represent? **Change of independent to dependent variable.**
4. What does the y-intercept of a linear model mean? **Value of the dependent when independent is zero**
5. A linear model describing the height of a river with respect to the rainfall total for the previous month suggests that for each inch of rainfall, the river rises five inches. What is the slope for this linear model? **5**

**Sample Items: MS Questar Practice Test**

**#22 and #29**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

S-ID.8

### **Drill Questions**

1. What does the correlation coefficient tell us? **Measure of linear association between two variables.**
2. The correlation coefficient between two variables is 0.9. How would you describe this value? **Strong, positive.**
3. We assume SAT score is linearly associated with GPA and determine the correlation coefficient to be 0.8. What does that suggest? **SAT score increases as GPA increases**
4. What would the graph of a set of data points with a  $r = -0.3$  value look like? **See student's response.**
5. If you were told that the correlation coefficient of ACT score is dependent on GPA, what value would you expect? **A positive correlation with a  $r$  value  $> 0.50$ .**

**Sample Items: MS Questar Practice Test**

#N/A

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

S-ID.9

### *Drill Questions*

1. Correlation does not imply causation. Why? Because we must consider all possible variable when proving causation.
2. What is the definition of correlation? Measure of the strength of a linear relationship between two variables.
3. What value of  $r$  would indicate no correlation? 0.
4. What does an  $r$  value of  $-0.89$  suggest about two variables? The independent variable increases as the dependent variable decreases.
5. What does an  $r$  value of  $0.05$  suggest about two variables? The variables are not correlated and  $x$  does not cause  $y$ .

**Sample Items: MS Questar Practice Test**  
#N/A

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

A-REI.1

Drill Questions

*Justify each step in solving the following equations:*

1.  $3x - 6 = -33$  See students' work.
2.  $\frac{1}{4}x + 3 = -13$  See students' work.
3.  $-x + 4 = 3(x + 4)$  See students' work.
4.  $\frac{1}{8}(16x + 8) = -2x - 7$  See students' work.
5.  $\frac{1}{2}x - 1 = -2x - 3$  See students' work.

Sample Items: MS Questar Practice Test

#24

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-REI.3

**Drill Questions**

Solve each equation/inequality for the noted variable.

1.  $12y - 3y - 6 = 9$      $y = \frac{5}{3}$

2.  $\frac{1}{4}x + 3 = -13$      $x = -64$

3.  $-x + 16 < 3x$      $x > 4$

4.  $2 > \frac{x+10}{4}$      $x < -2$

5.  $\frac{a}{6} - 1 \geq 4$      $a \geq 30$

**Sample Items: MS Questar Practice Test**

**#45**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-REI.5

Drill Questions

Identify the point of intersection (POI) for each set of equations:

1.  $4x - 2y = 20$  and  $-8x - 3y = 16$  (1, -8)

2.  $4x - 9y = -11$  and  $3x - y = 9$  (4, 3)

3.  $7x + 7y = 0$  and  $-9x - 6y = 12$  (-4, 4)

4.  $-2x + 4y = -6$  and  $-6x - 2y = -4$  (1, -1)

5.  $2x - 3y = -6$  and  $-5x - 9y = 15$  (-3, 0)

Sample Items: MS Questar Practice Test

#13 and #41

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

A-REI.11

### Drill Questions

**Determine the intersection between each graph.**

1. When solving a system, what is the objective in each situation? Explain.
2.  $y = 2x - 8$  and  $y = 4x + 16$  (**-12, -32**)
3.  $f(x) = 2x^2 + 5$  and  $g(x) = x^2 - 6x + 5$  (**0, 5**)
4.  $y = 17x + 1$  and  $y = -24x + 68$  (**1.6, 29**)
5. Imagine you're interviewing for your dream job, and you don't want to screw it up. Dave, the interviewer, asks you to find the intersection of the equations  $y = -x + 8$  and  $y = -2x + 16$ . What do you tell him? (**8, 0**)

**Sample Items: MS Questar Practice Test**

**#32**



## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-REI.12

### Drill Questions

1. Do the graphs of  $y > x^2 - 2$  and  $y < -x^2 + 2$  overlap? **Yes, they overlap.**
2. When graphing an inequality that says "less than," we must shade in which portion of the graph? **Below**
3. A system of inequalities can be solved by graphing the inequalities. But where are the solutions? **In the overlapping shaded region.**
4. A health inspector has been plotting data concerning some particularly nasty well water. He has three inequalities, one for each local town. The overlapping area on his graph shows where the worst well water is. If the three inequalities are  $y > x + 7$ ,  $y > -x + 6$ , and  $y < 7$ , what are the x-values for the locations where the well water is worst? **Between -1 and 0**
5. The principal has found out that students who listen to their math teacher have GPAs modeled by the inequality  $y < x + 9$ , while the GPAs of students who don't are given by  $y > x + 9$ . He wants you to create a little poster, since it's much better to visually see the data, in a graphical form. Draw you graph below and tell him at which point (x) the graphs overlap? **They do not overlap.**

**Sample Items: MS Questar Practice Test**

**#13 and #41**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-REI.6

### **Drill Questions**

1. As the CEO of a company, you need to figure out how quickly manufacturing costs are adding up. Your assistant tells you that the relationship of cost ( $y$ ) to the number of products sold ( $x$ ) is  $y = 3x + 13$ . The revenue, on the other hand, is  $y = 5x - 39$ . How many units must you produce in order to start making money (meaning revenues are greater than costs)? **26**
2. One salsa factory produces  $y$  gallons of salsa for every hour the machine is running, given by  $x$ , at a rate of  $y = -30x + 900$ . A second type of salsa at the same plant makes  $y$  gallons for every  $x$  hour at a rate of  $y = 15x + 90$ . When will the amount of salsa manufactured be the same? **After 18h**
3. The Delicious Donut Shop knows that it can sell  $y = 32x$  doughnut in  $x$  hours. Their competitors, Donutello's, can sell  $y = 32x + 3$  doughnuts after  $x$  hours. After how many hours will the Delicious Donut Shop catch up? **Never. The lines are parallel.**
4. A racer only puts in so much fuel into his tank since the more he puts in, the higher the energy expenditure needed to drive the car. He will have  $y = -40x + 1200$  gallons of fuel left in his tank after  $x$  seconds after stepping onto the gas. His opponent will have  $y = -2x + 600$  gallons of fuel left. After how many seconds of full throttle racing will they have the same amount of fuel left in the tank (rounded to the nearest second)? **16**
5. What is the mathematical consequence of a system with the same slope and different  $y$ -intercepts

**Sample Items: MS Questar Practice Test**

#51

**Bailey's "Learn Algebra in a Snap" Tool**  
**(B.L.A.S.T)**

**A-APR.1**

**Drill Questions**

1.  $(3r^4 - 9r^3 - 8) + (4r^4 + 8r^3 - 8)$      $7r^4 - r^3 - 16$
2.  $(x^2 - 3)(x^3 - 4x + 6)$      $x^5 - 7x^3 + 6x^2 + 12x - 18$
3.  $(2x - 5)(x + 5)$      $2x^2 + 5x - 25$
4.  $(-8r^2 - 9r + 7) - (-5r + 1)$      $-8r^2 - 14r + 6$
5.  $(2t^2 - t - 1) - (2t - 4)$      $2t^2 + t + 3$

**Sample Items: MS Questar Practice Test**

**#1, #16, #35 and #42**

# Bailey's "Learn Algebra in a Snap" Tool

## (B.L.A.S.T)

A-APR.3

**Drill Questions**

**Determine the zeros for each polynomial.**

1.  $x^2 - 7x + 12 = 0$  ( $x = 3, x = 4$ )

2.  $x^3 - 2x^2 - 8x$  ( $x = 0, x = 4, x = -2$ )

3.  $x^4 - x^2$  ( $x = 0, x = -1, x = 1$ )

4.  $x^2 - 16$  ( $x = -4, x = 4$ )

5.  $(3y - 4)(y + 4)$  ( $y = \frac{4}{3}, y = -4$ )

**Sample Items: MS Questar Practice Test  
#8, #25, #31 and #57**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

F-IF.8

### Drill Questions

1. In the function  $f(x) = (x - 2)^2 + 4$ , the minimum value occurs when  $x$  is: **2**
2. If Lylah completes the square for  $f(x) = x^2 - 12x + 7$  in order to find the minimum, she must write  $f(x)$  in the general form  $f(x) = (x - a)^2 + b$ . What is the value of  $a$  for  $f(x)$ ? **6**
3. The function  $f(x) = 3x^2 + 12x + 11$  can be written in vertex form as:  **$3(x + 2)^2 - 1$**
4. Write the vertex form of an equation that is equivalent to  $y - 34 = x(x - 12)$ :  **$y = (x - 6)^2 - 2$**
5. Write an equation and ordered pair that represents the correct vertex form and vertex for  $f(x) = x^2 - 12x + 7$ :  **$y = (x - 6)^2 - 29, (6, -29)$**

Sample Items: MS Questar Practice Test

#30

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-REI.4

### Drill Questions

Solve each quadratic function using an appropriate method.

1.  $(x - 5)(2x + 1) = 0$      $(x = 5, x = \frac{-1}{2})$

2.  $x^2 - 8x + 7 = 0$      $(x = 1, x = 7)$

3.  $p^2 + 14p - 32 = 0$      $(p = 2, p = -16)$

4.  $v^2 + 6v - 59 = 0$      $(x = -3 \pm 2\sqrt{17})$

5.  $x^2 + 6x + 8 = 0$      $(x = -2, x = -4)$

Sample Items: MS Questar Practice Test  
#9 and #52

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

A-CED.2

### **Drill Questions**

1. The ratio of nut chocolates to cordials in an assortment box is 2:1. Describes the contents of an assortment box: **Ratio of nut chocolates to cordials = 2:1**
2. The ratio of nut chocolates to cordials is an assortment box is 2:1. If there are 5 cordials in an assortment box, how many nut chocolates are there? **10**
3. The Fuzzlegump School for Gifted and Not-So-Gifted Children requires that three chaperones go on any field trip. More chaperones are required if there are more than 30 students on the trip. For every 12 additional students, another chaperone is required. Which of these inequalities describes the number of chaperones required? **Chaperones required  $\geq$  three chaperones for 30 students and another chaperone for every 12 additional students**
4. Describe the graph of  $x = 2$ . How is it different from  $y = 2$ . **:See student's work.**
5. Describe the approach to graphing  $y = 2x + 3$ : **See student's work.**

**Sample Items: MS Questar Practice Test**

**#48**

## Bailey's "Learn Algebra in a Snap" Tool (B.L.A.S.T)

### A-CED.3

#### Drill Questions

1. Small boxes of chocolates contain 12 pieces. Large boxes of chocolates contain 45 pieces. One chaperone buys 8 boxes of chocolate containing a combined total of 195 pieces. Write an equation.  $s + g = 8$ ;  $12s + 45g = 195$
2. Small boxes of chocolates contain 12 pieces. Large boxes of chocolates contain 45 pieces. One chaperone buys 8 boxes of chocolate containing a combined total of 195 pieces. How many small boxes and how many large boxes of chocolate did the chaperone purchase? 5 small; 3 large.
3. On the day of the field trip, each teacher must call the parents of any student who has not returned a permission slip. All of Mr. Gomez's students returned their permission slips, so he did not have to make any calls. Mrs. Hooper and Mr. Anderson had to call a total of eight parents. Mrs. Hooper needed to call two more students than Mr. Anderson. Write a set of equations.  $H + A = 8$ ;  $H = A + 2$
4. How many phone calls did Mrs. Hooper make to parents? 5.
5. What does the solution for a system of equations tell you. *See student's work.*

#### Sample Items: MS Questar Practice Test

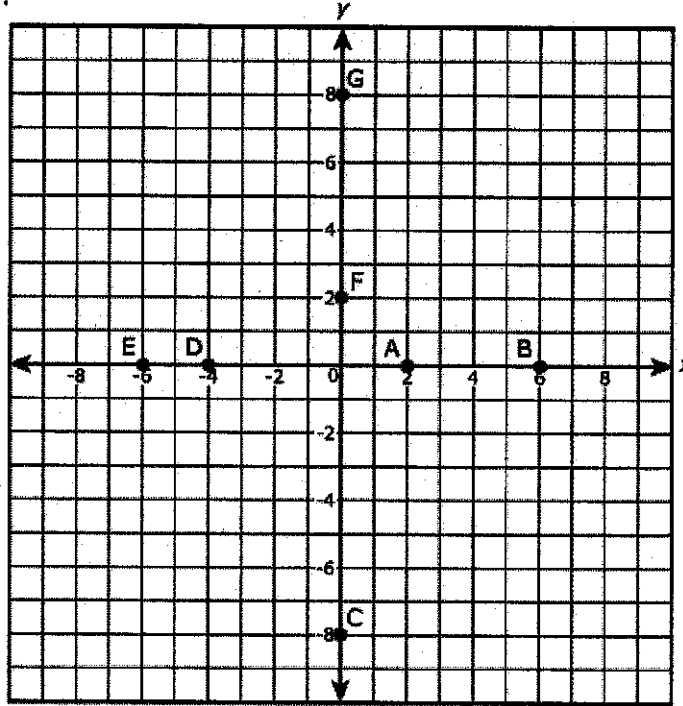
#19



1. Factor the expression  $3x(x + 2) + 2(x + 2) - 3(x + 2)$ .

$$(\quad x + \quad)(\quad x + \quad)$$

2. Which of the plotted points on the graph represent zeros of the function  $f(x) = x^2 + 2x - 8$ ? Select all that apply.



A. (2, 0)

B. (0, -8)

C. (6, 0)

D. (-4, 0)

E. (0, 8)

3. Rewrite the expression  $(3x^2 + 2y^2 - 3x) + (2x^2 + y^2 - 2x) - (x^2 + 4y^2 + x)$  to find the coefficients of each term. Write the coefficients in the appropriate boxes.

$$\square x^2 + \square y^2 + \square x$$

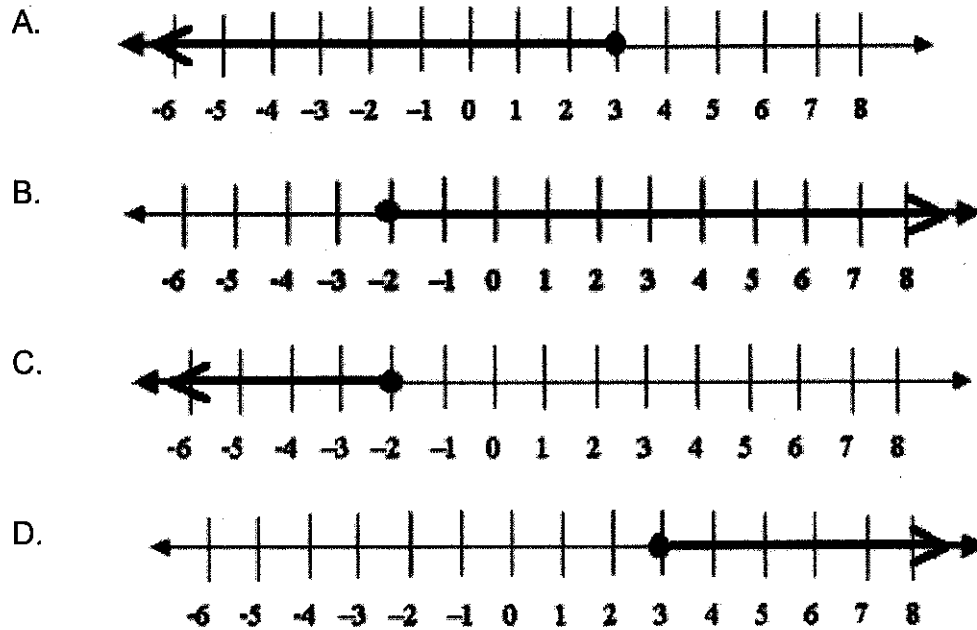
4. Which expression is equivalent to  $(3x^5 + 8x^3) - (7x^2 - 6x^3)$ ?
- A.  $-4x^3 + 14$
  - B.  $-4x^5 + 14x^3$
  - C.  $3x^5 + 14x^3 - 7x^2$
  - D.  $3x^5 + 2x^3 - 7x^2$
5. The function  $f(x) = -0.25x + 5$  models the height of a candle  $x$  seconds after it is lit. What is the meaning of the  $y$ -intercept of the function?
- A. the initial height of the candle
  - B. the final height of the candle
  - C. the rate at which the candle is burning
  - D. the amount of time it will take the candle to burn
6. The expression  $4(5 - 3y) + 3(y + 2)$  is simplified in the following steps.
- |         |  |
|---------|--|
| Step 1: | $4(5 - 3y) + 3(y + 2) = 20 - 12y + 3y + 6$ |
| Step 2: | $= 20 + -9y + 6$                           |
| Step 3: | $= 20 + 6 + -9y$                           |
| Step 4: | $= 26 + -9y$                               |

Which property was used to go from Step 2 to Step 3?

- A. commutative property
- B. associative property
- C. distributive property
- D. additive identity

7. Which graph represents all of the solutions to the inequality shown below?

$$-3x + 2 \leq 8$$



8. What is the solution of the following system of equations?

$$2x + 3y = 12$$

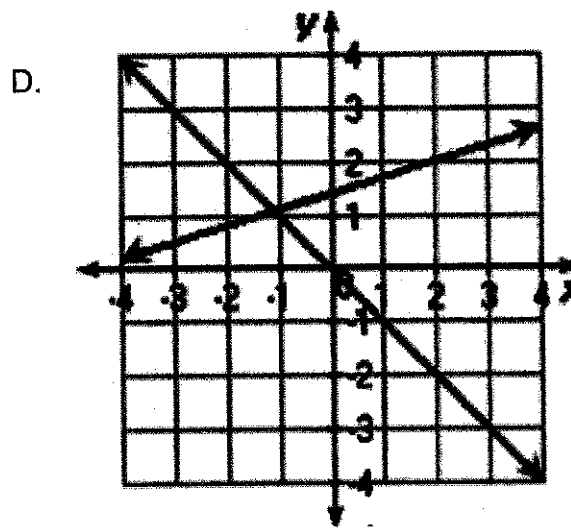
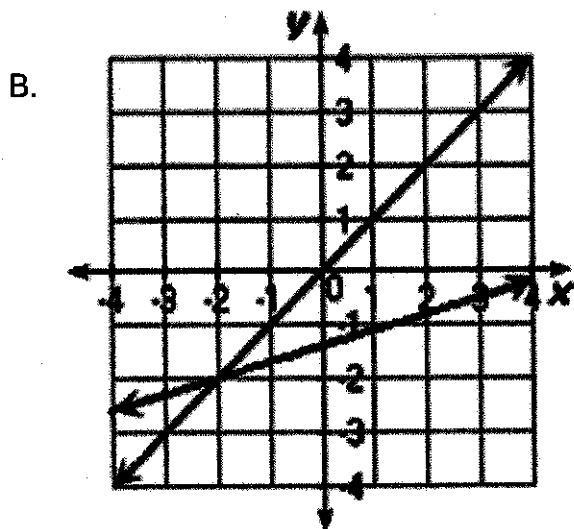
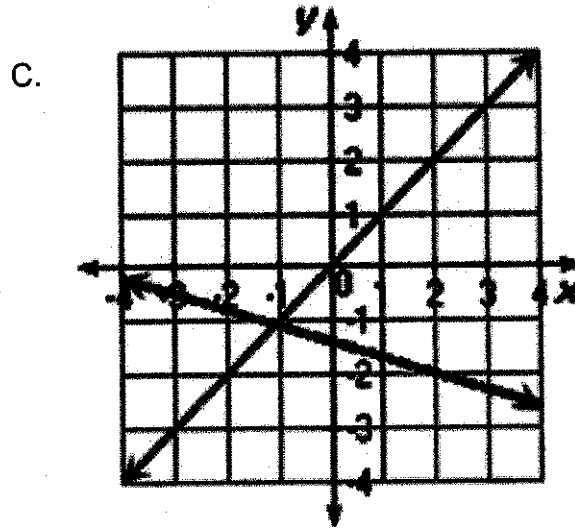
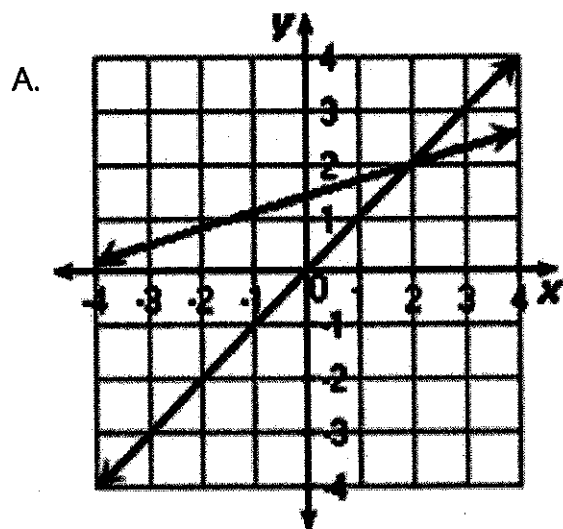
$$x = \frac{1}{2}y - 6$$

- A.  $x = -6$  and  $y = 0$
- B.  $x = -4.5$  and  $y = 3$
- C.  $x = -3$  and  $y = 6$
- D.  $x = 24$  and  $y = 6$

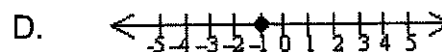
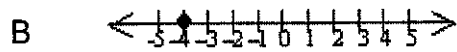
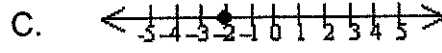
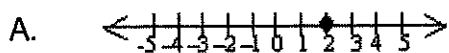
9. Which of the following graphs show the solution of the system of equations?

$$y = x$$

$$x + 3y = -4$$

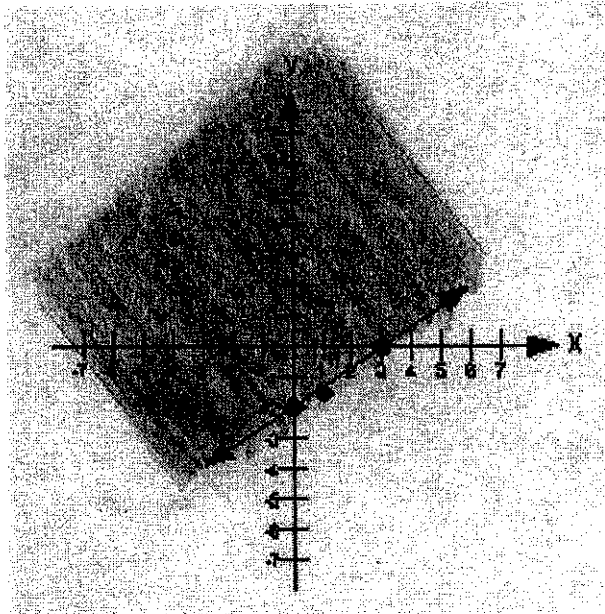


10. Which graph shows the solution of  $3x - 5 = -17$ ?



11. John factored out the greatest common factor (GCF) of the polynomial  $-6x^3 - 4x^2 - 2x$ . What is the GCF of this polynomial?

12. Which linear inequality is graphed below?



- A.  $2x - 3y \leq 6$
- B.  $3x - 2y \leq 6$
- C.  $3x - 2y \geq 6$
- D.  $2x - 3y \geq 6$

13. Determine whether the linear equations yield one solution, infinitely many solutions, or no solution and write in the box.

a.  $5x + 5 = 3(5x - 4) - 10x$

b.  $3(2x - 1) - 7 = 6x - 10$

c.  $2x + 2 + 3x = 3(x - 2)$

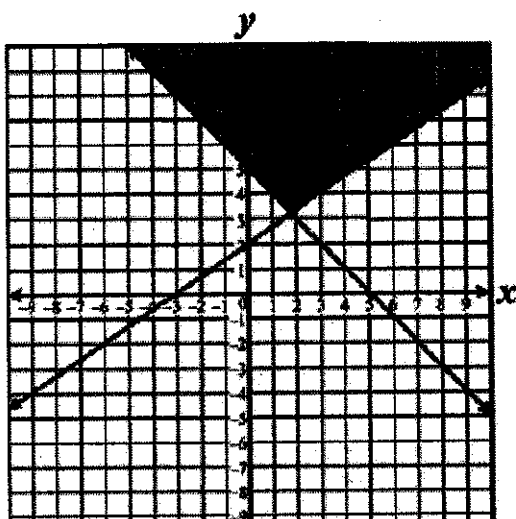
d.  $6(x + 5) = 10 - (x - 20)$

14. Which graph best represents the solution to the system of linear inequalities below?

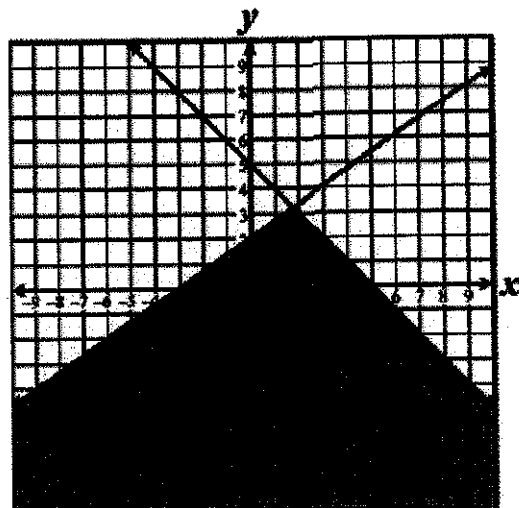
$$x + y \leq 5$$

$$-2x + 3y \geq 6$$

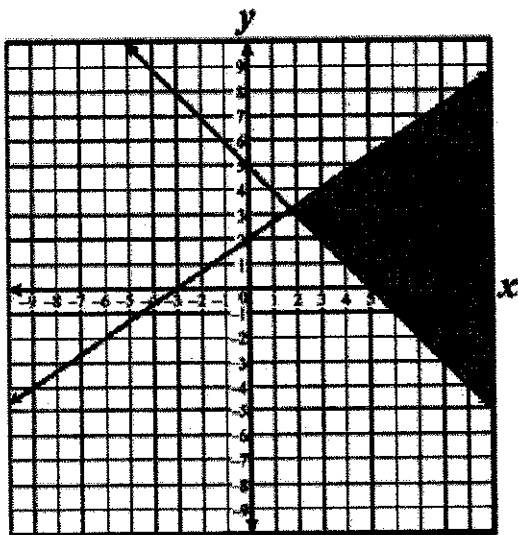
A.



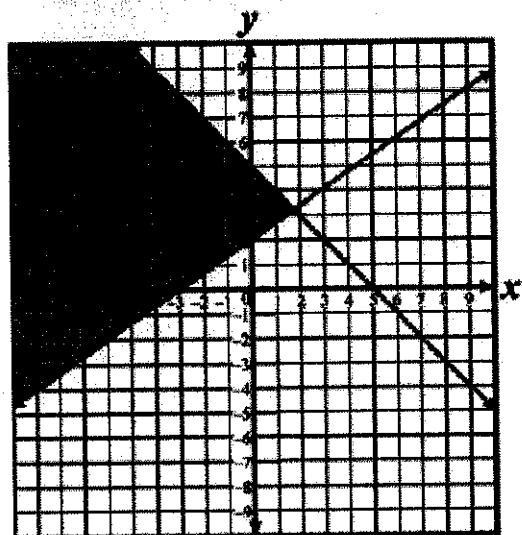
C.



B.



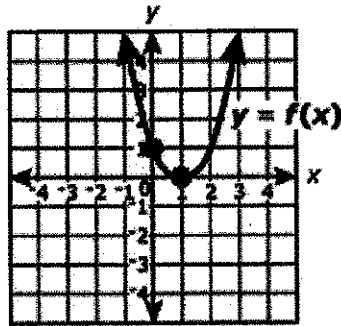
D.



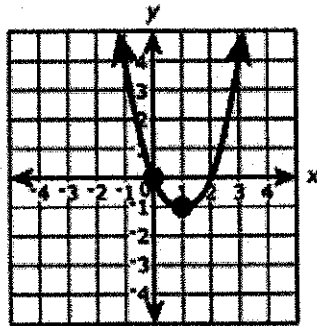
15. The graph of  $y = 4x - 11$  is translated up 8 units. Which equation represents the translated graph?

- A.  $y = 4x - 19$
- B.  $y = 12x - 3$
- C.  $y = 12x - 11$
- D.  $y = 4x - 3$

16. Consider the function,  $f(x)$ , shown on the coordinate plane.



Below,  $y = f(x + p) + n$  is a transformation of  $f(x)$ . Fill in the missing values for  $p$  and  $n$  that describe the transformation of  $f(x)$  to  $y$ .

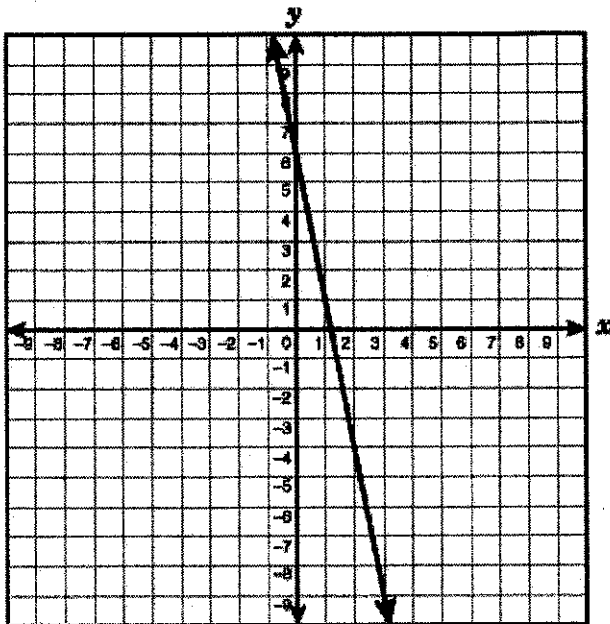


$$y = f(x + \boxed{\phantom{00}}) + \boxed{\phantom{00}}$$

17. Select the correct factorization of the quadratic function  $6x^2 - 5x - 6$ .

- A.  $(6x + 1)(x - 6)$
- B.  $(3x - 2)(2x + 3)$
- C.  $(3x + 2)(2x - 3)$
- D.  $(6x - 3)(x + 2)$

18. The graph of a linear function is shown on the coordinate grid below.

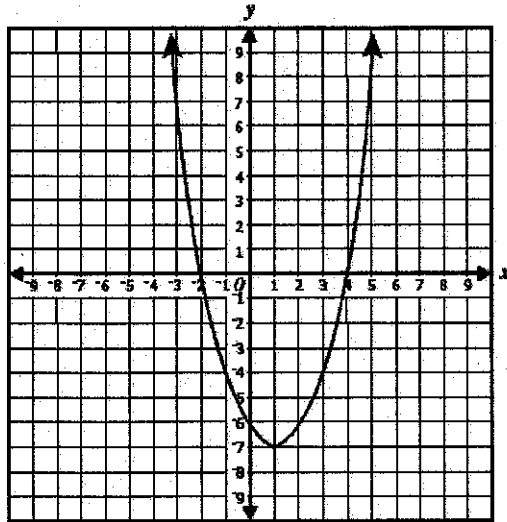


If the  $y$ -intercept is changed to  $(0, 5)$  and the slope becomes  $-5$ , which statement best describes the relationship between the two lines when they are graphed on the same coordinate grid?

- A. The  $y$ -intercepts are 1 unit apart, and the lines are parallel.
- B. The  $y$ -intercepts are 1 unit apart, and the lines intersect at  $(1, 1)$ .
- C. The  $y$ -intercepts are 1 unit apart, and the lines are perpendicular.
- D. The  $y$ -intercepts are 1 unit apart, and the lines intersect at  $(1, 0)$ .



19. The function  $f(x)$  is graphed on the coordinate plane.



What are the zeros of  $f(x + 3)$ ? Choose two of the answer choices.

- A. 4
- B. -6
- C. -5
- D. 1
- E. -2

20. Emily solved the equation  $2(x + 9) = 4(x + 7) + 2$ . Her steps are shown.

Which step identifies an error?

**Step 1:**  $2(x + 9) = 4(x + 7) + 2$

**Step 2:**  $2x + 18 = 4x + 28 + 2$

**Step 3:**  $2x + 18 = 4x + 26$

**Step 4:**  $-8 = 2x$

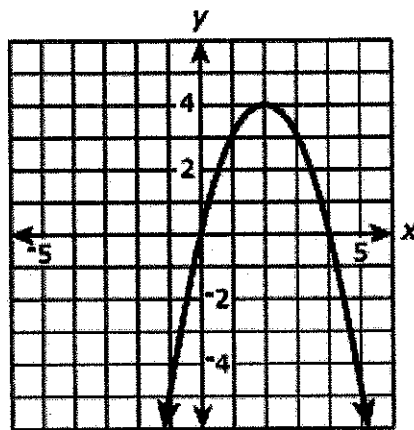
**Step 5:**  $-4 = x$

- A. Step 2
- B. Step 3
- C. Step 4
- D. Step 5

21. Emily solved the equation  $2(x + 9) = 4(x + 7) + 2$ . What is her solution?

- A.  $x = 4.5$
- B.  $x = -6$
- C.  $x = -2$
- D.  $x = 2$

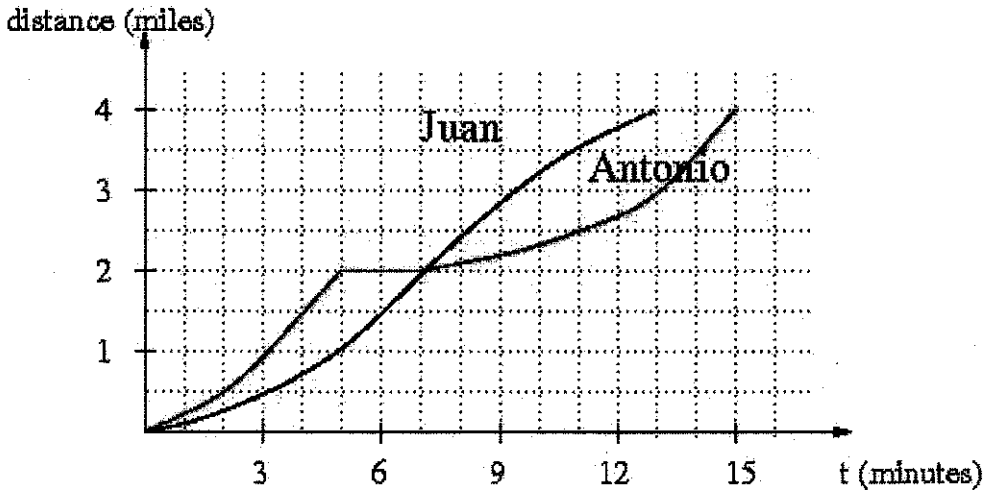
22. The function  $f(x) = 4x - x^2$  is graphed in the  $xy$ -coordinate plane as shown.



Based on the graph of the function, which statements are true? Select all that apply.

- A.  $f$  is increasing on the interval  $x < 0$
- B.  $f$  is decreasing on the interval  $x < 0$
- C.  $f$  is increasing on the interval  $0 < x < 2$
- D.  $f$  is decreasing on the interval  $0 < x < 2$
- E.  $f$  is increasing on the interval  $2 < x < 4$
- F.  $f$  is decreasing on the interval  $2 < x < 4$
- G.  $f$  is increasing on the interval  $x > 4$
- H.  $f$  is decreasing on the interval  $x > 4$

23. Antonio and Juan are in a 4-mile bike race. The graph below shows the distance of each racer (in miles) as a function of time (in minutes).



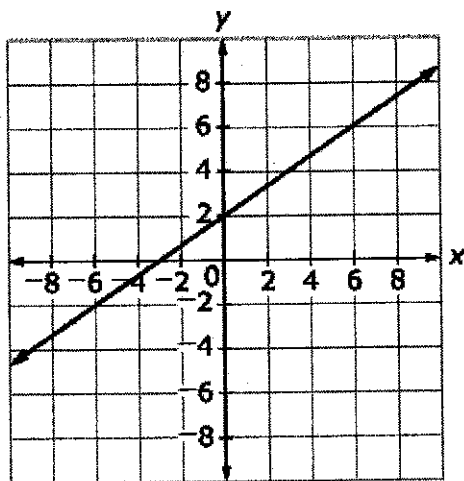
At what time are the racers at the same point in the race and who won the race?

\_\_\_\_\_ minutes \_\_\_\_\_ won the race

24. The equation  $y = 1.15x + 8.53$  models the approximate height of a plant in centimeters after  $x$  weeks. Which statements are true about the linear model. Select all that apply.

- A. The plant grows about 8.53 centimeters each week.
- B. The plant grows about 1.15 centimeters each week.
- C. The initial height of the plant is 1.15 centimeters.
- D. The initial height of the plant is 8.53 centimeters.
- E. The plant grows a total of 1.15 centimeters.

25. The function  $f(x)$  is represented in the graph below.

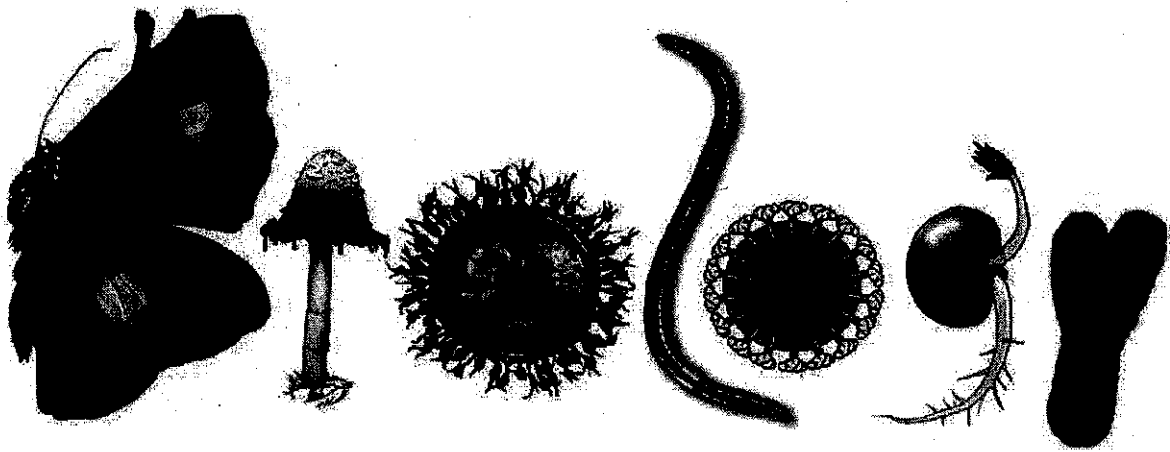


If  $g(x) = x + 2$ , which of the following comparisons is true?

- A. The rate of change of  $f(x)$  is greater than the rate of change of  $g(x)$ .  
The y intercept of  $f(x)$  is the same as the y intercept of  $g(x)$ .
- B. The rate of change of  $f(x)$  is less than the rate of change of  $g(x)$ .  
The y intercept of  $f(x)$  is the same as the y intercept of  $g(x)$ .
- C. The rate of change of  $f(x)$  is greater than the rate of change of  $g(x)$ .  
The y intercept of  $f(x)$  is the less than the y intercept of  $g(x)$ .
- D. The rate of change of  $f(x)$  is less than the rate of change of  $g(x)$ .  
The y intercept of  $f(x)$  is the less than the y intercept of  $g(x)$ .



# Biology



To Proficiency and  
Beyond!

## BIO 1A. Living Organisms & Viruses

*Living things share certain characteristics in common. Being able to reproduce and use resources for energy are two of those characteristics. In the past, scientists have considered viruses to be nonliving. New research, however, is challenging that idea.*

### Characteristics of Life

There are several characteristics that all types of organisms on Earth have in common. These characteristics determine whether something is considered a living organism or is nonliving.

**1. Organisms are made of cells.**

Cells are the basic unit of life. All organisms are composed of one or more cells.

**2. Organisms grow and develop.**

Growth and development are processes that increase an organism's overall size and lead to an increase in the complexity of the structure of an organism. Development continues from infancy to childhood, and on through adulthood.

**3. Organisms obtain and use resources for energy.**

Organisms need energy in order to perform basic life processes, such as growth, development, and repair. Organisms that make their own food, such as through photosynthesis, are autotrophs. Organisms that obtain food from the environment are heterotrophs.

**4. Organisms are able to respond to stimuli in their environment.**

All organisms can recognize changes in their internal and external environments and respond to them. For example, plants detect light and bend toward it.

**5. Organisms maintain homeostasis.**

By regulating their internal environment to maintain a constant state, organisms maintain homeostasis. For example, when a person's internal temperature is too high, the body begins to sweat in order to reduce the temperature through evaporation.

**6. Organisms are capable of passing on genetic material through reproduction.**

All organisms are able to reproduce in order to ensure that their species lives on.

**7. Organisms adapt.**

Adaptation is the ability to change over time in response to the environment. Through adaptation, species evolve to better fit their environment.

### Viruses vs. Cells

A virus is an infectious agent that is only able to replicate inside the living cells of another organism. A virus consists of genetic material (either DNA or RNA) surrounded by a protein coat. Viruses are the most

abundant biological entity on Earth—viruses are diverse, ranging in size and shape, and are specialized to infect all different forms of life, from archaea to animals.

While viruses and cells have some features in common, there are several major differences that distinguish viruses from cells.

#### **Characteristics of Cells**

- Cells are alive, and they are the basic units of all life.
- Cells can reproduce on their own.
- Cells possess organelles and ribosomes.
- Cells have their own energy metabolism.
- Cells are surrounded by a cell membrane.
- Cells are much larger than viruses.

#### **Characteristics of Viruses**

- Viruses are generally considered to not be alive.
- Viruses must use a host cell to reproduce.
- Viruses do not possess organelles or ribosomes.
- Viruses do not have their own energy metabolism.
- Viruses are surrounded by a protein coat.
- Viruses are extraordinarily small.

#### **Characteristics of Both Cells & Viruses**

- Both cells and viruses contain some form of nucleic acid (DNA or RNA).
- Both cells and viruses can infect host cells.

#### **Are Viruses Living Organisms?**

Most scientists have historically considered viruses to be nonliving. However, some scientists are reconsidering this classification. One reason why viruses are generally considered not living is that they require other organisms to reproduce. However, there are many organisms, like some types of bacteria and fungi, that are obligate parasites. This means they cannot complete their life cycle without a host. Another traditional justification for classifying viruses as nonliving is that they do not have the proteins needed to replicate themselves. However, giant viruses discovered in the 2000s do have genes that code for most of these proteins, though the viruses still use host cells to replicate. Evidence also suggests that viruses have many unique genes, rather than simply copies of genetic material from a variety of cells. These points have scientists rethinking if viruses should be classified as living organisms.

# BIO1A

## Question 1 .

An organ system is made up of

- A. organisms that have similar behaviors and appearances.
- B. all of the tissues found in an individual organism.
- C. identical cells that perform the same function.
- D. organs that work together to perform a certain function.

## Question 2 .

In 2018, researchers discovered a new type of virus called the Tupanvirus. They made the following observations about this virus.

uses amoebas as host cells	contains many of the genes needed to build its own proteins and copy its DNA	if taken into a non-host cell, causes the cell to destroy itself
----------------------------	--	--

*Information courtesy of Abrahao et al., 2018. Nature Communications. Licensed under CC BY 4.0.*

How could this information support the argument that viruses could be living organisms?

- A. Observation 2 suggests that viruses may have once had the ability to reproduce outside of a host.
- B. Observation 3 shows that viruses must be able to take in and use energy.
- C. Observation 2 suggests that viruses are incapable of evolving over time.
- D. Observation 3 shows that viruses are unable to respond to and interact with their environments.

## Question 3 .

All living organisms use energy. They also grow and reproduce. What is another characteristic of all living organisms?

- A. All living organisms can produce glucose through photosynthesis.
- B. All living organisms are composed of one or more cells.
- C. All living organisms consist of many cells with specialized organelles.
- D. All living organisms must consume food in order to acquire nutrition.



**Question 4 .**

Theodor Schwann is considered one of the founders of cell theory. What is one way that Theodor Schwann contributed to the development of cell theory?

- A. He was the first to propose that cells only arise from pre-existing cells.
- B. He determined that all animals are made up of cells, which helped lead to the conclusion that the cell is the basic unit of life.
- C. He determined that all plants are made up of cells, which helped lead to the conclusion that all living organisms are made up of cells.
- D. He was the first to observe and describe a cell using a microscope.

**Question 5 .**

A virus can be considered nonliving, even though it is capable of invading and destroying living organisms. Which of the following is a reason that a virus can be considered nonliving?

- A. Viruses can only reproduce through fission.
- B. Viruses only metabolize inorganic minerals.
- C. Viruses are not able to grow.
- D. Viruses are too small to be considered a viable form of life.

**Question 6 .**

Blood consists of different types of cells—red blood cells, platelets, and white blood cells.

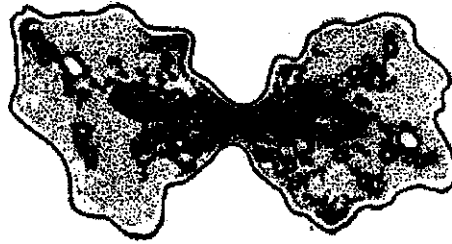
Red blood cells transport oxygen throughout the body, platelets aid in blood clotting, and white blood cells help destroy and remove old cells and foreign substances.

This is an example of how

- A. different cells are unable to be grouped together within the same organ or organ system.
- B. only similar cells are grouped together so they can perform a singular function.
- C. the cells of the body are of different kinds and are grouped in ways that enhance how they function together.
- D. every part of the body contains different cells with unique and unrelated functions.

**Question 7 .**

The picture below shows one cell dividing into two cells.



Which of the following statements is best supported by the picture shown above?

- A. All cells come from pre-existing cells.
- B. Cell division only occurs in animals.
- C. All organisms are multi-cellular.
- D. Both living and non-living organisms contain cells.

**Question 8 .**

In 1987, scientists isolated an unknown biological particle from the sand of a river. The particle had the following characteristics:

- is single-celled
- cannot function in the presence of oxygen
- has circular DNA
- uses inorganic substances like metals for energy
- reproduces without a host cell

Based on the given information, is it likely that the particle is classified as living or nonliving?

- A. living, because the particle uses energy and reproduces on its own
- B. nonliving, because the particle cannot transmit genetic material to offspring
- C. living, because the particle has DNA
- D. nonliving, because the particle does not need oxygen or food

**Question 9 .**

When a group of cells work together, such as in bones, muscles, or nerves, they are known as \_\_\_\_\_.

- A. an organism
- B. an organ
- C. a tissue
- D. an organelle

Question 10 .

Directions: Drag the tiles to the correct boxes to complete the pairs.

Diego is comparing the hierarchical organization of his school system to the hierarchical organization of systems within organisms. Match each part of a school system to the part of an organism that shares a similar level of organization.

organ	tissue	organ system	cell
↔			
school system	↔		
school	↔		
class	↔		
student	↔		

Question 11 .

As Darla is walking along the beach, she encounters something she's never seen before. When she touches the object, it appears to move away from her. This observation makes Darla wonder if the object is alive.

Which of the following positive test results could provide Darla with another piece of evidence that the object is alive?

- A. presence of ions
- B. presence of water
- C. presence of oxygen
- D. presence of DNA

Question 12 .

Organisms are made up of structures that allow them to grow, survive, and reproduce. From simplest to most complex, how are the structures organized within organisms?

- A. organs → organ systems → cells → cell parts → tissues → organisms
- B. tissues → cell parts → cells → organs → organ systems → organisms
- C. cells → cell parts → organs → tissues → organ systems → organisms
- D. cell parts → cells → tissues → organs → organ systems → organisms

**Question 13 .**

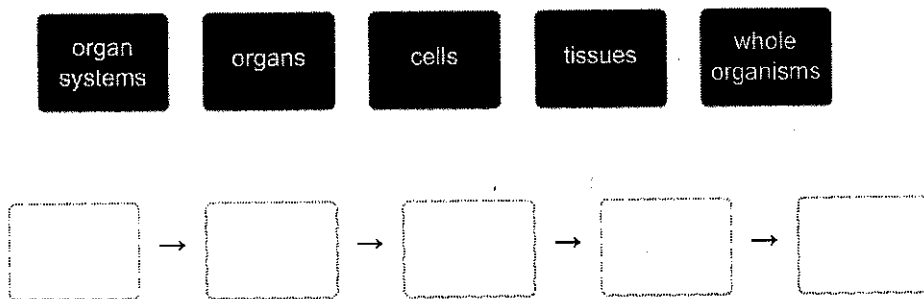
There are many criteria that are used to define living things. Living things reproduce, grow, and develop. They respond to stimuli, use materials and energy, and evolve and adapt over time to their environment. What is another criteria used to define living things?

- A. All living things are made of cells.
- B. All living things are able to move.
- C. All living things are complex.
- D. All living things are intelligent.

**Question 14 .**

**Directions: Drag each tile to the correct box.**

The levels of organizations in multicellular organisms are shown below, but they are not in the correct order. Arrange the levels of organization in order from simplest to most complex.



**Question 15 .**

\_\_\_\_\_ are the basic building blocks of all living organisms.

- A. Tissues
- B. Cells
- C. Organs
- D. Organ systems

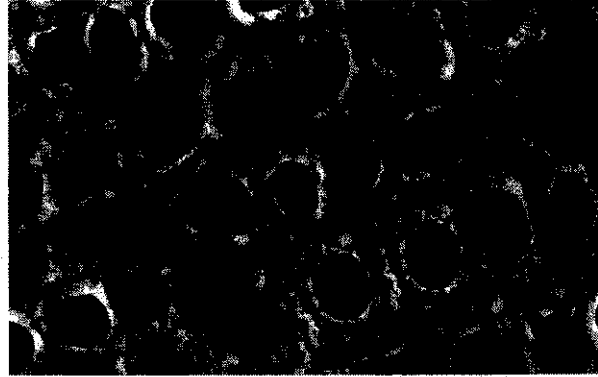
**Question 16 .**

What contribution did Robert Hooke make to the development of cell theory?

- A. He suggested that all living organisms are made up of cells.
- B. He first observed and described cells in plant tissues.
- C. He determined that cells can arise spontaneously.
- D. He first proposed that cells can only arise from pre-existing cells.

**Question 17 .**

The image below shows an onion root viewed under a microscope.



Which of the three primary tenets of cell theory does this image best demonstrate?

- A. All cells contain DNA in their nuclei.
- B. Cells of different organisms have similar composition.
- C. Living organisms are composed of one or more cells.
- D. New cells only arise from pre-existing cells.

**Question 18 .**

Matthias Schleiden is considered one of the founders of cell theory. What is one way that Matthias Schleiden contributed to the development of cell theory?

- A. He determined that all animals are made up of cells, which helped lead to the conclusion that the cell is the basic unit of life.
- B. He observed a cell in the process of forming, which led to the conclusion that cells can exhibit spontaneous generation.
- C. He observed a cell in the process of dividing, which led to the conclusion that all cells arise from pre-existing cells.
- D. He determined that all plants are made up of cells, which helped lead to the conclusion that all living organisms are composed of cells.

**Question 19 .**

In the 1800s, the work of Rudolf Virchow and others led to third tenet of cell theory. What contribution to cell theory did Rudolf Virchow make?

- A. After seeing evidence of photosynthesis, he concluded that energy flow occurs within cells.
- B. After observing cells in animals, he concluded that the cell is most basic unit of life.
- C. After seeing evidence of cell division, he argued that all cells arise only from pre-existing cells.
- D. After observing cells in plants, he concluded that all life is made of one or more cells.

**Question 20 .**

**Directions: Select each correct answer. More than one answer may be correct.**

Which of the following is a major tenet of the cell theory?

- All organisms are composed of one or more cells.
- All cells that currently exist have originated from pre-existing cells.
- Cells are the most basic structural and functional unit of life.
- All cells possess DNA enclosed within a nucleus.

**Question 21 .**

Which of the following characteristics is shared by all living organisms?

- A.** an internal circulatory system
- B.** a method of locomotion
- C.** the need for oxygen
- D.** the ability to respond to stimuli

**Question 22 .**

The advancement of which type of microscope led to the development of the cell theory?

- A.** compound light microscope
- B.** dissecting microscope
- C.** transmission electron microscope
- D.** scanning electron microscope

**Question 23 .**

Arteries are tube-like organs of the circulatory system. They have three distinct layers. The middle layer contains smooth muscle tissue, which contracts and relaxes to push blood through the artery. It also contains elastic connective tissue that gives the artery flexibility and helps to regulate blood pressure.

Which statement describes how the tissues in this layer relate to the artery's function?

- A.** The two tissues are made up of the same types of cells, allowing each tissue to perform all the functions of the artery.
- B.** The two tissues contain different types of cells, allowing each tissue to perform different functions for the artery.
- C.** The two tissues contain identical cells, but the shapes of two tissues allow them to perform different functions.
- D.** The two tissues lack cells, but their position in the middle layer allows each tissue to perform their specific functions.

**Question 24 .**

The National Aeronautics and Space Administration (NASA) is involved in the study of astrobiology, which includes the search for life on other planets. The table below describes the biological definition of life and the NASA definition of life.

Biological Definition of Life	
<ul style="list-style-type: none"><li>• maintains a stable internal state</li><li>• made up of one or more cells</li><li>• can break down chemical compounds for energy</li><li>• grows and reproduces</li><li>• responds to stimuli</li><li>• adapts to changes</li></ul>	<ul style="list-style-type: none"><li>• is a chemical system that makes its own proteins</li><li>• can reproduce on its own</li><li>• has molecules that carry inherited information</li><li>• has random variations in chemical structures</li><li>• evolves through natural selection</li></ul>

If discovered, which would most likely be considered a living organism by the NASA definition but not the biological definition of life?

- A.** a virus that synthesizes its own proteins and reproduces outside of a host cell
- B.** a virus that needs to insert its DNA into a host cell in order to reproduce
- C.** a bacterium that can break down oil and other pollutants instead of sugars for energy
- D.** a bacterium that can only break down sugar molecules for energy

# Answers

1. D

2. A

3. B

4. B

5. C

6. C

7. A

8. A

9. C

10. --

11. D

12. D

13. A

14. --

15. B

16. B

17. C

18. D

19. C

20. --

21. D

22. A

23. B

24. A



# BIO 1B.1 Complex Organic Molecules

## Biological Molecules

Biological molecules are composed of small repeating subunits that bond together to form larger units. The subunits, or **building blocks**, are called *monomers*. *Polymers* are the complex molecules formed from the repeating subunits.

There are four basic classes of complex organic molecules, or *macromolecules*, that compose cells: **carbohydrates**, **proteins**, **lipids**, and **nucleic acids**. Each of the major classes of biological molecules is associated with different properties and functions within cells and whole organisms.

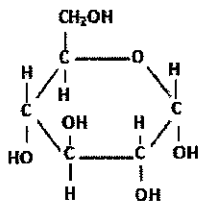
### Carbohydrates

Carbohydrates are organic macromolecules that are made up of carbon, hydrogen, and oxygen atoms. These atoms are combined in a ratio of:



The presence of multiple carbon-hydrogen bonds within carbohydrates makes them an excellent source of energy. The energy is released when these bonds are broken.

Carbohydrates may be simple or complex. The building blocks of carbohydrates are the simple sugars known as **monosaccharides**. Sugars such as glucose, fructose, and ribose are all examples of monosaccharides.



Glucose, a monosaccharide, is an important source of energy.

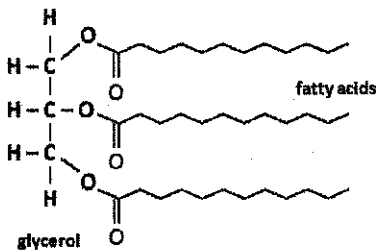
Monosaccharides can be combined to form more complex carbohydrates known as **polysaccharides**. Glycogen, starch, and cellulose are all examples of polysaccharides. These compounds are typically used for long term energy storage or as structural molecules. Cellulose, for example, is a major component found in the cell walls of plants.

Dietary fiber is a special class of carbohydrate that cannot be digested by the human body. Cellulose is one example of a carbohydrate that acts as fiber. Dietary fiber is an important part of a healthy diet because it is essential for proper digestion. Humans can get fiber by eating many different kinds of plants, such as whole grains, legumes, prunes, and potatoes.

## Lipids

Lipids are organic macromolecules that are insoluble in water. This is why lipids are often found in biological membranes and other waterproof coverings (e.g. plasma membrane, intracellular membranes of organelles). These lipids play a vital role in regulating which substances can or cannot enter the cell.

The most important lipids, however, are fats. Triglycerides are a type of fat that contain one **glycerol** molecule and three **fatty acids**.

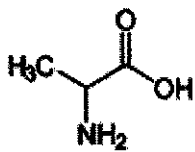


Fatty acids are long chains of CH<sub>2</sub> units joined together. The fatty acids in **saturated fats** do not contain any double bonds between the CH<sub>2</sub> units whereas the fatty acids in **unsaturated fats** contain some carbon-carbon double bonds. Saturated fats are found in butter, cheese, chocolate, beef, and coconut oil. Unsaturated fats are found in olives and olive oil, peanuts and peanut oil, fish, and mayonnaise.

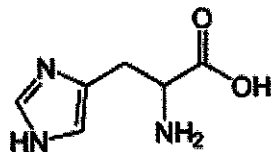
Fats are important because they are a major source of energy. Since they contain even more carbon-hydrogen bonds than carbohydrates, fatty tissue has the ability to store energy for extended periods of time

## Proteins

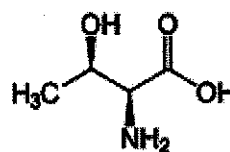
Proteins are organic macromolecules that are composed of **amino acid** monomers. There are 20 essential amino acids that are used by all living things to construct proteins. These amino acids are made up of the elements carbon, hydrogen, oxygen, and nitrogen. Some of the amino acids also contain sulfur. Three of the amino acids are shown below.



**Alanine**



**Histidine**



**Threonine**

Proteins differ from each other due to the number and arrangement of their component amino acids. Proteins also take on unique shapes as determined by their amino acid sequences.

Water is the most abundant molecule in the body, but proteins are the second most abundant type of molecule. Proteins assist with muscular contractions and serve many structural roles. For example, cartilage and tendons are made of a protein known as collagen, and a protein known as keratin is found in hair, nails, feathers, hooves, and some animal shells.

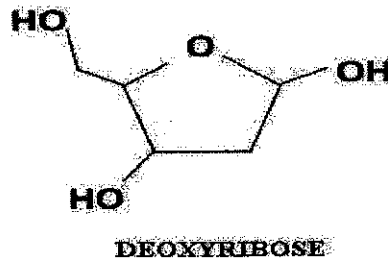
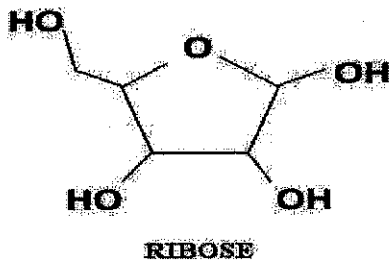
Proteins are also involved in cell signaling, cell transport, immune responses, and the cell cycle. **Hormones** are protein-containing substances that play a role in the regulation of cellular functions. Substances containing proteins that play a role in defense are **antibodies**.

Other proteins known as **enzymes** are involved in many biological processes such as the breakdown of food molecules, transport across the cell membrane, and cellular signaling and regulation. Most enzymes have a surface with one or more deep folds. The folds make pockets called *active sites*. The active sites match folds in the substrate's surface, like a key matches a lock. So, the enzyme only catalyzes specific reactions. Once an enzyme binds to a substrate, the amount of energy needed to start a chemical reaction with the substrate is reduced. In some cases, the activation energy is too high to overcome without an enzyme.

### **Nucleic Acids**

Nucleic acids are formed from **nucleotide** monomers. Nucleotides are chemical compounds that are primarily comprised of the elements carbon, hydrogen, oxygen, nitrogen, and phosphorus. They consist of a **five-carbon sugar**, a **nitrogenous base**, and one or more **phosphate groups**.

There are two main types of nucleic acids - **ribonucleic acids (RNA)** and **deoxyribonucleic acids (DNA)**. These nucleic acids are different because their five-carbon sugars are different. RNA contains **ribose**, and DNA contains **deoxyribose**.



DNA and RNA also have different functions. DNA stores genetic information and encodes the sequences of all the cell's proteins. RNA is involved in the direct production of the proteins.

Nucleic acids are also different because the sequence of nitrogenous bases that they contain are different. There are five nitrogenous bases found in nucleic acids. **Adenine (A)**, **cytosine (C)**, and **guanine (G)** are found in both DNA and RNA. **Thymine (T)** is only found in DNA, and **uracil (U)** is only found in RNA.

### **Summary of Macromolecules**

The table below compares the basic properties, monomers, and functions of the four biological macromolecules.

	<b>Carbohydrates</b>	<b>Lipids</b>	<b>Proteins</b>	<b>Nucleic Acids</b>
<b>Building Blocks (monomers)</b>	<ul style="list-style-type: none"> <li>• monosaccharides (glucose, fructose, ribose, etc.)</li> </ul>	<ul style="list-style-type: none"> <li>• glycerol</li> <li>• fatty acids</li> </ul>	<ul style="list-style-type: none"> <li>• amino acids (20 different amino acids)</li> </ul>	<ul style="list-style-type: none"> <li>• nucleotides (adenine, cytosine, guanine, thymine, uracil)</li> </ul>
<b>Function(s) in cells</b>	<ul style="list-style-type: none"> <li>• energy storage</li> <li>• structural support (plant cell walls)</li> </ul>	<ul style="list-style-type: none"> <li>• energy storage</li> <li>• insulation</li> <li>• protective covering</li> <li>• lubrication</li> </ul>	<ul style="list-style-type: none"> <li>• muscle contraction</li> <li>• oxygen transport</li> <li>• immune responses</li> <li>• chemical reactions</li> </ul>	<ul style="list-style-type: none"> <li>• information storage</li> </ul>
<b>Elements Present</b>	<ul style="list-style-type: none"> <li>• carbon</li> <li>• hydrogen</li> <li>• oxygen</li> </ul>	<ul style="list-style-type: none"> <li>• carbon</li> <li>• hydrogen</li> <li>• oxygen</li> </ul>	<ul style="list-style-type: none"> <li>• carbon</li> <li>• hydrogen</li> <li>• oxygen</li> <li>• nitrogen</li> <li>• sulfur (some)</li> </ul>	<ul style="list-style-type: none"> <li>• carbon</li> <li>• hydrogen</li> <li>• oxygen</li> <li>• nitrogen</li> <li>• phosphorus</li> </ul>
<b>Water Soluble</b>	<ul style="list-style-type: none"> <li>• yes</li> </ul>	<ul style="list-style-type: none"> <li>• no</li> </ul>	<ul style="list-style-type: none"> <li>• many</li> </ul>	<ul style="list-style-type: none"> <li>• yes</li> </ul>
<b>Examples</b>	<ul style="list-style-type: none"> <li>• sugars</li> <li>• starches (glycogen &amp; cellulose)</li> </ul>	<ul style="list-style-type: none"> <li>• fats</li> <li>• oils</li> <li>• waxes</li> </ul>	<ul style="list-style-type: none"> <li>• enzymes</li> <li>• hemoglobin</li> <li>• muscle fibers</li> </ul>	<ul style="list-style-type: none"> <li>• RNA</li> <li>• DNA</li> </ul>

## BIO1B.1 Macromolecules

### Question 1 .

Which of the following is a protein molecule that is found in red blood cells and transports oxygen throughout the body?

- A. glycogen
- B. cholesterol
- C. insulin
- D. hemoglobin

### Question 2 .

A large carbohydrate molecule is composed of several subunits, such as glucose.

An example of a large carbohydrate molecule is \_\_\_\_\_.

- A. starch
- B. cellulose
- C. glycogen
- D. all of these

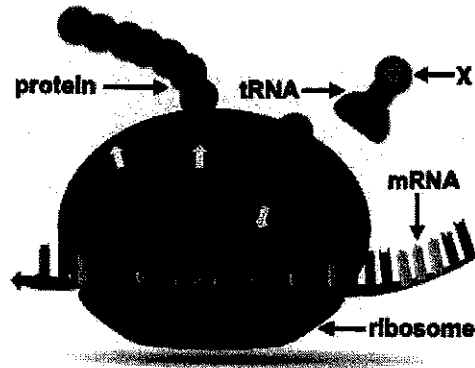
### Question 3 .

\_\_\_\_\_ are nonpolar macromolecules found in cell membranes; they prevent ions from freely entering cells.

- A. Proteins
- B. Lipids
- C. Carbohydrates
- D. Nucleic acids

**Question 4 .**

The process of translation is shown in the diagram below.



Which of the following structures is labeled as X in the diagram?

- A. nucleic acid
- B. DNA
- C. amino acid
- D. enzyme

**Question 5 .**

Protein molecules are composed of long chains of \_\_\_\_\_.

- A. RNA
- B. ribosomes
- C. DNA
- D. amino acids

**Question 6 .**

Sugars are a type of \_\_\_\_\_. They are produced by plants and release energy when they are broken down into smaller molecules.

- A. protein
- B. hydrocarbon
- C. lipid
- D. carbohydrate

**Question 7 .**

Carbohydrates are composed of which three elements?

- A.** oxygen, hydrogen, and nitrogen
- B.** carbon, nitrogen, and phosphorus
- C.** oxygen, sulfur, and phosphorus
- D.** carbon, hydrogen, and oxygen

**Question 8 .**

Lipids are organic macromolecules that serve a variety of purposes. What is the most important role of lipids?

- A.** to metabolize sugar
- B.** to build muscles
- C.** to oxygenate blood
- D.** to store energy

**Question 9 .**

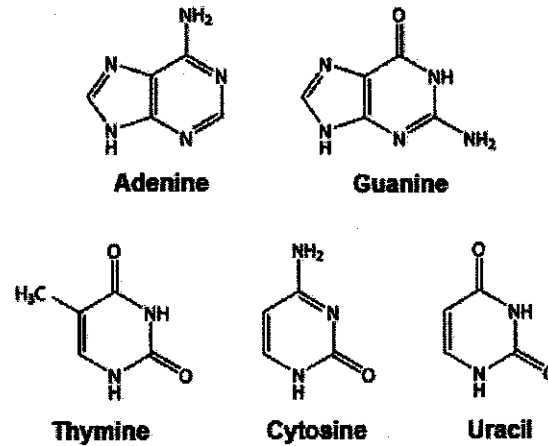
**Directions: Select ALL the correct answers.**

Which of the following is true about nucleic acids?

- Nucleic acids always consist of a five-carbon sugar, a nitrogenous base, and one or more phosphate groups.
- Nucleic acids are usually insoluble in water and are used for long term energy storage.
- Both DNA, which stores genetic information and encodes protein sequences, and RNA, which is involved in the direct production of proteins, are nucleic acids.
- Glucose, cellulose, and starch are examples of nucleic acids found in most cells.

**Question 10 .**

The image below shows the structure of five nitrogenous bases.



Which of the following statements is true regarding all five of these nitrogenous bases?

- A.** They all can be found within a molecule of RNA.
- B.** They all can be found within all living organisms.
- C.** They all contain the same molecular structure.
- D.** They all can be found within a molecule of DNA.

**Question 11 .**

Nucleic acids are one of the four major macromolecules.

The main function of nucleic acids is to

- A.** act as enzymes, cell signals, and structural support for the cell.
- B.** aid in development, the immune system, and blood clotting.
- C.** absorb energy from the Sun and transport it around the cell.
- D.** carry genetic material that helps to create structures inside the cell.

**Question 12 .**

Cellular processes are carried out by many different types of molecules, mostly proteins. The function of each protein molecule depends on its shape which, in turn, is determined by the protein's specific sequence of \_\_\_\_\_.

- A.** amino acids
- B.** monosaccharides
- C.** nucleotides
- D.** triglycerides



**Question 13 .**

In which of the following are lipids found?

- A.** some vitamins and steroids
- B.** saturated and unsaturated fats
- C.** biological membranes
- D.** all of these

**Question 14 .**

Which of the following would be most likely to cause a change in the sequence of amino acids of a protein product produced by a cell?

- A.** using an enzyme to catalyze the protein synthesis reaction
- B.** altering the amount of energy available to the cell
- C.** increasing the volume of the cell
- D.** changing the sequence of DNA nucleotides in the cell

**Question 15 .**

A student is given a small amount of unknown tan-colored liquid substance. This unknown liquid is placed into a glass of water and mixed. Despite mixing, the tan liquid remains separated from the water and collects as a large droplet at the top. Which of the macromolecule groups is this liquid most likely to be a member of?

- A.** lipids
- B.** proteins
- C.** carbohydrates
- D.** nucleic acids

# Answers

1. D
2. D
3. B
4. C
5. D
6. D
7. D
8. D
9. --
10. B
11. D
12. A
13. D
14. D
15. A

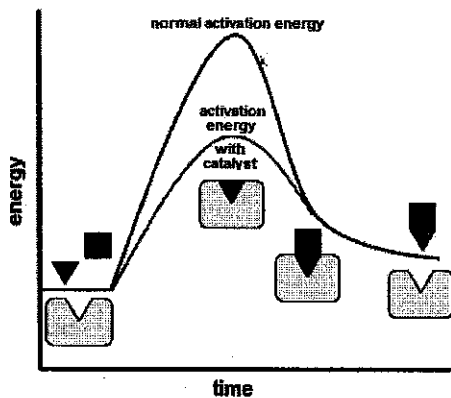
# BIO 1B.2. Enzymes

## Enzymes & Activation Energy

Substances that increase the rate of a chemical reaction without being consumed in the reaction are called *catalysts*. **Enzymes** are biological catalysts, and they are generally composed of proteins. According to *collision theory*, chemical reactions occur when suitable reactants collide with sufficient energy. The amount of energy needed for a reaction to occur is called the **activation energy** of the reaction. The lower the activation energy of a reaction, the more likely it is that the reaction will occur. Enzymes provide an alternate pathway for chemical reactions to occur that has a lower activation energy than if no enzyme was involved.

The graph below compares the activation energy of a catalyzed reaction to the same reaction uncatalyzed.

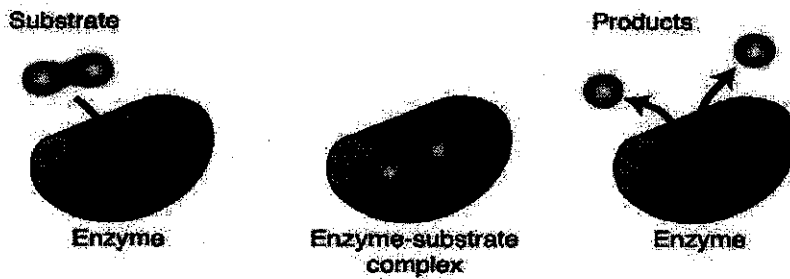
### Effect of a Catalyst on Activation Energy



Catalysts are substances that make it more likely that a chemical reaction will occur. Biological catalysts are called enzymes.

### Role of Enzymes in the Cell

The vast majority of enzymes are proteins that are produced inside the cell by ribosomes. Ribosomes produce specific enzymes to act on specific substances, called **substrates**. For example, hydrogen peroxide can be harmful to cells. The enzyme catalase catalyzes the breakdown of hydrogen peroxide into water and oxygen. In this case, hydrogen peroxide is the substrate of the catalase enzyme.



This enzyme binds to its substrate, then splits the substrate molecule into two products. After the reaction, the enzyme is free to catalyze the breakdown of another substrate molecule.

Image courtesy of Darryl Leja, NHGRI

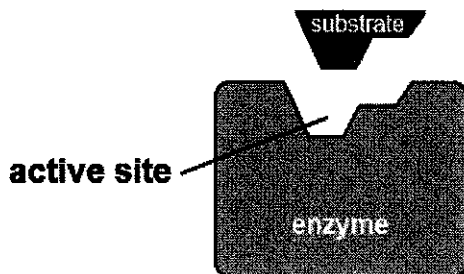
While many enzymes are responsible for breaking down molecules, others are important in building them up. For example, DNA polymerase is the enzyme responsible for synthesizing new strands of DNA during the process of DNA replication.

A huge number of the chemical reactions that occur in cells are catalyzed by enzymes. The activation energy of many reactions is simply too high to overcome without enzymes; in fact, such reactions may not occur at all in the absence of an enzyme. The importance of enzymes to organisms cannot be understated. For example, without enzymes catalyzing metabolic reactions, cells would not be able to perform metabolism quickly enough to support life.

The **concentration** of an enzyme inside the cell determines how quickly a particular reaction proceeds. As long as sufficient substrate is available, increasing the concentration of an enzyme will increase the rate of a reaction. Cells can control chemical reactions by increasing or decreasing the intracellular concentration of an enzyme. Since enzymes are not consumed in a chemical reaction, their concentration will remain constant until the cell triggers the re-uptake of the enzymes.

#### Enzyme Shape & Function

The shape of an enzyme determines how it works and which substrate can fit into it. Most enzymes have a surface with one or more deep folds. Inside the fold is a pocket called an **active site**. The active site on the enzyme matches the shape of a particular substrate. Thus, the substrate and enzyme fit together like two pieces of a puzzle.

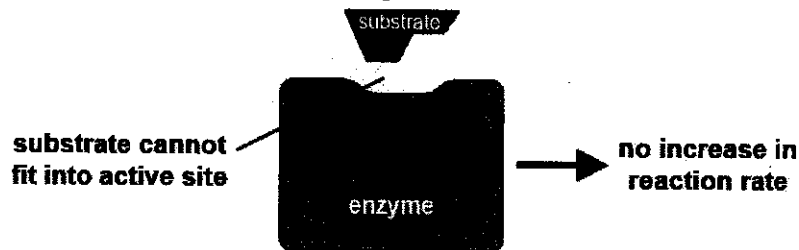


An enzyme's shape is key to how the enzyme functions. If an enzyme's shape changes, it may not function as well or at all. Enzymes are only able to work properly in a certain temperature and pH range.

A molecule that binds to an enzyme and decreases its effectiveness is called an **enzyme inhibitor**. Some enzyme inhibitors bind to the same part of the enzyme that would be used by the substrate. Some medications are enzyme inhibitors that impact enzymes used by bacteria or viruses.

### **Enzymes & Temperature**

If the temperature inside a cell is too *low*, reactants will not collide with enough energy for a reaction to occur, even if the correct enzyme is present. If the temperature is too *high*, the shape of the enzyme can change, and its active site may no longer fit a substrate. When this happens, the enzyme is said to be *denatured*, and it cannot catalyze the reaction. As a result, the overall rate of the reaction will slow dramatically as temperature increases. In the diagram below, an enzyme has changed shape because the temperature inside the cell is too high.



Optimal temperature ranges can vary from enzyme to enzyme. Depending on its function and location in an organism, an enzyme may have unique temperature requirements.

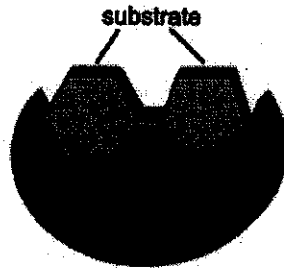
### **Enzymes & pH**

Like temperature, pH can affect the function of an enzyme. Certain enzymes require acidic environments in order to function, while others require alkaline environments. Still others operate best at a neutral pH. In humans, for example, an enzyme called pepsin can withstand the acidity of the stomach, while an enzyme called pancreatic amylase is found in the alkaline environment of the small intestine. Outside its optimal pH range, an enzyme or its substrate can change shape. In extreme cases, the enzyme can be permanently denatured.

## BIO 1B.2 Enzyme Questions

### Question 1 .

The diagram below shows an enzyme-substrate complex.



What is the best comparison to the enzyme-substrate complex?

- A. dime and penny
- B. lock and key
- C. salt and pepper
- D. shoe and sock

### Question 2 .

Lactose is a sugar found in milk products. Lactase is an enzyme that breaks down lactose so it can be absorbed into the bloodstream and turned into energy. However, people with lactose intolerance do not produce enough lactase enzymes to break down lactose.

Which of the following best explains why other enzymes within the body cannot break down lactose for individuals with lactose intolerance?

- A. Other enzymes within the body are destroyed after catalyzing reactions.
- B. Other enzymes would catalyze the lactose reaction too quickly.
- C. Other enzymes would decrease the temperature within the cell.
- D. Other enzymes cannot bind to lactose due to enzyme specificity.

### Question 3 .

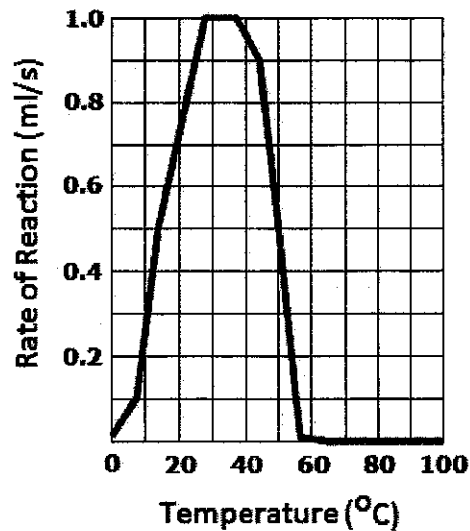
Suppose that enzyme X catalyzes a reaction that involves the breakdown of a substrate. The products of this reaction are amino acids.

What is the enzyme's substrate?

- A. a lipid
- B. a protein
- C. a carbohydrate
- D. a mineral

Question 4 .

The Effect of Temperature on Catalase

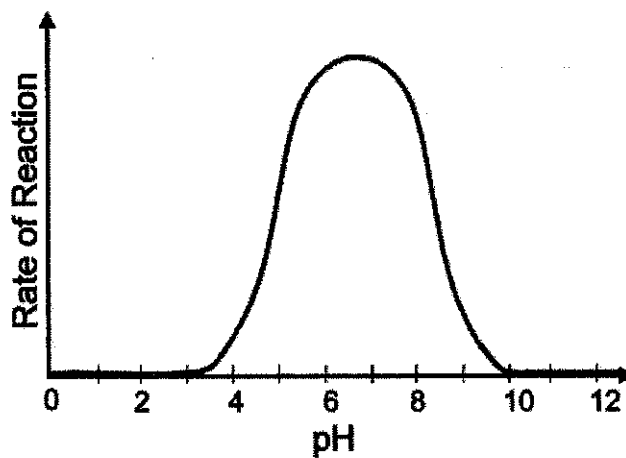


The above graph shows how temperature affects the rate of a reaction that uses the catalase enzyme. At what temperatures, approximately, is the enzyme denatured?

- A. between 27°C and 37°C
- B. between 60°C and 100°C
- C. between 0°C and 27°C
- D. between 37°C and 60°C

Question 5 .

In order for cells to function properly, the enzymes that they contain must also function properly. The graph below shows how pH affects the activity of the enzyme salivary amylase.



From the information given, what can be inferred about cells that have salivary amylase?

- A. They function best at a high pH.
- B. They function best at a low pH.
- C. They function equally well regardless of the pH level.
- D. They do not function well at a pH that is too high or too low.

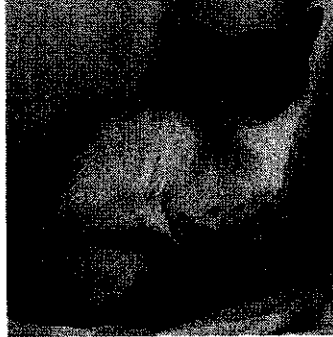
**Question 6 .**

Which of the following can affect the function of a cell?

- A. high temperature
- B. low temperature
- C. high acidity
- D. all of these

**Question 7 .**

Siamese cats are characterized by light and dark regions of fur.



The darker parts occur on the cooler parts of the cat's body because the enzyme that catalyzes the formation of the dark pigment is more active when cool. This example shows that enzymes are affected by \_\_\_\_\_.

- A. temperature
- B. concentration
- C. pH
- D. all of these

**Question 8 .**

Homeostasis is the ability of an organism to maintain a relatively stable internal environment.

How would an organism's homeostasis be affected if it was not able to produce enzymes?

- A. Without enzymes, biochemical reactions would cease completely.
- B. Without enzymes, chemical reactions would not occur quickly enough to sustain life.
- C. Without enzymes, ribosomes would break down proteins, rather than build them.
- D. Without enzymes, the temperature inside cells would increase rapidly.



**Question 9 .**

A person takes a bite of a sandwich that has meat, cheese, and bread. Enzymes in the person's saliva start the digestion process by helping break the sandwich down into simpler molecules that can be absorbed into the bloodstream. Which of these best describes how salivary enzymes perform this role?

- A. The same enzyme binds to each type of molecule in the sandwich to catalyze the digestion process.
- B. The same enzyme binds to each type of molecule in the sandwich to decrease the overall activation energy.
- C. Different enzymes break down different molecules in the sandwich based on the pH of each molecule.
- D. Different enzymes break down different molecules in the sandwich based on their three-dimensional shape.

**Question 10 .**

In order to maintain life, organisms must produce, modify, transport, and exchange materials. What is this process called?

- A. homeostasis
- B. circulation
- C. metabolism
- D. digestion

**Question 11 .**

Proteins are used for many structural functions such as in the actin and myosin in muscle or as a part of the cytoskeleton scaffolding that maintains cell shape. What other main function do proteins serve?

- A. as coding for genotypic expression and phenotypic traits
- B. as waterproof membranes to regulate the transport of molecules in and out of the cell
- C. as cellulose to form the major structural component of plant cell walls
- D. as enzymes to control the rate of reactions and regulate cellular activity

**Question 12 .**

Which of the following describes the role that enzymes play in the process of metabolism?

- A. Enzymes provide the chemical energy that is broken down and released during metabolism.
- B. Enzymes increase the rate of the chemical reactions carried out during metabolism.
- C. Enzymes carry the genetic instructions required for a cell to initiate metabolism.
- D. Enzymes store the chemical energy that is used to construct nucleic acids during metabolism.

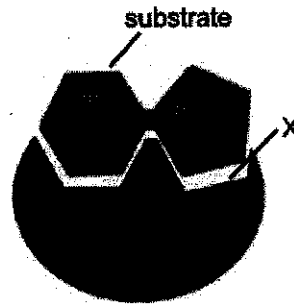
**Question 13 .**

Which of the following best describes an enzyme?

- A.** It slows the rate of a chemical reaction.
- B.** It can bind to any substrate.
- C.** It lowers the activation energy of a chemical reaction.
- D.** It functions properly at all temperatures.

**Question 14 .**

The diagram shows an enzyme and its substrate.



In the diagram, what does X represent?

- A.** the enzyme's glucose-fructose bond
- B.** the enzyme's catalyst
- C.** the enzyme's active site
- D.** the enzyme's globular protein

**Question 15 .**

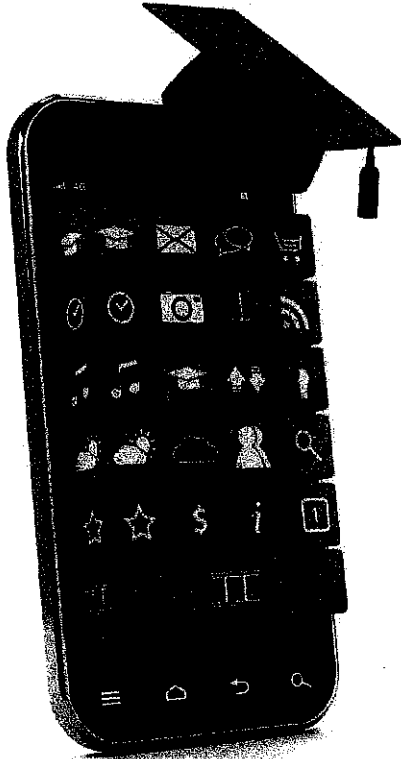
Enzymes are catalysts. This means that they are able to speed up chemical reactions. Which of the following statements is also true of enzyme catalysts?

- A.** They must be continuously replaced after each catalyzed reaction.
- B.** They increase the energy that is released by reactions.
- C.** They increase the energy that must be absorbed by reactions.
- D.** They are not used up by reactions.

# Answers

1. B
2. D
3. B
4. B
5. D
6. D
7. A
8. B
9. D
10. C
11. D
12. B
13. C
14. C
15. D

# English 2



**To Proficiency and  
Beyond!**

# Table of Contents

- Glossary of Academic Terms
- Annotation Guide
- Vocabulary Practice Items
- Comprehension Practice Items
- Answer Guide

## Glossary of Academic Terms

<b>Term</b>	<b>Definition</b>	<b>Example</b>
<b>Tension</b>	Tension arises from conflict. It's the reader's concern about how the conflict will be resolved	Who will win the battle? Will the missing child be found? Will the hero live?
<b>Suspense</b>	A sense of anticipation, or even worry, that the reader has for the characters as they encounter problems during the plot of the story.	
<b>Oxymoron (Much like Juxtaposition)</b>	<b>Oxymoron</b> is a figure of speech in which two opposite ideas are joined to create an effect.	
<b>Euphemism</b>	a mild or indirect word or expression substituted for one considered to be too harsh or blunt when referring to something unpleasant or embarrassing.	
<b>Juxtaposition</b>	See Oxymoron, however, juxtaposition can show similarities or differences	
<b>Theme</b>	A unifying, recurring idea or truth related in a text	
<b>Figurative Language</b>	Refers to words and phrases that are not intended to be understood literally	
<b>Simile</b>	A comparison of two unlike things using the words like or as.	

<b>Metaphor</b>	A comparison of two unlike things without the words like or as.	
<b>Personification</b>	When an object or item is given human characteristics or qualities.	
<b>Onomatopoeia</b>	A word that makes the sound it states.	
<b>Alliteration</b>	The repetition of consonant sounds at the beginning of a series of words in a row.	
<b>Idiom</b>	n. a common saying that has a figurative meaning rather than a literal one.	
<b>Mood</b>	The feeling or atmosphere a text creates within the reader.	
<b>Tone</b>	The overall attitude toward the them and audience that is implied in a literary text	
<b>Foreshadowing</b>	A <b>literary</b> device in which a writer gives an advance hint of what is to come later in the story	
<b>Satire</b>	A technique employed by writers to expose and criticize foolishness and corruption of an individual or a society, by using humor, irony, exaggeration, or ridicule.	
<b>Complex Character</b>	A <b>Complex character</b> , (also known as a <b>Dynamic</b> character or a <b>Round</b> character):	

	<ul style="list-style-type: none"> <li>* undergoes an important change as the plot unfolds.</li> <li>*The changes he or she experiences occur because of his or her actions or experiences in the story.</li> <li>*Changes in the character may be good or bad.</li> <li>*The character is highly developed and complex, meaning they have a variety of traits and different sides to their personality.</li> <li>*Some of their character traits may create conflict in the character.</li> <li>*He or she displays strengths, weaknesses, and a full range of emotions.</li> <li>*He or she has significant interactions with other characters.</li> <li>*He or she advances the plot or develops a major theme in the text.</li> </ul>	
<p><b>Motivation</b></p>	<p>The reason behind a <b>character's</b> behaviors and actions throughout a story. <b>Motivations</b> are intrinsic needs: they might be external needs and relate to survival, but they might also be psychological or existential needs, such as love or professional achievement.</p>	



<b>Conflict</b>	Any struggle the protagonist faces and that moves the plot of the story: <b>Man vs. Self</b> <b>Man vs. Man</b> <b>Man vs. Society</b> <b>Man vs. Nature</b> <b>Man vs. Technology</b> <b>Man vs. Fate (or the Supernatural)</b>	
<b>Interact</b>	Interact--action, effect, or influence of the plot elements on characters or characters on other character	
<b>Plot</b>	The events of a story: (introduction, rising action, climax, falling action, resolution)	
<b>Direct Characterization</b>	Tells the reader what the personality of the character is	
<b>Indirect Characterization</b>	Shows the reader the character's personality through the character's STEAL: speech, thoughts, emotions, actions, looks	
<b>Antagonist</b>	the character that opposes the leading character	
<b>Protagonist</b>	Leading/Main character	

## English II Annotation Guide

**1. Always read with a pen in hand.**

**2. Annotate what's most important:**

- o Main ideas (summarize stated main ideas; try to write out implied main ideas)
- o Definitions (indicate with dfn in the margin)
- o Examples (indicate with ex in the margin)
- o Lists of reason or characteristics (number them; perhaps also summarize each one)
- o Concepts that show cause and effect relationships, or similarities and differences (use arrows to show the connections)
- o Summary statements (paraphrase in the margin and circle)
- o Unfamiliar words (put a box around them, or underline with a red pen)
- o Signal words (circle them)

**3. Annotate one section at a time. "Chunk" the text.**

Survey the section first, and then read all the information under the heading. Then determine what's important to write in the margin.

**4. Annotate before you underline or highlight.** This will reduce the amount you'll need to underline or highlight.

**5. Annotate in your own words, using as few words as possible.** Don't just copy. Think about what you're reading, and accurately paraphrase it. This helps you monitor your learning. If you can't write the information in your own words, then you probably don't understand it.

**6. Turn headings into questions.** When you find the answer to your question, place parentheses around the answer and write imp in the margin.

**7. Number items in a list. Write out a brief heading for that list.**

**8. Put "?" to indicate information that you do not understand.**

**9. Put \* next to information that may be important (but you're not sure)**

**10. Mark important ideas with \*\* or imp in the margin.**

**11. Use numbers for lists and sequences.**

**12. Put "T" next to items that are likely to be on the test.**

**13. Put SUM next to a summary statement**

**14. Use abbreviations and symbols.** Develop a personalized marking system that's meaningful to you.

**15. Write comments in the margins to help you connect the material with instructor comments and your own experience.**

**16. Re-read any parts that you did not understand.**

English II  
Vocabulary Practice Items

1. Read the following sentences.  
(Adapted from EngageNY 2014)

"Yes, I have a turn both for observation and for deduction. The theories which I have expressed there, and which appear to you to be so chimerical, are really extremely practical—so practical that I depend upon them for my bread-and-cheese."

As used in the passage, the word "**chimerical**" most nearly means

- A. unfair
- B. aggravating
- C. unrealistic
- D. contradictory

2. Read the following sentences.  
(Item 2 from Mississippi Item Sampler)

**"I was at first unable to answer these questions, but perpetual attention and time explained to me many appearances which were at first enigmatic."**

What does **enigmatic** mean as it is used in the paragraph?

- A. admirable
- B. constant
- C. depressing
- D. mysterious

3. Read the sentence.  
(Item 5 from Mississippi Item Sampler)

**"This was indeed a godlike science, and I ardently desired to become acquainted with it."**

What does the word **ardently** mean as it is used in the sentence?

- A. passionately
- B. enviously
- C. miserably
- D. faithfully

4. Read the sentence.  
(Item 15 from Mississippi Item Sampler)

**"The ship which finally rescued that party deposited its stock of stores on Paulet Island for the use of any later castaways."**

What is the meaning of **stock** as it is used in the sentence?

- A. framework
- B. estimate
- C. share
- D. supply

5. Read the sentences.  
(Item 20 from Mississippi Item Sampler)

**"Evidence of the scope of such an undertaking is the fact that after Shackleton's failure, the crossing of the continent remained untried for fully forty-three years— until 1957–1958."**

Choose the word that would best replace the word **scope** as it is used in the original sentence from the text.

- A. scan
- B. extent
- C. preview
- D. liberty

6. Read the following sentences.  
(Item 2 from Mississippi Practice Test)

**Highbury, the large and populous village, almost amounting to a town, to which Hartfield, in spite of its separate lawn, and shrubberies, and name, did really belong, afforded her no equals. The Woodhouses were first in consequence there.**

What can be inferred about the Woodhouses based on the phrase "**first in consequence**"?

- A. The Woodhouses settled Highbury.
- B. The Woodhouses governed Highbury.
- C. The Woodhouses were the largest family in Highbury .
- D. The Woodhouses were the most important family in Highbury.

7. Read the following sentences.  
(Item 15 from Mississippi Practice Test)

**The history of the present King of Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world.**

What is the meaning of the word **usurpations** as it is used in this paragraph?

- A. making objections to laws
- B. creating unnecessary regulations
- C. taking someone's power or property by force
- D. taking someone's ideas and passing them as his own.

8. Read this sentence.  
(Item 22 from Mississippi Practice Test)

**Such a pitiful beginning it was for their married life; they loved each other so, and they could not have the briefest respite!**

What does the word **respite** mean as it is used in this sentence?

- A. a break from everyday worries
- B. a desire for love to conquer all
- C. a meal that would relax them
- D. a dislike of the outside world

9. Read this sentence.  
(Item 23 from Mississippi Practice Test)

**They had opened their hearts, like flowers to the springtime, and the merciless winter had fallen upon them.**

How does the author use figurative language in the sentence to contribute to the meaning of the passage?

- A. to convey a sense of beauty about the couple's relationship
- B. to emphasize the short time the couple experienced together
- C. to illustrate how nature played a part in the couple's relationship
- D. to contrast the expectations of the couple with the reality they experience

10. Read this sentence.  
(Item 24 from Mississippi Practice Test)

**All that day he stood at his lard machine, rocking unsteadily, his eyes closing in spite of him; and he all but lost his place even so, for the foreman booted him twice to waken him.**

What does the phrase **his eyes closing in spite of him** mean?

- A. It implies that he is ill.
- B. It describes that he is bored at work.
- C. It shows his efforts to fight exhaustion.
- D. It illustrates how he is pushed at work.

11. Read this sentence.  
(Item 27 from Mississippi Practice Test)

**Over them, relentless and savage, there cracked the lash of want; the morning after the wedding it sought them as they slept, and drove them out before daybreak to work.**

How does the figurative language in this sentence help the reader understand the reality the characters face in the excerpt?

- A. It reveals the couple's lack of control over their environment.
- B. It portrays the couple's physical pains from their labors both day and night.
- C. It describes the couple's inability to spend any time with each other.
- D. It establishes the couple's desire to pay back the debt caused by their wedding.

12. Read the sentences from the excerpt from *Gift from the Sea*.  
(Item 31 from Mississippi Practice Test)

**I turn the shell in my hand, gazing into the wide-open door from which he made his exit. Had it become an encumbrance? Why did he run away?**

What does the word **encumbrance** mean as used in these sentences?

- A. a burden
- B. a disaster
- C. a desire
- D. a failure

13. Read the sentence from the excerpt from *Walden*.  
(Item 37 from Mississippi Practice Test)

**To be in company, even with the best, is soon wearisome and dissipating.**

What does the word **dissipating** mean as it is used in this sentence?

- A. detesting
- B. diminishing
- C. oppressing
- D. pacifying

14. Read the following paragraph.  
(Item 43 from Mississippi Practice Test)

**The farmer can work alone in the field or the woods all day, hoeing or chopping, and not feel lonesome, because he is employed; but when he comes home at night he cannot sit down in a room alone, at the mercy of his thoughts, but must be where he can "see the folks," and recreate, and as he thinks remunerate himself for his day's solitude; and hence he wonders how the student can sit alone in the house all night and most of the day without ennui and "the blues"; but he does not realize that the student, though in the house, is still at work in his field, and chopping in his woods, as the farmer in his, and in turn seeks the same recreation and society that the latter does, though it may be a more condensed form of it.**

What does the word "**remunerate**" mean as it used in paragraph 1 of the excerpt from *Walden*?

- A. considers
- B. rewards
- C. celebrates
- D. punishes

**15. Read the following paragraph.**  
(Adapted from EngageNY 2014)

Blowing out the candle, which her husband had left burning, she slipped her bare feet into a pair of satin mules at the foot of the bed and went out on the porch, where she sat down in the wicker chair and began to rock gently to and fro. It was then past midnight. The cottages were all dark. A single faint light gleamed out from the hallway of the house. There was no sound abroad except the hooting of an old owl in the top of a wateroak, and the everlasting voice of the sea, that was not uplifted at that soft hour. It broke like a mournful lullaby upon the night.

The author's choice of language in these lines serve to emphasize Mrs. Pontellier's sense of:

- A. isolation
- B. boredom
- C. disbelief
- D. inferiority

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"Yes, I have a turn both for observation and for deduction. The theories which I have expressed there, and which appear to you to be so chimerical, are really extremely practical—so practical that I depend upon them for my bread-and-cheese."

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C. disbelief

D. inferiority

**Source:** Mississippi Practice Test

**Read the passage. Then answer the questions that follow.**

## Excerpt from **Emma**

by Jane Austen

1 Emma Woodhouse, handsome, clever, and rich, with a comfortable home and happy disposition, seemed to unite some of the best blessings of existence; and had lived nearly twenty-one years in the world with very little to distress or vex her.

2 She was the youngest of the two daughters of a most affectionate, indulgent father; and had, in consequence of her sister's marriage, been mistress of his house from a very early period. Her mother had died too long ago for her to have more than an indistinct remembrance of her caresses; and her place had been supplied by an excellent woman as governess, who had fallen little short of a mother in affection.

3 Sixteen years had Miss Taylor been in Mr. Woodhouse's family, less as a governess than a friend, very fond of both daughters, but particularly of Emma. Between them it was more the intimacy of sisters. Even before Miss Taylor had ceased to hold the nominal office of governess, the mildness of her temper had hardly allowed her to impose any restraint; and the shadow of authority being now long passed away, they had been living together as friend and friend very mutually attached, and Emma doing just what she liked; highly esteeming Miss Taylor's judgment, but directed chiefly by her own.

4 The real evils, indeed, of Emma's situation were the power of having rather too much her own way, and a disposition to think a little too well of herself; these were the disadvantages which threatened alloy to her many enjoyments. The danger, however, was at present so unperceived, that they did not by any means rank as misfortunes with her.

5 Sorrow came—a gentle sorrow—but not at all in the shape of any disagreeable consciousness.—Miss Taylor married. It was Miss Taylor's loss which first brought grief. It was on the wedding-day of this beloved friend that Emma first sat in mournful thought of any continuance. The wedding over, and the bride-people gone, her father and herself were left to dine together, with no prospect of a third to cheer a long evening. Her father composed himself to sleep after dinner, as usual, and she had then only to sit and think of what she had lost.

6 The event had every promise of happiness for her friend. Mr. Weston was a man of unexceptionable character, easy fortune, suitable age, and pleasant manners; and there was some satisfaction in considering with what self-denying, generous friendship she had always wished and promoted the match; but it was a black morning's work for her. The want of Miss Taylor would be felt every hour of every day. She recalled her past kindness—the kindness, the affection of sixteen years—how she had taught and how she had played with her from five years old—how she had devoted all her powers to attach and amuse her in health—and how nursed her through the various illnesses of childhood. A large debt of gratitude was owing here; but the intercourse of the last seven years, the equal footing and perfect unreserve which had soon followed Isabella's marriage, on their being left to each other, was yet a dearer, tenderer recollection. She had been a friend and companion such as few possessed: intelligent, well-informed, useful, gentle, knowing all the ways of the family, interested in all its concerns, and peculiarly interested in herself, in every pleasure, every scheme of hers—one to whom she could speak every thought as it arose, and who had such an affection for her as could never find fault.

7 How was she to bear the change?—It was true that her friend was going only half a mile from them; but Emma was aware that great must be the difference between a Mrs. Weston, only half a mile from them, and a Miss Taylor in the house; and with all her advantages, natural and domestic, she was now in great danger of suffering from intellectual solitude. She dearly loved her father, but he was no companion for her. He could not meet her in conversation, rational or playful. . . .

8 Highbury, the large and populous village, almost amounting to a town, to which Hartfield, in spite of its separate lawn, and shrubberies, and name, did really belong, afforded her no equals. The Woodhouses were first in consequence there. All looked up to them. She had many acquaintances in the place, for her father was universally civil, but not one among them who could be accepted in lieu of Miss Taylor for even half a day. It was a melancholy change; and Emma could not but sigh over it, and wish for impossible things, till her father awoke, and made it necessary to be cheerful. His spirits required support. He was a nervous man, easily depressed; fond of everybody that he was used to, and hating to part with them; hating change of every kind. Matrimony, as the origin of change, was always disagreeable; and he was by no means yet reconciled to his own daughter's marrying, nor could ever speak of her but with compassion, though it had been entirely a match of affection, when he was now obliged to part with Miss Taylor too; and from his habits of gentle selfishness, and of being never able to suppose that other people could feel differently from himself, he was very much disposed to think Miss Taylor had done as sad a

thing for herself as for them, and would have been a great deal happier if she had spent all the rest of her life at Hartfield. Emma smiled and chatted as cheerfully as she could, to keep him from such thoughts; but when tea came, it was impossible for him not to say exactly as he had said at dinner,

9 "Poor Miss Taylor!—I wish she were here again. What a pity it is that Mr. Weston ever thought of her!"

\*\*\*\*\*

1. The following question has two parts. First, answer Part A. Then, answer Part B.

**Part A**

Read this sentence from paragraph 3.

**Even before Miss Taylor had ceased to hold the nominal office of governess, the mildness of her temper had hardly allowed her to impose any restraint; and the shadow of authority being now long passed away, they had been living together as friend and friend very mutually attached, and Emma doing just what she liked; highly esteeming Miss Taylor's judgement, but directed chiefly by her own.**

How does this sentence explain how the relationship between Emma and Miss Taylor advances the plot in the passage?

- A. by summarizing how Miss Taylor became a governess for Emma
- B. by explaining the difference in social class between Emma and Miss Taylor
- C. by describing how Miss Taylor and Emma went from employer/ employee to friend
- D. by comparing how Emma treated Miss Taylor at the beginning of the story to how she treated her at the end of the story

**Part B**

Which quote advances the plot in the same way as the sentence from paragraph 3 in Part A?

- A. ". . . and her place had been supplied by an excellent woman as governess, who had fallen little short of a mother in affection." (para 2)
- B. "Between them it was more the intimacy of sisters." (para 3)
- C. "It was on the wedding-day of this beloved friend that Emma first sat in mournful thought of any continuance." (para 5)
- D. ". . . how she had taught and how she had played with her from five years old—how she had devoted all her powers to attach and amuse her in health—and how nursed her through the various illnesses of childhood." (para 6)

2. The following question has two parts. First, answer Part A. Then, answer Part B.

**Part A**

Read the following sentences from paragraph 8.

**Highbury, the large and populous village, almost amounting to a town, to which Hartfield, in spite of its separate lawn, and shrubberies, and name, did really belong, afforded her no equals. The Woodhouses were first in consequence there.**

What can be inferred about the Woodhouses based on the phrase first in consequence?

- A. The Woodhouses settled Highbury.
- B. The Woodhouses governed Highbury.
- C. The Woodhouses were the largest family in Highbury.
- D. The Woodhouses were the most important family in Highbury.

**Part B**

Which phrase from the sentences in Part A provides evidence to support the inference?

- A. ". . . the large and populous village . . ."
- B. ". . . almost amounting to a town . . ."
- C. ". . . in spite of its separate lawn . . ."
- D. ". . . afforded her no equals . . ."

3. Which statement expresses a theme of the passage?

- A. Change is often unavoidable.
- B. Strong friendships are important.
- C. True love endures despite separations.
- D. High social status rarely leads to happiness.

4. What does paragraph 8 suggest about English society in the early 1800s?

- A. A woman of wealth need not marry.
- B. Governesses have low social status.
- C. Farming is the foundation of the economy.
- D. Distinctions of class are openly acknowledged.



5. The author references the changing relationship between Emma and her father throughout the course of the passage. Select two quotes from the passage that show the changing relationship between Emma and her father.

	Changing Relationships
<p>"She was the youngest of the two daughters of a most affectionate, indulgent father. . . ." (paragraph 2)</p>	
<p>"Sixteen years had Miss Taylor been in Mr. Woodhouse's family, less as a governess than a friend. . . ." (paragraph 3)</p>	
<p>"She dearly loved her father, but he was no companion for her. He could not meet her in conversation, rational or playful." (paragraph 7)</p>	
<p>"She had many acquaintance in the place, for her father was universally civil. . . ." (paragraph 8)</p>	

6. How does the author create suspense in paragraph 4?

- A. by indicating Emma's high self-esteem
- B. by expressing Emma's enjoyment of her life
- C. by describing conflicts Emma has with others
- D. by offering information about evils surrounding Emma

7. How does the author use paragraphs 5 and 7 to build tension between Emma and her father?

- A. by describing the joy they find in one another's company
- B. by describing the closeness of their relationship after the marriage
- C. by describing the awkwardness between Emma and her father once Miss Taylor married
- D. by describing the anger both Emma and her father felt towards Miss Taylor upon her departure

8. The following question has two parts. First, answer Part A. Then, answer Part B.

**Part A**

Read the following sentence from paragraph 4.

**The real evils, indeed, of Emma's situation were the power of having rather too much her own way, and a disposition to think a little too well of herself; these were the disadvantages which threatened alloy to her many enjoyments.**

What can be inferred about Emma from this sentence?

- A. Emma is powerful and arrogant.
- B. Emma is carefree and confident.
- C. Emma is spoiled and self-absorbed.
- D. Emma is demanding and self-righteous.

**Part B**

Which statement from the passage supports the answer in Part A?

- A. ". . . they had been living together as friend and friend very mutually attached, and Emma doing just what she liked; highly esteeming Miss Taylor's judgment, but directed chiefly by her own." (paragraph 3)
- B. "She dearly loved her father, but he was no companion for her. He could not meet her in conversation, rational or playful." (paragraph 7)
- C. "She had many acquaintances in the place, for her father was universally civil, but not one among them who could be accepted in lieu of Miss Taylor for even half a day." (paragraph 8)
- D. "It was a melancholy change; and Emma could not but sigh over it, and wish for impossible things, till her father awoke, and made it necessary to be cheerful." (paragraph 8)

9. Read this line from paragraph 8 of the passage.

**. . . when he was now obliged to part with Miss Taylor too; and from his habits of gentle selfishness, and of being never able to suppose that other people could feel differently from himself. .**

. .

What does this line reveal about the narrator's feelings towards the father?

- A. The narrator views the father as caring.
- B. The narrator has sympathy for the father.
- C. The narrator views the father as arrogant.
- D. The narrator approves of the father's position.

10. Why does the author include the description of the setting in paragraph 8?

- A. to emphasize the loss Emma has experienced
- B. to reveal Emma's limited opportunities to meet people
- C. to highlight the importance of Emma's status in society
- D. to describe the elegance of the village in which Emma lives

11. How does the author's word choice develop tone in paragraph 8?

- A. by explaining the actions of Emma's father
- B. by describing how Emma's feelings have changed
- C. by recounting how Miss Taylor's life was different after she moved
- D. by showing how the action in the home changed after the marriage

**Source:** Mississippi Practice Test

**Read the two passages and then answer the questions that follow.**

## **Excerpt from *The Declaration of Independence***

by Thomas Jefferson

- 1 We hold these truths to be self-evident, that all men are created equal. . . . The history of the present King of Great Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world.
- 2 He has refused his Assent to Laws, the most wholesome and necessary for the public good.
- 3 He has forbidden his Governors to pass Laws of immediate and pressing importance, unless suspended in their operation till his Assent should be obtained; and when so suspended, he has utterly neglected to attend to them.
- 4 He has refused to pass other Laws for the accommodation of large districts of people, unless those people would relinquish the right of Representation in the Legislature, a right inestimable to them and formidable to tyrants only.
- 5 He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their public Records, for the sole purpose of fatiguing them into compliance with his measures.
- 6 He has dissolved Representative Houses repeatedly, for opposing with manly firmness his invasions on the rights of the people. . . .
- 7 He has endeavoured to prevent the population of these States; for that purpose obstructing the Laws for Naturalization of Foreigners; refusing to pass others to encourage their migrations hither, and raising the conditions of new Appropriations of Lands.
- 8 He has obstructed the Administration of Justice, by refusing his Assent to Laws for establishing Judiciary powers.
- 9 He has made Judges dependent on his Will alone, for the tenure of their offices, and the amount and payment of their salaries.

10 He has erected a multitude of New Offices, and sent hither swarms of Officers to harrass our people, and eat out their substance.

11 He has kept among us, in times of peace, Standing Armies without the Consent of our legislatures.

12 He has affected to render the Military independent of and superior to the Civil power. . . .

## Excerpt from **The Declaration of Sentiments**

by Elizabeth Cady Stanton

1 We hold these truths to be self-evident: that all men and women are created equal. . . .

2 The history of mankind is a history of repeated injuries and usurpations on the part of man toward woman, having in direct object the establishment of an absolute tyranny over her. To prove this, let facts be submitted to a candid world.

3 He has never permitted her to exercise her inalienable right to the elective franchise.

4 He has compelled her to submit to laws, in the formation of which she had no voice.

5 He has withheld from her rights which are given to the most ignorant and degraded men—both natives and foreigners.

6 Having deprived her of this first right of a citizen, the elective franchise, thereby leaving her without representation in the halls of legislation, he has oppressed her on all sides.

7 He has made her, if married, in the eye of the law, civilly dead.

8 He has taken from her all right in property, even to the wages she earns.

9 He has made her, morally, an irresponsible being, as she can commit many crimes with impunity, provided they be done in the presence of her husband. In the covenant of marriage, she is compelled to promise obedience to her husband, he becoming, to all intents and purposes, her

master—the law giving him power to deprive her of her liberty, and to administer chastisement.

10 He has so framed the laws of divorce, as to what shall be the proper causes, and in case of separation, to whom the guardianship of the children shall be given, as to be wholly regardless of the happiness of women—the law, in all cases, going upon a false supposition of the supremacy of man, and giving all power into his hands.

11 After depriving her of all rights as a married woman, if single, and the owner of property, he has taxed her to support a government which recognizes her only when her property can be made profitable to it.

12 He has monopolized nearly all the profitable employments, and from those she is permitted to follow, she receives but a scanty remuneration. He closes against her all the avenues to wealth and distinction which he considers most honorable to himself. As a teacher of theology, medicine, or law, she is not known.

13 He has denied her the facilities for obtaining a thorough education, all colleges being closed against her. . . .



12. How does Jefferson develop his argument in the excerpt from *The Declaration of Independence*?

- A. by describing the duties of Britain's king
- B. by relaying stories of the developing nation
- C. by referring to different branches of government
- D. by listing the wrongs committed by Britain's king

13. The following question has two parts. First, answer Part A. Then, answer Part B.

**Part A**

Which sentence states the central idea of the excerpt from *The Declaration of Independence*?

- A. Great Britain's king encourages the migration of foreigners into the colonies.
- B. Great Britain's king frequently ignores the needs of people living in the colonies.
- C. Legislative bodies in the colonies no longer wish to be controlled by Great Britain's king.
- D. Some people residing in the colonies are oppressed by officers appointed by Great Britain's king.

**Part B**

Which statement supports the answer in Part A?

- A. "We hold these truths to be self-evident, that all men are created equal. . . ." (paragraph 1)
- B. "He has forbidden his Governors to pass Laws of immediate and pressing importance, unless suspended in their operation till his Assent should be obtained; . . ." (paragraph 3)
- C. "He has called together legislative bodies at places unusual, uncomfortable, and distant from the depository of their public Records. . . ." (paragraph 5)
- D. "He has endeavoured to prevent the population of these States; for that purpose obstructing the Laws for Naturalization. . . ." (paragraph 7)

14. Which of the following statements **most** accurately evaluates the evidence that Jefferson uses to support the claim that the King of Great Britain is a tyrant?

- A. The evidence is flawed because it does not follow the author's claim.
- B. The evidence is flawed because it does not provide the reader clear reasoning to support the claim.
- C. The evidence is accurate because it provides specific examples that support the claim.
- D. The evidence is accurate because it provides an unbiased vision of the King's actions to support the claim.

15. OMITTED (USED IN VOCABULARY SECTION)

16. The following question has two parts. First, answer Part A. Then, answer Part B.

**Part A**

How does the author use rhetoric to advance her point of view in the excerpt from *The Declaration of Sentiments*?

- A. The author uses a metaphor to compare women to servants.
- B. The author uses a hyperbole to exaggerate the plight of women.
- C. The author uses satire to ridicule the lives of women and the actions of men.
- D. The author uses understatement to minimize crimes committed by women while justifying the behavior of men.

**Part B**

Which sentence from the passage supports the answer in Part A?

- A. "He has withheld from her rights which are given to the most ignorant and degraded men—both natives and foreigners." (paragraph 5)
- B. "He has made her, if married, in the eye of the law, civilly dead." (paragraph 7)
- C. ". . . she is compelled to promise obedience to her husband, he becoming, to all intents and purposes, her master. . . ." (paragraph 9)
- D. ". . . if single, and the owner of property, he has taxed her to support a government which recognizes her only when her property can be made profitable to it." (paragraph 11)



17. How does Stanton support her claim that women have been oppressed throughout history?

- A. by describing the effects of laws and customs on women
- B. by contrasting the rights of married women and unmarried men
- C. by illustrating the lack of women in the legal system of the nation
- D. by arguing that women should keep the profits of their employment

18. By using a similar organizational structure as the excerpt from *The Declaration of Independence*, what does Stanton accomplish in the excerpt from *The Declaration of Sentiments*?

- A. Stanton provides solutions to the inequalities experienced by women due to male involvement in creating laws.
- B. Stanton proves that the King of Great Britain is a tyrant because he instituted the legal system in the United States.
- C. Stanton reaches a larger audience since she uses the same structure as the excerpt from *The Declaration of Independence*.
- D. Stanton refutes Jefferson's claim that "all men are created equal" by pointing out the inequalities experienced by women.

19. How do Jefferson and Stanton each develop the central idea in each of the passages?

- A. Jefferson includes a list of wrongs committed by the King and explanations of why independence is needed, while Stanton includes a list of wrongs committed by man and solutions for independence.
- B. Jefferson provides general, social examples of oppression inspiring independence, while Stanton provides specific, individual examples of the oppression inspiring women's desire for independence.
- C. Jefferson uses an authoritative tone expressing examples of the colonies' oppression, while Stanton uses a satirical tone expressing examples of the oppression women have experienced.
- D. Jefferson utilizes figurative language portraying examples of oppression from which independence is sought, while Stanton utilizes vivid imagery portraying examples of oppression from which independence is sought.

20. According to both the excerpt from *The Declaration of Independence* and the excerpt from *The Declaration of Sentiments*, what challenge did the United States and women face when the documents were written?

- A. ownership of property
- B. participation in elections
- C. monopolization of military
- D. representation in government

21. How are the ideas in the excerpt from *The Declaration of Sentiments* and the excerpt from *The Declaration of Independence* related?

- A. Jefferson supports Stanton's grievances in the excerpt from *The Declaration of Sentiments*.
- B. Stanton uses Jefferson's introduction to refute the ideas presented in the excerpt from *The Declaration of Independence*.
- C. Jefferson provides Stanton with a list of injustices that she includes in the excerpt from *The Declaration of Sentiments*.
- D. Stanton uses the ideas in the excerpt from *The Declaration of Independence* to justify her ideas on the injustices suffered by women.

**Source:** Mississippi Practice Test

**Read the passage. Then answer the questions that follow.**

## Excerpt from **The Jungle**

by Upton Sinclair

### Chapter 7

1 All summer long the family toiled, and in the fall they had money enough for Jurgis and Ona to be married according to home traditions of decency. In the latter part of November they hired a hall, and invited all their new acquaintances, who came and left them over a hundred dollars in debt.

2 It was a bitter and cruel experience, and it plunged them into an agony of despair. Such a time, of all times, for them to have it, when their hearts were made tender! Such a pitiful beginning it was for their married life; they loved each other so, and they could not have the briefest respite! It was a time when everything cried out to them that they ought to be happy; when wonder burned in their hearts, and leaped into flame at the slightest breath. They were shaken to the depths of them, with the awe of love realized—and was it so very weak of them that they cried out for a little peace? They had opened their hearts, like flowers to the springtime, and the merciless winter had fallen upon them. They wondered if ever any love that had blossomed in the world had been so crushed and trampled!

3 Over them, relentless and savage, there cracked the lash of want; the morning after the wedding it sought them as they slept, and drove them out before daybreak to work. Ona was scarcely able to stand with exhaustion; but if she were to lose her place they would be ruined, and she would surely lose it if she were not on time that day. They all had to go, even little Stanislovas, who was ill from overindulgence in sausages and sarsaparilla. All that day he stood at his lard machine, rocking unsteadily, his eyes closing in spite of him; and he all but lost his place even so, for the foreman booted him twice to waken him.

4 It was fully a week before they were all normal again, and meantime, with whining children and cross adults, the house was not a pleasant place to live in. Jurgis lost his temper very little, however, all things considered. It was because of Ona; the least glance at her was always enough to make him control himself. She was so sensitive—she was not fitted for such a life as this; and a hundred times a day, when he thought of her, he would clench his hands and fling himself again at the task before him. She was too good for him, he told himself, and he was afraid, because she was his. So long he

had hungered to possess her, but now that the time had come he knew that he had not earned the right; that she trusted him so was all her own simple goodness, and no virtue of his. But he was resolved that she should never find this out, and so was always on the watch to see that he did not betray any of his ugly self; he would take care even in little matters, such as his manners, and his habit of swearing when things went wrong. The tears came so easily into Ona's eyes, and she would look at him so appealingly—it kept Jurgis quite busy making resolutions, in addition to all the other things he had on his mind. It was true that more things were going on at this time in the mind of Jurgis than ever had in all his life before.

5 He had to protect her, to do battle for her against the horror he saw about them. He was all that she had to look to, and if he failed she would be lost; he would wrap his arms about her, and try to hide her from the world. He had learned the ways of things about him now. It was a war of each against all, and the devil take the hindmost. You did not give feasts to other people, you waited for them to give feasts to you. You went about with your soul full of suspicion and hatred; you understood that you were environed by hostile powers that were trying to get your money, and who used all the virtues to bait their traps with. The store-keepers plastered up their windows with all sorts of lies to entice you; the very fences by the wayside, the lampposts and telegraph poles, were pasted over with lies. The great corporation which employed you lied to you, and lied to the whole country—from top to bottom it was nothing but one gigantic lie.

\*\*\*\*\*

22. OMITTED (USED IN VOCABULARY SECTION)

23. OMITTED (USED IN VOCABULARY SECTION)

24. OMITTED (USED IN VOCABULARY SECTION)

25. Which detail from the passage best supports the theme that personal relationships suffer from hardships?

A. "All summer long the family toiled, and in the fall they had money enough for Jurgis and Ona to be married according to home traditions of decency." (paragraph 1)

B. "They were shaken to the depths of them, with the awe of love realized—and was it so very weak of them that they cried out for a little peace?" (paragraph 2)

C. "It was fully a week before they were all normal again, and meantime, with whining children and cross adults, the house was not a pleasant place to live in." (paragraph 4)

D. "The store-keepers plastered up their windows with all sorts of lies to entice you; the very fences by the wayside, the lampposts and telegraph poles, were pasted over with lies." (paragraph 5)

26. Based on paragraph 4, what can the reader infer about Jurgis?

A Jurgis overcame his true nature because of his love for Ona.

B Jurgis wished Ona were a stronger person.

C Jurgis did not get upset easily.

D Jurgis worked hard at his job.

27. OMITTED (USED IN VOCABULARY SECTION)

28. What detail from the passage supports the idea that life for Jurgis and Ona might improve?

- A. "In the latter part of November they hired a hall, and invited all their new acquaintances. . . ." (paragraph 1)
- B. "It was a time when everything cried out to them that they ought to be happy; when wonder burned in their hearts, and leaped into flame at the slightest breath." (paragraph 2)
- C. "They had opened their hearts, like flowers to the springtime, and the merciless winter had fallen upon them." (paragraph 2)
- D. "He had to protect her, to do battle for her against the horror he saw about them." (paragraph 5)

29. Select two ways the author advances the plot through the development of Jurgis's character.

- A. Jurgis becomes fearful because of the financial struggles, which causes him to fear losing Ona as well.
- B. Jurgis becomes impatient due to his own insecurities, which causes him to push Ona further away from him.
- C. Jurgis becomes aware of the dangers within and around him, which causes him angrily to suspect all except Ona.
- D. Jurgis becomes aggressive because of the family members' attitudes, which causes him to work longer hours to stay away.
- E. Jurgis becomes critical of Ona because of her naïve personality, which causes him to question the nature of everything around them.

30. Which detail from the passage supports the idea that Ona is a much different person than Jurgis perceives?

- A. "They were shaken to the depths of them, with the awe of love realized—and was it so very weak of them that they cried out for a little peace?" (paragraph 2)
- B. "Ona was scarcely able to stand with exhaustion; but if she were to lose her place they would be ruined, and she would surely lose it if she were not on time that day." (paragraph 3)
- C. "She was so sensitive—she was not fitted for such a life as this; . . ." (paragraph 4)
- D. "The tears came so easily into Ona's eyes, and she would look at him so appealingly—it kept Jurgis quite busy making resolutions. . . ." (paragraph 4)

**Source:** Mississippi Practice Test

**Read the two passages and then answer the questions that follow.**

## Excerpt from **Gift from the Sea**

by Anne Morrow Lindbergh

1 The shell in my hand is deserted. It once housed a whelk, a snail-like creature, and then temporarily, after the death of the first occupant, a little hermit crab, who has run away, leaving his tracks behind him like a delicate vine on the sand. He ran away, and left me his shell. It was once a protection to him. I turn the shell in my hand, gazing into the wide open door from which he made his exit. Had it become an encumbrance? Why did he run away? Did he hope to find a better home, a better mode of living? I too have run away, I realize, I have shed the shell of my life, for these few weeks of vacation.

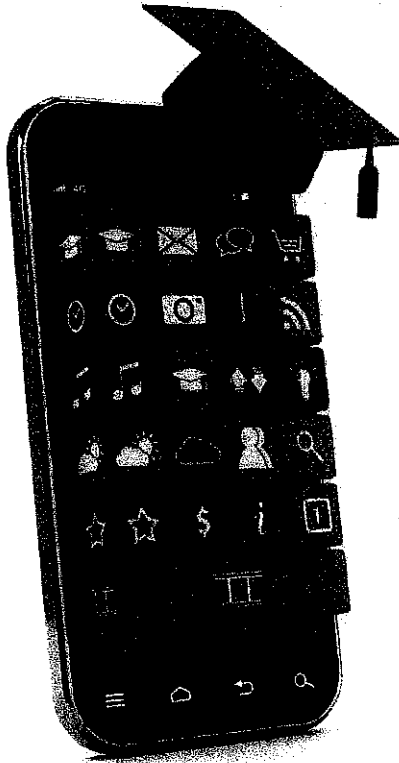
2 But his shell—it is simple; it is bare, it is beautiful. Small, only the size of my thumb, its architecture is perfect, down to the finest detail. Its shape, swelling like a pear in the center, winds in a gentle spiral to the pointed apex. Its color, dull gold, is whitened by a wash of salt from the sea. Each whorl, each faint knob, each criss-cross vein in its egg-shell texture, is as clearly defined as on the day of creation. My eye follows with delight the outer circumference of that diminutive winding staircase up which this tenant used to travel.

3 My shell is not like this, I think. How untidy it has become! Blurred with moss, knobby with barnacles, its shape is hardly recognizable any more. Surely, it had a shape once. It has a shape still in my mind. What is the shape of my life?

4 The shape of my life today starts with a family. I have a husband, five children and a home just beyond the suburbs of New York. I have also a craft, writing, and therefore work I want to pursue. The shape of my life is, of course, determined by many other things; my background and childhood, my mind and its education, my conscience and its pressures, my heart and its desires. I want to give and take from my children and husband, to share with friends and community, to carry out my obligations to man and to the world, as a woman, as an artist, as a citizen.

5 But I want first of all—in fact, as an end to these other desires—to be at peace with myself. I want a singleness of eye, a purity of intention, a central core to my life that will enable me to carry out these obligations and activities as well as I can. I want, in fact—to borrow from the language of the saints—to live “in grace” as much of the time as possible. I am not using

# English 2



To Proficiency and  
Beyond!



# Table of Contents

- Glossary of Academic Terms
- Annotation Guide
- Vocabulary Practice Items
- Comprehension Practice Items
- Answer Guide

## Glossary of Academic Terms

<b>Term</b>	<b>Definition</b>	<b>Example</b>
<b>Tension</b>	Tension arises from conflict. It's the reader's concern about how the conflict will be resolved	Who will win the battle? Will the missing child be found? Will the hero live?
<b>Suspense</b>	A sense of anticipation, or even worry, that the reader has for the characters as they encounter problems during the plot of the story.	
<b>Oxymoron (Much like Juxtaposition)</b>	<b>Oxymoron</b> is a figure of speech in which two opposite ideas are joined to create an effect.	
<b>Euphemism</b>	a mild or indirect word or expression substituted for one considered to be too harsh or blunt when referring to something unpleasant or embarrassing.	
<b>Juxtaposition</b>	See Oxymoron, however, juxtaposition can show similarities or differences	
<b>Theme</b>	A unifying, recurring idea or truth related in a text	
<b>Figurative Language</b>	Refers to words and phrases that are not intended to be understood literally	
<b>Simile</b>	A comparison of two unlike things using the words like or as.	

<b>Metaphor</b>	A comparison of two unlike things without the words like or as.	
<b>Personification</b>	When an object or item is given human characteristics or qualities.	
<b>Onomatopoeia</b>	A word that makes the sound it states.	
<b>Alliteration</b>	The repetition of consonant sounds at the beginning of a series of words in a row.	
<b>Idiom</b>	n. a common saying that has a figurative meaning rather than a literal one.	
<b>Mood</b>	The feeling or atmosphere a text creates within the reader.	
<b>Tone</b>	The overall attitude toward the them and audience that is implied in a literary text	
<b>Foreshadowing</b>	A <b>literary</b> device in which a writer gives an advance hint of what is to come later in the story	
<b>Satire</b>	A technique employed by writers to expose and criticize foolishness and corruption of an individual or a society, by using humor, irony, exaggeration, or ridicule.	
<b>Complex Character</b>	A <b>Complex character</b> , (also known as a <b>Dynamic</b> character or a <b>Round</b> character):	

	<ul style="list-style-type: none"> <li>* undergoes an important change as the plot unfolds.</li> <li>*The changes he or she experiences occur because of his or her actions or experiences in the story.</li> <li>*Changes in the character may be good or bad.</li> <li>*The character is highly developed and complex, meaning they have a variety of traits and different sides to their personality.</li> <li>*Some of their character traits may create conflict in the character.</li> <li>*He or she displays strengths, weaknesses, and a full range of emotions.</li> <li>*He or she has significant interactions with other characters.</li> <li>*He or she advances the plot or develops a major theme in the text.</li> </ul>	
<p><b>Motivation</b></p>	<p>The reason behind a <b>character's</b> behaviors and actions throughout a story. <b>Motivations</b> are intrinsic needs: they might be external needs and relate to survival, but they might also be psychological or existential needs, such as love or professional achievement.</p>	

<b>Conflict</b>	Any struggle the protagonist faces and that moves the plot of the story: <b>Man vs. Self</b> <b>Man vs. Man</b> <b>Man vs. Society</b> <b>Man vs. Nature</b> <b>Man vs. Technology</b> <b>Man vs. Fate (or the Supernatural)</b>	
<b>Interact</b>	Interact--action, effect, or influence of the plot elements on characters or characters on other character	
<b>Plot</b>	The events of a story: (introduction, rising action, climax, falling action, resolution)	
<b>Direct Characterization</b>	Tells the reader what the personality of the character is	
<b>Indirect Characterization</b>	Shows the reader the character's personality through the character's STEAL: speech, thoughts, emotions, actions, looks	
<b>Antagonist</b>	the character that opposes the leading character	
<b>Protagonist</b>	Leading/Main character	

## English II Annotation Guide

**1. Always read with a pen in hand.**

**2. Annotate what's most important:**

- o Main ideas (summarize stated main ideas; try to write out implied main ideas)
- o Definitions (indicate with dfn in the margin)
- o Examples (indicate with ex in the margin)
- o Lists of reason or characteristics (number them; perhaps also summarize each one)
- o Concepts that show cause and effect relationships, or similarities and differences (use arrows to show the connections)
- o Summary statements (paraphrase in the margin and circle)
- o Unfamiliar words (put a box around them, or underline with a red pen)
- o Signal words (circle them)

**3. Annotate one section at a time. "Chunk" the text.**

Survey the section first, and then read all the information under the heading. Then determine what's important to write in the margin.

**4. Annotate before you underline or highlight.** This will reduce the amount you'll need to underline or highlight.

**5. Annotate in your own words, using as few words as possible.** Don't just copy. Think about what you're reading, and accurately paraphrase it. This helps you monitor your learning. If you can't write the information in your own words, then you probably don't understand it.

**6. Turn headings into questions.** When you find the answer to your question, place parentheses around the answer and write imp in the margin.

**7. Number items in a list. Write out a brief heading for that list.**

**8. Put "?" to indicate information that you do not understand.**

**9. Put \* next to information that may be important (but you're not sure)**

**10. Mark important ideas with \*\* or imp in the margin.**

**11. Use numbers for lists and sequences.**

**12. Put "T" next to items that are likely to be on the test.**

**13. Put SUM next to a summary statement**

**14. Use abbreviations and symbols.** Develop a personalized marking system that's meaningful to you.

**15. Write comments in the margins to help you connect the material with instructor comments and your own experience.**

**16. Re-read any parts that you did not understand.**

English II  
Vocabulary Practice Items

1. Read the following sentences.  
(Adapted from EngageNY 2014)

"Yes, I have a turn both for observation and for deduction. The theories which I have expressed there, and which appear to you to be so chimerical, are really extremely practical—so practical that I depend upon them for my bread-and-cheese."

As used in the passage, the word "**chimerical**" most nearly means

- A. unfair
- B. aggravating
- C. unrealistic
- D. contradictory

2. Read the following sentences.  
(Item 2 from Mississippi Item Sampler)

**"I was at first unable to answer these questions, but perpetual attention and time explained to me many appearances which were at first enigmatic."**

What does **enigmatic** mean as it is used in the paragraph?

- A. admirable
- B. constant
- C. depressing
- D. mysterious

3. Read the sentence.  
(Item 5 from Mississippi Item Sampler)

**"This was indeed a godlike science, and I ardently desired to become acquainted with it."**

What does the word **ardently** mean as it is used in the sentence?

- A. passionately
- B. enviously
- C. miserably
- D. faithfully

4. Read the sentence.  
(Item 15 from Mississippi Item Sampler)

**"The ship which finally rescued that party deposited its stock of stores on Paulet Island for the use of any later castaways."**

What is the meaning of **stock** as it is used in the sentence?

- A. framework
- B. estimate
- C. share
- D. supply

5. Read the sentences.  
(Item 20 from Mississippi Item Sampler)

**"Evidence of the scope of such an undertaking is the fact that after Shackleton's failure, the crossing of the continent remained untried for fully forty-three years— until 1957–1958."**

Choose the word that would best replace the word **scope** as it is used in the original sentence from the text.

- A. scan
- B. extent
- C. preview
- D. liberty

6. Read the following sentences.  
(Item 2 from Mississippi Practice Test)

**Highbury, the large and populous village, almost amounting to a town, to which Hartfield, in spite of its separate lawn, and shrubberies, and name, did really belong, afforded her no equals. The Woodhouses were first in consequence there.**

What can be inferred about the Woodhouses based on the phrase "**first in consequence**"?

- A. The Woodhouses settled Highbury.
- B. The Woodhouses governed Highbury.
- C. The Woodhouses were the largest family in Highbury .
- D. The Woodhouses were the most important family in Highbury.



7. Read the following sentences.  
(Item 15 from Mississippi Practice Test)

**The history of the present King of Britain is a history of repeated injuries and usurpations, all having in direct object the establishment of an absolute Tyranny over these States. To prove this, let Facts be submitted to a candid world.**

What is the meaning of the word **usurpations** as it is used in this paragraph?

- A. making objections to laws
- B. creating unnecessary regulations
- C. taking someone's power or property by force
- D. taking someone's ideas and passing them as his own.

8. Read this sentence.  
(Item 22 from Mississippi Practice Test)

**Such a pitiful beginning it was for their married life; they loved each other so, and they could not have the briefest respite!**

What does the word **respite** mean as it is used in this sentence?

- A. a break from everyday worries
- B. a desire for love to conquer all
- C. a meal that would relax them
- D. a dislike of the outside world

9. Read this sentence.  
(Item 23 from Mississippi Practice Test)

**They had opened their hearts, like flowers to the springtime, and the merciless winter had fallen upon them.**

How does the author use figurative language in the sentence to contribute to the meaning of the passage?

- A. to convey a sense of beauty about the couple's relationship
- B. to emphasize the short time the couple experienced together
- C. to illustrate how nature played a part in the couple's relationship
- D. to contrast the expectations of the couple with the reality they experience

10. Read this sentence.  
(Item 24 from Mississippi Practice Test)

**All that day he stood at his lard machine, rocking unsteadily, his eyes closing in spite of him; and he all but lost his place even so, for the foreman booted him twice to waken him.**

What does the phrase **his eyes closing in spite of him** mean?

- A. It implies that he is ill.
- B. It describes that he is bored at work.
- C. It shows his efforts to fight exhaustion.
- D. It illustrates how he is pushed at work.

11. Read this sentence.  
(Item 27 from Mississippi Practice Test)

**Over them, relentless and savage, there cracked the lash of want; the morning after the wedding it sought them as they slept, and drove them out before daybreak to work.**

How does the figurative language in this sentence help the reader understand the reality the characters face in the excerpt?

- A. It reveals the couple's lack of control over their environment.
- B. It portrays the couple's physical pains from their labors both day and night.
- C. It describes the couple's inability to spend any time with each other.
- D. It establishes the couple's desire to pay back the debt caused by their wedding.

12. Read the sentences from the excerpt from *Gift from the Sea*.  
(Item 31 from Mississippi Practice Test)

**I turn the shell in my hand, gazing into the wide-open door from which he made his exit. Had it become an encumbrance? Why did he run away?**

What does the word **encumbrance** mean as used in these sentences?

- A. a burden
- B. a disaster
- C. a desire
- D. a failure

13. Read the sentence from the excerpt from *Walden*.  
(Item 37 from Mississippi Practice Test)

**To be in company, even with the best, is soon wearisome and dissipating.**

What does the word **dissipating** mean as it is used in this sentence?

- A. detesting
- B. diminishing
- C. oppressing
- D. pacifying

14. Read the following paragraph.  
(Item 43 from Mississippi Practice Test)

**The farmer can work alone in the field or the woods all day, hoeing or chopping, and not feel lonesome, because he is employed; but when he comes home at night he cannot sit down in a room alone, at the mercy of his thoughts, but must be where he can "see the folks," and recreate, and as he thinks remunerate himself for his day's solitude; and hence he wonders how the student can sit alone in the house all night and most of the day without ennui and "the blues"; but he does not realize that the student, though in the house, is still at work in his field, and chopping in his woods, as the farmer in his, and in turn seeks the same recreation and society that the latter does, though it may be a more condensed form of it.**

What does the word "**remunerate**" mean as it used in paragraph 1 of the excerpt from *Walden*?

- A. considers
- B. rewards
- C. celebrates
- D. punishes

**15. Read the following paragraph.**  
(Adapted from EngageNY 2014)

Blowing out the candle, which her husband had left burning, she slipped her bare feet into a pair of satin mules at the foot of the bed and went out on the porch, where she sat down in the wicker chair and began to rock gently to and fro. It was then past midnight. The cottages were all dark. A single faint light gleamed out from the hallway of the house. There was no sound abroad except the hooting of an old owl in the top of a wateroak, and the everlasting voice of the sea, that was not uplifted at that soft hour. It broke like a mournful lullaby upon the night.

The author's choice of language in these lines serve to emphasize Mrs. Pontellier's sense of:

- A. isolation
- B. boredom
- C. disbelief
- D. inferiority

**1. Read the following sentences.**

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