COLLEGE READINESS INITIATIVE

Test Two: Math with Calculator
Additional Problems

Once you have read through the test marked Test Two: Math with Calculator and understand the solutions, complete the following practice test to reinforce what you have just learned. Good luck!

Question 1

John set up a store at his school that sells pencils and erasers. Johnny earns $0.27 for each pencil he sells and $0.08 for each eraser. Which of the following expressions represents the amount, in dollars, that John earns if he sells p number of pencils and e number of erasers?

A) $0.27p + $0.08e
B) $0.08p – $0.27e
C) $0.27p – $0.08e
D) $0.08p + $0.27e

Question 2

A quality control manager at a factory selects 11 knives at random for inspection out of every 500 knives produced. At this rate, how many lightbulbs will be inspected if the factory produces 30,000 knives?

A) 400
B) 550
C) 660
D) 825

Question 3

$$l = 6 + 2.5m$$

A rubber band is attached to a ceiling. When an object of mass m kilograms is attached to the rubber band, the band stretches to a length of l centimeters as shown in the equation above. What is m when l is 13?

A) .5
B) 2
C) 2.8
D) 3.5

Question 4

The amount of money a magician earns is directly proportional to the number of people attending his performances. The magician earns $75 at a performance where 15 people attend.

How much money will the magician earn when 24 people attend a performance?

A) $360
B) $250
C) $150
D) $120

Question 5

The amount of money a magician earns is directly proportional to the number of people attending his performances. The magician earns $75 at a performance where 15 people attend.

The magician uses 31% of the money earned to pay the costs involved in putting on each performance. The rest of the money earned is the magician's profit. What is the profit the magician makes at a performance where 15 people attend?

A) $23.25
B) $51.75
C) $57.00
D) $68.75

Question 6

When 6 divided by x is added to 8, the result is 11. What number results when 4 times x is deducted by 9?

A) -1
B) 0
C) 2
D) 3

Written by Crystal Ding

Question 7

$$y = x^2 - x - 12$$

The equation above represents a parabola in the xy-plane. Which of the following equivalent forms of the equation displays the x-intercepts of the parabola as constants or coefficients?

A) $y = (x - 1)^2 + x - 13$
B) $y = x(x - 1) - 12$
C) $y = (x - 4)(x + 3)$
D) $y - 3 = x^2 - 6x + 5$

Written by Crystal Ding

Question 8

In a video game, each player starts the game with k points, wins 3 points each time a task is completed and loses 2 points each time a task is not completed. If a player who completes 20 tasks and fails to complete 25 tasks has a score of 110 points, what is the value of k?

A) 0
B) 100
C) 150
D) 200

Written by Crystal Ding

Question 9

A truck driver uses a truck to move boxes that weigh either 30 pounds or 45 pounds each. Let x be the number of 30-pound boxes and y be the number of 45-pound boxes. The truck can carry up to either 40 boxes or a weight of 2,000 pounds. Which of the following systems of inequalities represents this relationship?

A) $30x + 45y \leq 2{,}000$
$x + y \leq 40$

B) $45x + 30y \leq 2{,}000$
$x + y \leq 40$

C) $30x + 45y \leq 40$
$x + y \leq 2{,}000$

D) $x + y \leq 2{,}000$
$30x + 45y \leq 2{,}000$

Written by Faizan Dogar

Question 10

A function g satisfies $g(2)=6$ and $g(4)=5$. A function x satisfies $x(2)=4$ and $x(4)=3$. What is the value of $g(x(2))$?

A) 3
B) 5
C) 6
D) 4

Written by Nicole D'Onofrio

Question 11

Number of minutes Sam plans to run per week	60
Number of laps per mile	10
Number of miles Sam plans to run per day	3
Number of minutes it takes Sam to run 1 lap	0.5

Sam is planning to run 12 miles per week. The table above shows information about Sam's running plan. If Sam anticipates running at the following rates, given above, which of the following is closest to the number of days Sam plans to run per week?

A) 7
B) 4
C) 3
D) 2

Written by Nicole D'Onofrio

Question 12

Before the start of a 10 day fitness program, Luke consumes 2,000 calories per day. He expects that as his amount of exercise per day increases, he will have to take in more calories for energy. Each day he will consume about 150 more calories more than the prior day. If Luke consumes 2800 calories on the 4th day, by how many calories did Luke exceed his calorie target for that day?

A) 2,000
B) 800
C) 400
D) 200

Written by Nicole D'Onofrio

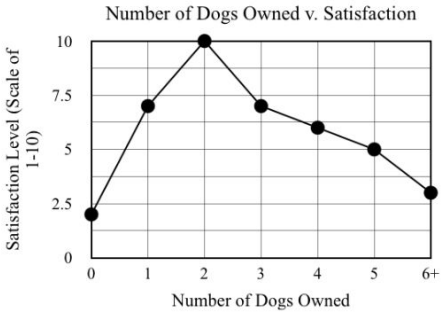
Question 13

A researcher conducted a survey to determine whether or not students should be given more or less homework. The researcher surveyed every other student who walked out of school. In total she surveyed 520 students, but 23 students refused to answer. Which of the following factors makes it least likely that a reliable conclusion can be drawn about the amount of homework students should receive?

A) The number of people who refused to respond
B) Population Size
C) Sample Size
D) Bias in the sample group

Written by Nicole D'Onofrio

Question 14



A student surveyed 100 people and asked them, on a scale from 1-10, how happy they are with the number of dogs they own. The chart above shows the reported satisfaction level at each number of dogs owned, starting at 0. Which of the following conclusions accurately describes this student's results?

A) People who own 6+ dogs are more satisfied than people who don't own a dog.
B) People are least content when they own 2 dogs.
C) People are most satisfied when they own 4 dogs.
D) Someone who owns 1 dog is likely less satisfied than someone who owns 6 dogs.

Written by Nicole D'Onofrio

Question 15

Fred writes 6 pages of his novel per day. Each page has about 312 words. It takes Fred 20 minutes to write each page of the novel. What is the amount, in hours per day, that Fred writes for his novel each day?

A) 52
B) 4
C) 2
D) 120

Written by Nicole D'Onofrio

Question 16

Dessert Preferences of 60 People at a Party

	Chocolate	Vanilla
Prefer Ice Cream	10	15
Prefer Cake	13	22

The table above shows the results of 60 people who have the option of either ice cream or cake for dessert at a party. They also have the option of chocolate or vanilla for either dessert. If one person is chosen at random, what are the odds that they prefer cake, but not chocolate cake?

A) 13
B) 10/23
C) 22/35
D) 13/10

Written by Nicole D'Onofrio

Question 17

Joe's pizzeria offers a plain slice and a slice with extra cheese. The slice with extra cheese has 20% more cheese than the plain slice. If the plain slice has 1 cup of cheese, what is the best approximation for the amount of cheese, in cups, that the extra cheese slice has?

A) 1.0
B) 2.0
C) 1.2
D) 0.2

Written by Nicole D'Onofrio

Question 18

A survey was taken of the average amount people pay to get into their local beach. The researcher of this survey found that the mean amount people pay is $9 and the median amount people pay is $7. Which of the following could explain the difference between the mean and median amount people pay for admission into their local beach?

A) There are a few beaches that set a very high price for admission.
B) There are many beaches that charge $7.
C) There are many beaches that set a very high price for admission.
D) There are a few beaches that set a very low price for admission.

Written by Nicole D'Onofrio

At random, a researcher chooses two high school classes to survey about their gum chewing habbits. The survey consists of 56 students from the two classes. The results are shown in the table below.

Packs of Gum Students Chew in One Month

Packs of gum	Class A	Class B
0	2	2
1	4	7
2	6	6
3	12	5
4	8	4

There are a total of 32 students in Class A and 24 students in Class B.

Question 19

What is the mean packs of gum chewed for all the students surveyed?

A) 1
B) 2
C) 3
D) 4

Written by Nicole D'Onofrio

Question 20

Based on the survey data, which of the following statements most accurately describes the amount of students who don't chew gum?

A) In both classes, the same percentage of students don't chew gum.
B) A higher percentage of students in class B don't chew gum.
C) A different number of students, in the two classes, don't chew gum.
D) The total number of students who don't chew gum, exceeds the number of students who chew one pack.

Written by Nicole D'Onofrio

Question 21

A caterer estimates that an order will take x hours to complete, where $x > 100$. The goal is for the estimate to be within 5 hours of the time it will actually take to complete the project. If the manager meets the goal and it takes y hours to complete the project, which of the following inequalities represents the relationship between the estimated time and the actual completion time?

A) $x + y < 5$
B) $y > x + 5$
C) $y < x - 5$
D) $-5 < y - x < 5$

Written by Faizan Dogar

$C = nh^2 / t$

C represents the number of cookies Nina is allowed to eat per hour. The number of hours passed is represented by h. The number of times her mom says no to eating one is represented by t. The number of cookies Nina wants to eat is represented by n.

Question 22

Three hours have passed since the cookies came out of the oven. If Nina's mom only says no 3 times when she asks for one, how many times more cookies will she actually eat than if her mom said no 9 times?

A) 3
B) 1
C) 2
D) 3n

Written by Nicole D'Onofrio

Question 23

Which of the following represents the number of cookies Nina wants to eat per hour?

A) $h = Cnt$
B) $C = nh^2$
C) $n = Ct / h^2$
D) $Ct = n$

Written by Nicole D'Onofrio

Question 24

The equation of a circle in the xy-plane is shown above. What is the radius of the circle?

A) 9
B) 6
C) 3
D) 1

Written by Faizan Dogar

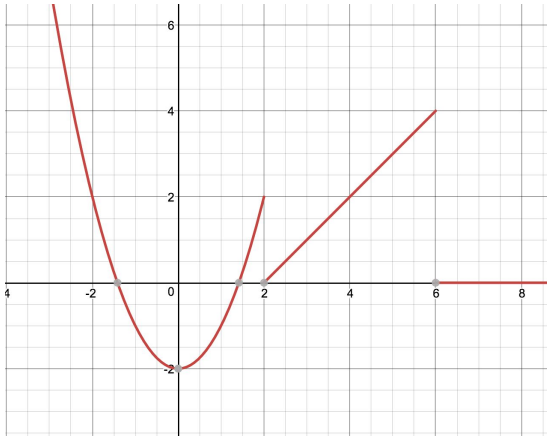
Question 25

The graph of the linear function g has intercepts at $(a,0)$ and $(0,b)$ in the xy-plane. If $a = b$ and a, which of the following is true about the slope of the graph of g?

A) It is positive.
B) It is negative.
C) It equals zero.
D) It is undefined.

Written by Faizan Dogar

Question 26



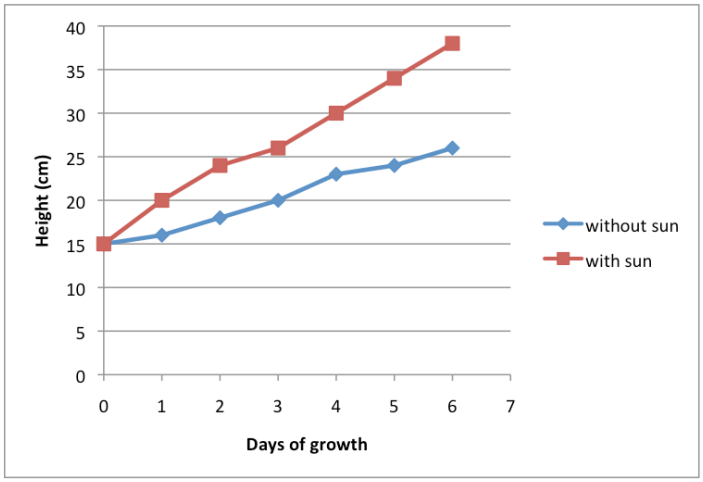
The graph of f(x) is below. Which of the following are equal to 0?

I. f(0)
II. f(2)
III. f(6)

A) III only
B) I and II only
C) II and III only
D) I, II, and III

Written by Elise Favia

Question 27



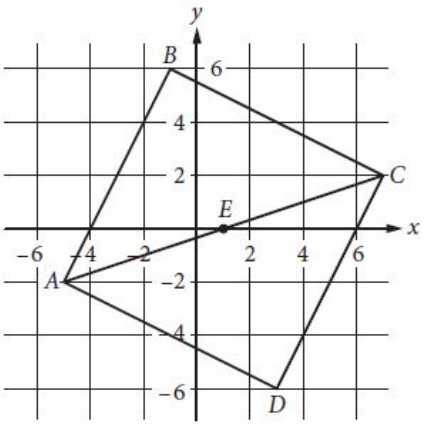
Two plants are growing, one in sunlight, one without sunlight. Which of the following is a correct comparison about the rate of growths of the plants?

A)The rate of change of the height of the plant without sun is always greater than that of the plant with sun
B) The rate of change of the height of the plant with sun is always greater than that of the plant without sun

C) From days 1-3, the rate of change of the height of the plant with sun is greater than that of the plant without sun, but from days 4-6 the rate of change of the height of the plant without sun is always greater than that of the plant with sun
D) From days 1-3, the rate of change of the height of the plant without sun is greater than that of the plant with sun, but from days 4-6 the rate of change of the height of the plant with sun is always greater than that of the plant without sun

Written by Elise Favia

Question 28



ABCD forms a square and point E is the center of the square. If C and E are at (0,4), (-2,2), respectively, what is an equation of a line that passes through points B and D?

A) y=x
B) y=-2x
C) y=4x
D) y=-x

Written by Elise Favia

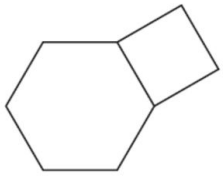
Question 29

In the system of equations above, a and b are constants. For which of the following values of a and b does the system of equations have no real solutions?

A) $a = 2, b = 2$
B) $a = -2, b = 4$
C) $a = 2, b = 4$
C) $a = 4, b = 3$

Written by Faizan Dogar

Question 30



The figure above shows a regular hexagon with sides of length a If the area of the hexagon is $216\sqrt{3}$ square inches, what is the area, in square inches, of the square?

A) 144
B) 36
C) 9
D) $36\sqrt{3}$

Written by Elise Favia

Question 31

If the average person reads at a rate of three pages per minute, how many minutes would it take the average person to read 156 pages?

Written by Nicole D'Onofrio

Question 32

If x days and 10 hours is equal to 154 hours, what is the value of x?

Written by Nicole D'Onofrio

Question 33

In the xy-plane, the point (2,4) lies on the graph of the function $g(x)=4x^3-bx+12$. What is the value of b?

Written by Nicole D'Onofrio

Question 34

If x days and 10 hours is equal to 154 hours, what is the value of x?

Written by Nicole D'Onofrio

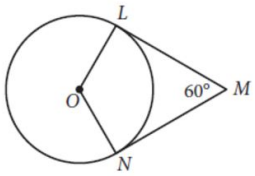
Question 35

$$S = 5w + 75$$

Koby wants to increase his math grade. He creates a study plan to steadily increase his math score over the course of 5 weeks. Based on the equation above, how many points does Koby expect to increase his score each week?

Written by Nicole D'Onofrio

Question 36



In the figure above, point O is the center of the circle, line segments LM and MN are tangent to the circle at points L and N, respectively, and the segments intersect at point M as shown. If the circumference of the circle is 36, what is the length of minor arc LN?

Written by Elise Favia

A biologist is cultivating a rare species of bacteria in a controlled environment and currently has 4,000 of these bacteria. The population of this species that the biologist expects to grow next year, can be estimated from the number of bacteria this year, by the equation below.

The constant K in this formula is the number of bacteria the environment is able to support.

Question 37

According to the formula, what will be the number of bacteria three years from now if $K = 6000$? (Round your answer to the nearest whole number.)

Written by Faizan Dogar

Question 38

The biologist would like to increase the number of bacteria that the environment can support so that the population of the species will increase more rapidly. If the biologist's goal is to increase from 4000 to 4500 next year, how many bacteria must the modified environment support? (Round your answer to the nearest whole number.)

Written by Faizan Dogar

Great work! Click on the "Additional Problems Key" to score your test. Then redo the problems that you scored incorrectly.