1 Mark for Review

4, 4, 4, 4, 8, 8, 8, 13, 13

Which frequency table correctly represents the data listed?

(A)

Number	Frequency
4	4
8	3
13	2

(B)

Number	Frequency
4	4
3	8
2	13

(C)

Number	Frequency
4	16
8	24
13	26

(D)

Number	Frequency
16	4
24	8
26	13

2 Mark for Review

Which expression is equivalent to $x^2 + 3x - 40$?

(A) $(x - 4)(x + 10)$

(B) $(x - 5)(x + 8)$

(C) $(x - 8)(x + 5)$

(D) $(x - 10)(x + 4)$

3 Mark for Review

Jay walks at a speed of 3 miles per hour and runs at a speed of 5 miles per hour. He walks for w hours and runs for r hours for a combined total of 14 miles. Which equation represents this situation?

(A) $3w + 5r = 14$

(B) $\frac{1}{3}w + \frac{1}{5}r = 14$

(C) $\frac{1}{3}w + \frac{1}{5}r = 112$

(D) $3w + 5r = 112$

4 Mark for Review

In triangle ABC, the measure of angle B is 52° and the measure of angle C is 17°. What is the measure of angle A?

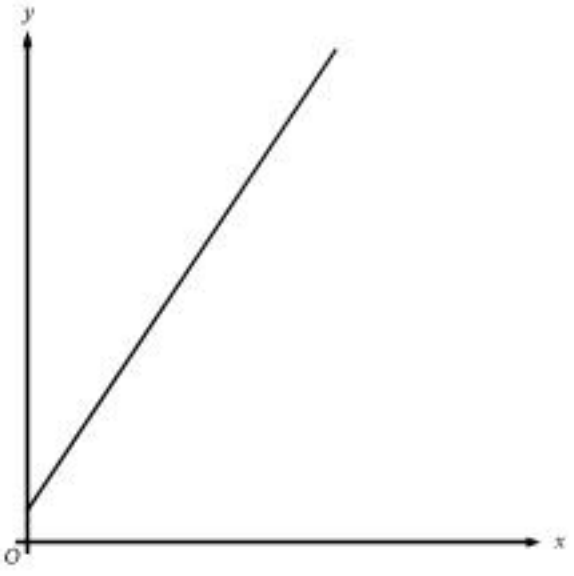
(A) 21°

(B) 35°

(C) 69°

(D) 111°

5 Mark for Review



The graph represents the total charge, in dollars, by an electrician for x hours of work. The electrician charges a onetime fee plus an hourly rate. What is the best interpretation of the slope of the graph?

(A) The electrician's hourly rate

(B) The electrician's onetime fee

(C) The maximum amount that the electrician charges

(D) The total amount that the electrician charges

6 Mark for Review

The table summarizes the distribution of color and shape for 100 tiles of equal area.

	Red	Blue	Yellow	Total
Square	10	20	25	55
Pentagon	20	10	15	45
Total	30	30	40	100

If one of these tiles is selected at random, what is the probability of selecting a red tile? (Express your answer as a decimal or fraction, not as a percent.)

Answer Preview:

7 Mark for Review

From a population of 50,000 people, 1,000 were chosen at random and surveyed about a proposed piece of legislation. Based on the survey, it is estimated that 35% of people in the population support the legislation, with an associated margin of error of 3%. Based on these results, which of the following is a plausible value for the total number of people in the population who support the proposed legislation?

(A) 350

(B) 650

(C) 16,750

(D) 31,750

8 Mark for Review

$$\frac{55}{x+6} = x$$

What is the positive solution to the given equation?

Answer Preview:

9 Mark for Review

An airplane descends from an altitude of $9{,}500$ feet to $5{,}000$ feet at a constant rate of 400 feet per minute. What type of function best models the relationship between the descending airplane's altitude and time?

(A) Decreasing exponential

(B) Decreasing linear

(C) Increasing exponential

(D) Increasing linear

$$g(x) = 11\left(\tfrac{1}{12}\right)^x$$

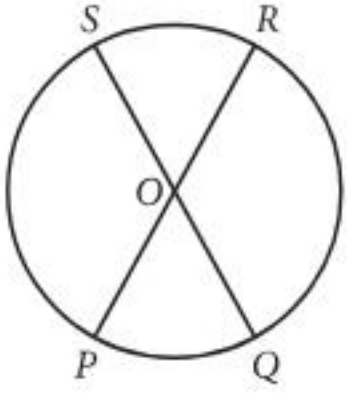
If the given function g is graphed in the xy-plane, where $y = g(x)$, what is the y-intercept of the graph?

(A) $(0, 11)$

(B) $(0, 132)$

(C) $(0, 1)$

(D) $(0, 12)$



Note: Figure not drawn to scale.

The circle shown has center O, circumference 144π, and diameters $\overline{PR}$ and $\overline{QS}$. The length of arc PS is twice the length of arc PQ. What is the length of arc QR?

(A) 24π

(B) 48π

(C) 72π

(D) 96π

12 Mark for Review

A rectangle has a length of x units and a width of $(x - 15)$ units. If the rectangle has an area of 76 square units, what is the value of x?

(A) 4

(B) 19

(C) 23

(D) 76

Time (years)	Total amount (dollars)
0	604.00
1	606.42
2	608.84

Rosa opened a savings account at a bank. The table shows the exponential relationship between the time t, in years, since Rosa opened the account and the total amount n, in dollars, in the account. If Rosa made no additional deposits or withdrawals, which of the following equations best represents the relationship between t and n?

(A) $n = (1 + 604)^t$

(B) $n = (1 + 0.004)^t$

(C) $n = 604(1 + 0.004)^t$

(D) $n = 0.004(1 + 604)^t$

14 Mark for Review

At how many points do the graphs of the equations $y = x + 20$ and $y = 8x$ intersect in the xy-plane?

(A) 0

(B) 1

(C) 2

(D) 8

15 Mark for Review

$$5G + 45R = 380$$

At a school fair, students can win colored tokens that are worth a different number of points depending on the color. One student won G green tokens and R red tokens worth a total of 380 points. The given equation represents this situation. How many more points is a red token worth than a green token?

Answer Preview:

16 Mark for Review

The number of bacteria in a liquid medium doubles every day. There are 44,000 bacteria in the liquid medium at the start of an observation. Which represents the number of bacteria, y, in the liquid medium t days after the start of the observation?

(A) $y = \frac{1}{2}(44{,}000)^t$

(B) $y = 2(44{,}000)^t$

(C) $y = 44{,}000\left(\frac{1}{2}\right)^t$

(D) $y = 44{,}000(2)^t$

17 Mark for Review

A cylinder has a diameter of 8 inches and a height of 12 inches. What is the volume, in cubic inches, of the cylinder?

(A) 16π

(B) 96π

(C) 192π

(D) 768π

$$6x + 7y = 28$$
$$2x + 2y = 10$$

The solution to the given system of equations is (x, y). What is the value of y?

(A) -2

(B) 7

(C) 14

(D) 18

19 Mark for Review

In triangle JKL, $\cos(K) = \frac{24}{51}$ and angle J is a right angle. What is the value of $\cos(L)$?

Answer Preview:

20 Mark for Review

$$f(x) = 4x^2 - 50x + 126$$

The given equation defines the function f. For what value of x does $f(x)$ reach its minimum?

Answer Preview:

21 Mark for Review

In the xy-plane, line ℓ passes through the point $(0, 0)$ and is parallel to the line represented by the equation $y = 8x + 2$. If line ℓ also passes through the point $(3, d)$, what is the value of d?

Answer Preview:

22 Mark for Review

In the xy-plane, a line with equation $2y = c$ for some constant c intersects a parabola at exactly one point. If the parabola has equation $y = -2x^2 + 9x$, what is the value of c?

Answer Preview:

1 Mark for Review

71, 72, 73, 76, 77, 79, 83, 87, 93

What is the median of the data shown?

(A) 71

(B) 77

(C) 78

(D) 79

2 Mark for Review

$$x + 40 = 95$$

What value of x is the solution to the given equation?

Answer Preview:

3 Mark for Review

What is the area of a rectangle with a length of 17 centimeters (cm) and a width of 7 cm?

(A) $24\ \text{cm}^2$

(B) $48\ \text{cm}^2$

(C) $119\ \text{cm}^2$

(D) $576\ \text{cm}^2$

4 Mark for Review

Which expression is equivalent to $20w - (4w + 3w)$?

(A) $10w$

(B) $13w$

(C) $19w$

(D) $21w$

5 Mark for Review

The number y is 84 less than the number x. Which equation represents the relationship between x and y?

(A) $y = x + 84$

(B) $y = \frac{1}{84}x$

(C) $y = 84x$

(D) $y = x - 84$

6 Mark for Review

The expression $\frac{24}{6x+42}$ is equivalent to $\frac{4}{x+b}$, where b is a constant and $x > 0$. What is the value of b?

(A) 7

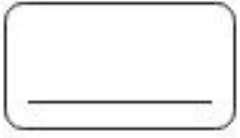
(B) 10

(C) 24

(D) 252

7 Mark for Review

Out of 300 seeds that were planted, 80% sprouted. How many of these seeds sprouted?



Answer Preview:

8 Mark for Review

Ty set a goal to walk at least 24 kilometers every day to prepare for a multiday hike. On a certain day, Ty plans to walk at an average speed of 4 kilometers per hour. What is the minimum number of hours Ty must walk on that day to fulfill the daily goal?

(A) 4

(B) 6

(C) 20

(D) 24

9 Mark for Review

If $6 + x = 9$, what is the value of $18 + 3x$?

Answer Preview:

10 Mark for Review

The function f is defined by $f(x) = x^3 + 9$. What is the value of $f(2)$?

(A) 14

(B) 15

(C) 17

(D) 18

11 Mark for Review

The total cost $f(x)$, in dollars, to lease a car for 36 months from a particular car dealership is given by $f(x) = 36x + 1{,}000$, where x is the monthly payment, in dollars. What is the total cost to lease a car when the monthly payment is $400?

(A) $13,400

(B) $13,000

(C) $15,400

(D) $37,400

12 Mark for Review

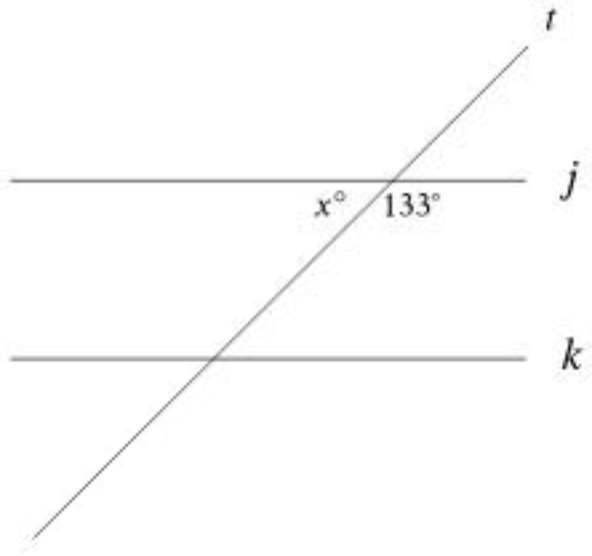
The function g is defined by $g(x) = 10x + 8$. What is the value of $g(x)$ when $x = 8$?

(A) 0

(B) 8

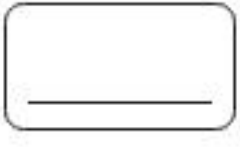
(C) 10

(D) 88



Note: Figure not drawn to scale.

In the figure, line j is parallel to line k. What is the value of x?



14 Mark for Review

The graph of $7x + 2y = -31$ in the xy-plane has an x-intercept at $(a, 0)$ and a y-intercept at $(0, b)$, where a and b are constants. What is the value of $\frac{b}{a}$?

(A) $-\frac{7}{2}$

(B) $-\frac{2}{7}$

(C) $\frac{2}{7}$

(D) $\frac{7}{2}$

15 Mark for Review

An object travels at a constant speed of 12 centimeters per second. At this speed, what is the time, in seconds, that it would take for the object to travel 108 centimeters?

(A) 9

(B) 96

(C) 120

(D) 972

16 Mark for Review

John paid a total of $165 for a microscope by making a down payment of $37 plus p monthly payments of $16 each. Which of the following equations represents this situation?

(A) $16p - 37 = 165$

(B) $37p - 16 = 165$

(C) $16p + 37 = 165$

(D) $37p + 16 = 165$

x	y
0	18
1	13
2	8

The table shows three values of x and their corresponding values of y. There is a linear relationship between x and y. Which of the following equations represents this relationship?

(A) $y = 18x + 13$

(B) $y = 18x + 18$

(C) $y = -5x + 13$

(D) $y = -5x + 18$

18 Mark for Review

An object is kicked from a platform. The equation $h = -4.9t^2 + 7t + 9$ represents this situation, where h is the height of the object above the ground, in meters, t seconds after it is kicked. Which number represents the height, in meters, from which the object was kicked?

(A) 0

(B) 4.9

(C) 7

(D) 9

$$h(x) = x^2 - 3$$

Which table gives three values of x and their corresponding values of $h(x)$ for the given function h?

(A)

x	1	2	3
$h(x)$	4	5	6

(B)

x	1	2	3
$h(x)$	-2	1	6

(C)

x	1	2	3
$h(x)$	-1	1	3

(D)

x	1	2	3
$h(x)$	-2	1	3

20 Mark for Review

In the linear function f, $f(0) = 8$ and $f(1) = 12$. Which equation defines f?

(A) $f(x) = 12x + 8$

(B) $f(x) = 4x$

(C) $f(x) = 4x + 12$

(D) $f(x) = 4x + 8$

$$14j + 5k = m$$

The given equation relates the numbers j, k, and m. Which equation correctly expresses k in terms of j and m?

(A) $k = \frac{m-14j}{5}$

(B) $k = \frac{1}{5}m - 14j$

(C) $k = \frac{14j-m}{5}$

(D) $k = 5m - 14j$

$$RS = 440$$

$$ST = 384$$

$$TR = 584$$

The side lengths of right triangle RST are given. Triangle RST is similar to triangle UVW, where S corresponds to V and T corresponds to W. What is the value of $\tan W$?

(A) $\frac{48}{73}$

(B) $\frac{55}{73}$

(C) $\frac{48}{55}$

(D) $\frac{55}{48}$

1 Mark for Review

Which expression is equivalent to $9x^2 + 7x^2 + 9x$?

(A) $63x^4 + 9x$

(B) $9x^2 + 16x$

(C) $25x^5$

(D) $16x^2 + 9x$

Of 900,000 beads, 828,000 are silver. What percentage of the beads are silver?

(A) 8%

(B) 36%

(C) 72%

(D) 92%

3 Mark for Review

If $2(3t - 10) + t = 40 + 4t$, what is the value of $3t$?

_____

4 Mark for Review

If $5(x+4)=4(x+4)+29$, what is the value of $x+4$?

(A) -4

(B) 25

(C) 29

(D) 33

5 Mark for Review

A neighborhood consists of a 2-hectare park and a 35-hectare residential area. The total number of trees in the neighborhood is $3{,}934$. The equation $2x + 35y = 3{,}934$ represents this situation. Which of the following is the best interpretation of x in this context?

(A) The average number of trees per hectare in the park

(B) The average number of trees per hectare in the residential area

(C) The total number of trees in the park

(D) The total number of trees in the residential area

6 Mark for Review

For a certain rectangular region, the ratio of its length to its width is 35 to 10. If the width of the rectangular region increases by 7 units, how must the length change to maintain this ratio?

(A) It must decrease by 24.5 units.

(B) It must increase by 24.5 units.

(C) It must decrease by 7 units.

(D) It must increase by 7 units.

$$p = 9 + \frac{14}{n}$$

The given equation relates the numbers p and n, where n is not equal to 0 and $p > 9$. Which equation correctly expresses n in terms of p?

A $n = \frac{p-9}{14}$

B $n = \frac{p}{14} + 9$

C $n = \frac{p}{14} - 9$

D $n = \frac{14}{p-9}$

The expression $\frac{24}{6x+42}$ is equivalent to $\frac{4}{x+b}$, where b is a constant and $x > 0$. What is the value of b?

(A) 7

(B) 10

(C) 24

(D) 252

9 Mark for Review

Circle A in the xy-plane has the equation $(x+5)^2+(y-5)^2=4$. Circle B has the same center as circle A. The radius of circle B is two times the radius of circle A. The equation defining circle B in the xy-plane is $(x+5)^2+(y-5)^2=k$, where k is a constant. What is the value of k?

_____

A business owner plans to purchase the same model of chair for each of the 81 employees. The total budget to spend on these chairs is $14,000, which includes a 7% sales tax. Which of the following is closest to the maximum possible price per chair, before sales tax, the business owner could pay based on this budget?

A $148.15

B $161.53

C $172.84

D $184.94

$$8x + y = -11$$

$$2x^2 = y + 341$$

The graphs of the equations in the given system of equations intersect at the point (x, y) in the xy-plane. What is a possible value of x?

(A) -15

(B) -11

(C) 2

(D) 8

How many solutions does the equation $10(15x - 9) = -15(6 - 10x)$ have?

(A) Exactly one

(B) Exactly two

(C) Infinitely many

(D) Zero

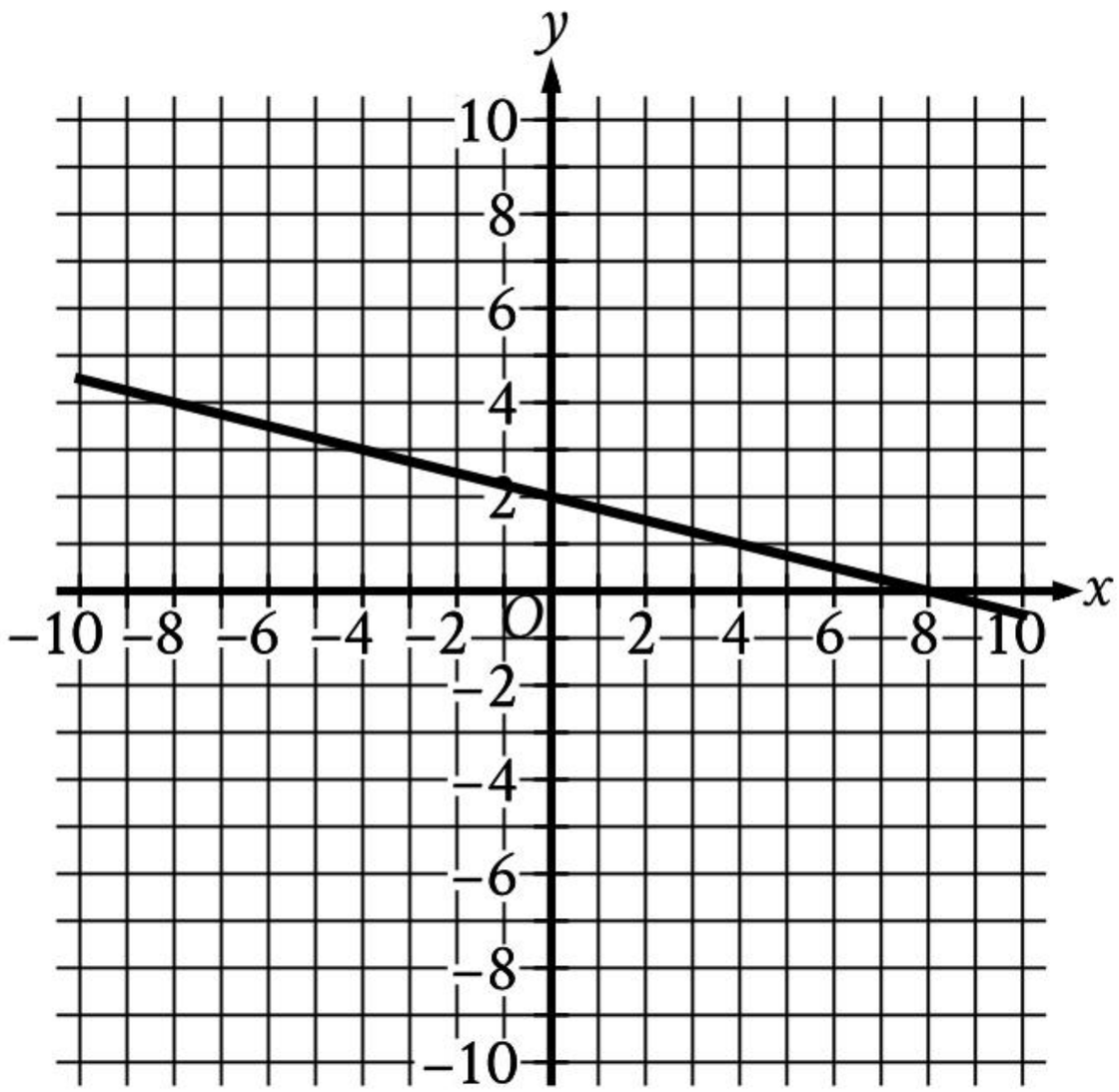
When the quadratic function f is graphed in the xy-plane, where $y = f(x)$, its vertex is $(-3, 6)$. One of the x-intercepts of this graph is $\left(-\frac{17}{4}, 0\right)$. What is the other x-intercept of the graph?

(A) $\left(-\frac{29}{4}, 0\right)$

(B) $\left(-\frac{7}{4}, 0\right)$

(C) $\left(\frac{5}{4}, 0\right)$

(D) $\left(\frac{17}{4}, 0\right)$



The graph of $y = f(x) + 14$ is shown. Which equation defines function f?

(A) $f(x) = -\frac{1}{4}x - 12$

(B) $f(x) = -\frac{1}{4}x + 16$

(C) $f(x) = -\frac{1}{4}x + 2$

(D) $f(x) = -\frac{1}{4}x - 14$

$$64x^2 + bx + 25 = 0$$

In the given equation, b is a constant. For which of the following values of b will the equation have more than one real solution?

(A) -91

(B) -80

(C) 5

(D) 40

The graph of $7x + 2y = -31$ in the xy-plane has an x-intercept at $(a, 0)$ and a y-intercept at $(0, b)$, where a and b are constants. What is the value of $\frac{b}{a}$?

(A) $-\frac{7}{2}$

(B) $-\frac{2}{7}$

(C) $\frac{2}{7}$

(D) $\frac{7}{2}$

17 Mark for Review

$$4x - 6y = 10y + 2$$

$$ty = \frac{1}{2} + 2x$$

In the given system of equations, t is a constant. If the system has no solution, what is the value of t?

_____

18 Mark for Review

An isosceles right triangle has a hypotenuse of length 58 inches. What is the perimeter, in inches, of this triangle?

(A) $29\sqrt{2}$

(B) $58\sqrt{2}$

(C) $58 + 58\sqrt{2}$

(D) $58 + 116\sqrt{2}$

x	$f\left(x\right)$
1	-64
2	0
3	64

For the linear function f, the table shows three values of x and their corresponding values of $f\left(x\right)$. Function f is defined by $f\left(x\right)=ax+b$, where a and b are constants. What is the value of $a-b$?

(A) -64

(B) 62

(C) 128

(D) 192