1

$$(p + 3) + 8 = 10$$

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

A) -1

B) 5

C) 15

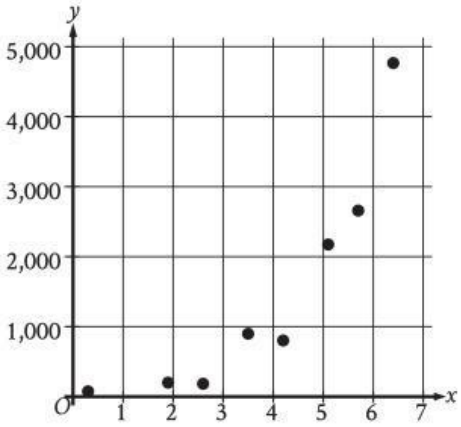
D) 21

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LIVEWORKSHEETS

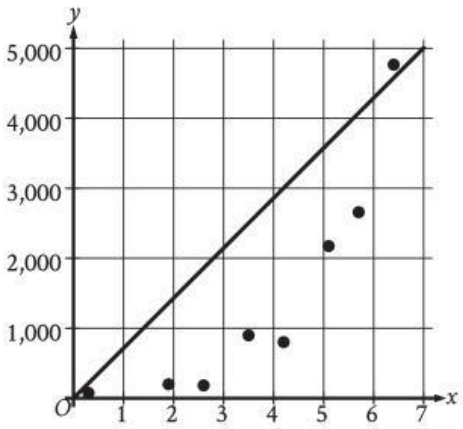
2

The scatterplot shows the relationship between two variables, x and y.

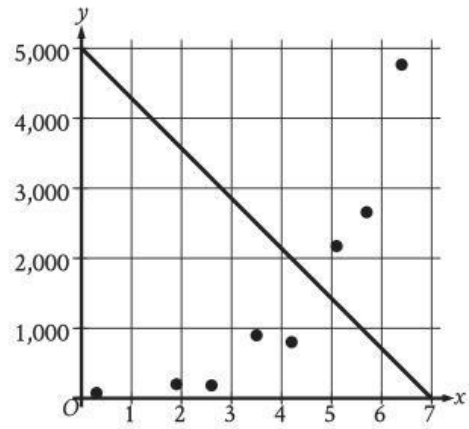


Which of the following graphs shows the most appropriate model for the data?

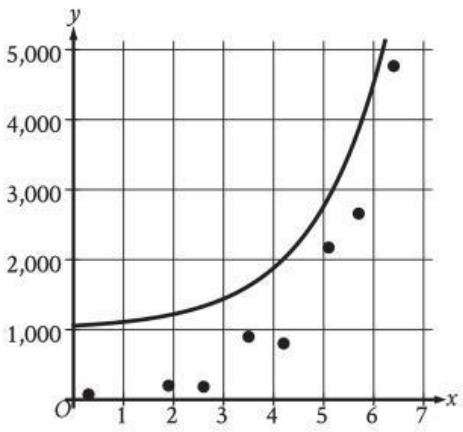
A)



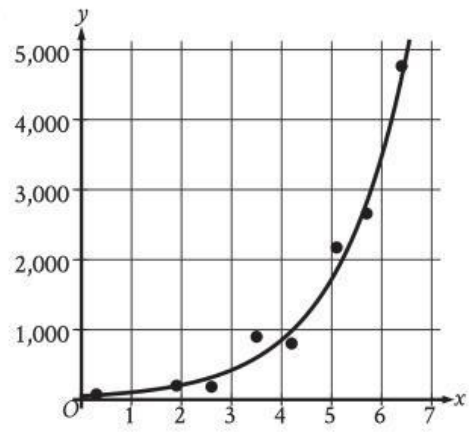
B)



C)



D)



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CONTINUE
LIVEWORKSHEETS

3

$$k^2 - 53 = 91$$

What is the positive solution to the given equation?

A) 144

B) 72

C) 38

D) 12

4

During a portion of a flight, a small airplane's cruising speed varied between 150 miles per hour and 170 miles per hour. Which inequality best represents this situation, where s is the cruising speed, in miles per hour, during this portion of the flight?

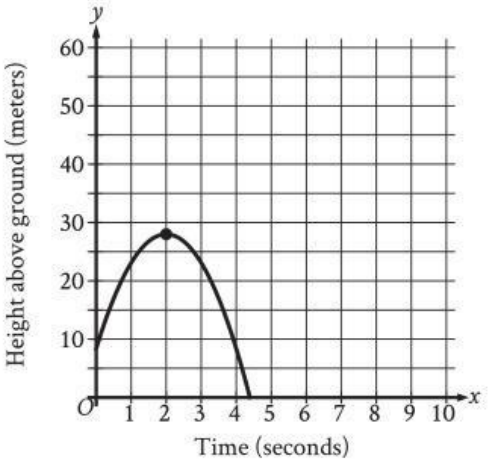
A) $s \leq 20$

B) $s \leq 150$

C) $s \leq 170$

D) $150 \leq s \leq 170$

5



An object was launched upward from a platform. The graph shown models the height above ground, y, in meters, of the object x seconds after it was launched. For which of the following intervals of time was the height of the object increasing for the entire interval?

A) From $x = 0$ to $x = 2$

B) From $x = 0$ to $x = 4$

C) From $x = 2$ to $x = 3$

D) From $x = 3$ to $x = 4$

6

How many yards are equivalent to 1,116 inches?
(1 yard = 36 inches)

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CONTINUE
LIVEWORKSHEETS

7

$$f(x) = 14 + 4x$$

The function f represents the total cost, in dollars, of attending an arcade when x games are played. How many games can be played for a total cost of $58?

8

$$f(x) = x + b$$

For the linear function f, b is a constant. When $x = 0$, $f(x) = 30$. What is the value of b ?

A) -30

B) $-\frac{1}{30}$

C) $\frac{1}{30}$

D) 30

9

$$P(t) = 1{,}800(1.02)^t$$

The function P gives the estimated number of marine mammals in a certain area, where t is the number of years since a study began. What is the best interpretation of $P(0) = 1{,}800$ in this context?

A) The estimated number of marine mammals in the area was 102 when the study began.

B) The estimated number of marine mammals in the area was 1,800 when the study began.

C) The estimated number of marine mammals in the area increased by 102 each year during the study.

D) The estimated number of marine mammals in the area increased by 1,800 each year during the study.

10

A manager is responsible for ordering supplies for a shaved ice shop. The shop's inventory starts with 4,500 paper cups, and the manager estimates that 70 of these paper cups are used each day. Based on this estimate, in how many days will the supply of paper cups reach 1,700?

A) 20

B) 40

C) 60

D) 80

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CONTINUE
LIVEWORKSHEETS

11

$y > 4x + 8$

For which of the following tables are all the values of x and their corresponding values of y solutions to the given inequality?

A)

x	y
2	19
4	30
6	41

B)

x	y
2	8
4	16
6	24

C)

x	y
2	13
4	18
6	23

D)

x	y
2	13
4	21
6	29

12

Which expression is equivalent to $(x^2 + 11)^2 + (x - 5)(x + 5)$?

A) $x^4 + 23x^2 - 14$

B) $x^4 + 23x^2 + 96$

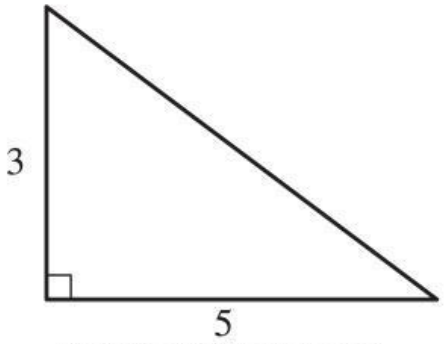
C) $x^4 + 12x^2 + 121$

D) $x^4 + x^2 + 146$

13

The function h is defined by $h(x) = \frac{8}{5x + 6}$. What is the value of $h(2)$?

14



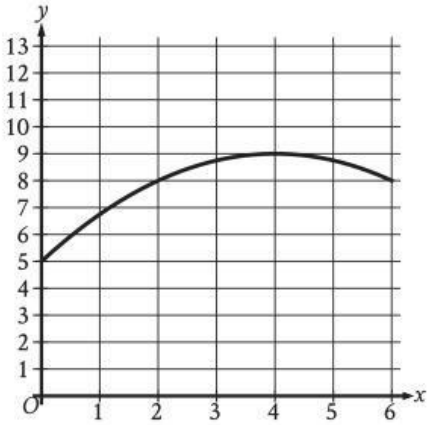
Note: Figure not drawn to scale.

The figure shows the lengths, in inches, of two sides of a right triangle. What is the area of the triangle, in square inches?

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LIVEWORKSHEETS

15



The graph models the number of active projects a company was working on x months after the end of November 2012, where $0 \le x \le 6$. According to the model, what is the predicted number of active projects the company was working on at the end of November 2012?

A) 0

B) 5

C) 8

D) 9

16

The relationship between two variables, x and y, is linear. For every increase in the value of x by 1, the value of y increases by 8. When the value of x is 2, the value of y is 18. Which equation represents this relationship?

A) $y = 2x + 18$

B) $y = 2x + 8$

C) $y = 8x + 2$

D) $y = 3x + 26$

17

$$P = N(19 - C)$$

The given equation relates the positive numbers P, N, and C. Which equation correctly expresses C in terms of P and N ?

A) $C = \dfrac{19 + P}{N}$

B) $C = \dfrac{19 - P}{N}$

C) $C = 19 + \dfrac{P}{N}$

D) $C = 19 - \dfrac{P}{N}$

18

$$w^2 + 12w - 40 = 0$$

Which of the following is a solution to the given equation?

A) $6 - 2\sqrt{19}$

B) $2\sqrt{19}$

C) $\sqrt{19}$

D) $-6 + 2\sqrt{19}$

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CONTINUE
LIVEWORKSHEETS

19

The table shown summarizes the number of employees at each of the 17 restaurants in a town.

Number of employees	Number of restaurants
2 to 7	2
8 to 13	4
14 to 19	2
20 to 25	7
26 to 31	2

Which of the following could be the median number of employees for the restaurants in this town?

A) 2

B) 9

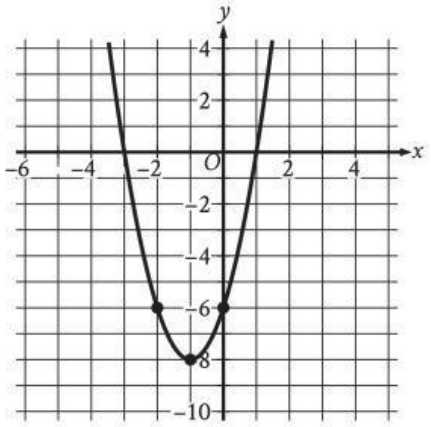
C) 15

D) 21

20

What is the y-coordinate of the y-intercept of the graph of $\frac{3x}{7} = -\frac{5y}{9} + 21$ in the xy-plane?

21



The graph of $y = 2x^2 + bx + c$ is shown, where b and c are constants. What is the value of bc ?

22

In 2008, Zinah earned 14% more than in 2007, and in 2009 Zinah earned 4% more than in 2008. If Zinah earned y times as much in 2009 as in 2007, what is the value of y ?

A) 0.5600

B) 1.0056

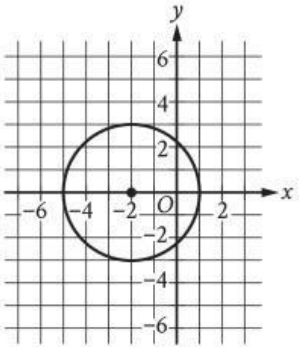
C) 1.1800

D) 1.1856

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LIVEWORKSHEETS

23



Circle A (shown) is defined by the equation $(x + 2)^2 + y^2 = 9$. Circle B (not shown) is the result of shifting circle A down 6 units and increasing the radius so that the radius of circle B is 2 times the radius of circle A. Which equation defines circle B ?

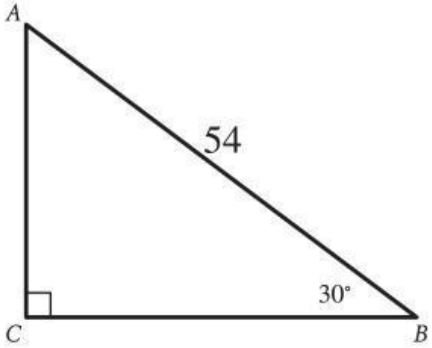
A) $(x + 2)^2 + (y + 6)^2 = (4)(9)$

B) $2(x + 2)^2 + 2(y + 6)^2 = 9$

C) $(x + 2)^2 + (y - 6)^2 = (4)(9)$

D) $2(x + 2)^2 + 2(y - 6)^2 = 9$

24



Note: Figure not drawn to scale.

Right triangle ABC is shown. What is the value of $\tan A$?

A) $\frac{\sqrt{3}}{54}$

B) $\frac{1}{\sqrt{3}}$

C) $\sqrt{3}$

D) $27\sqrt{3}$

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LIVEWORKSHEETS

25

At the time that an article was first featured on the home page of a news website, there were 40 comments on the article. An exponential model estimates that at the end of each hour after the article was first featured on the home page, the number of comments on the article had increased by 190% of the number of comments on the article at the end of the previous hour. Which of the following equations best represents this model, where C is the estimated number of comments on the article t hours after the article was first featured on the home page and $t \leq 4$?

A) $C = 40(1.19)^t$

B) $C = 40(1.9)^t$

C) $C = 40(19)^t$

D) $C = 40(2.9)^t$

26

x	$g(x)$
−27	3
−9	0
21	5

The table shows three values of x and their corresponding values of $g(x)$, where $g(x) = \frac{f(x)}{x+3}$ and f is a linear function. What is the y-intercept of the graph of $y = f(x)$ in the xy-plane?

A) $(0, 36)$

B) $(0, 12)$

C) $(0, 4)$

D) $(0, -9)$

27

In right triangle ABC, angle C is the right angle and $BC = 162$. Point D on side AB is connected by a line segment with point E on side AC such that line segment DE is parallel to side BC and $CE = 2AE$. What is the length of line segment DE ?

STOP

If you finish before time is called, you may check your work on this module only.
Do not turn to any other module in the test.

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LIVEWORKSHEETS

Math

27 QUESTIONS

DIRECTIONS

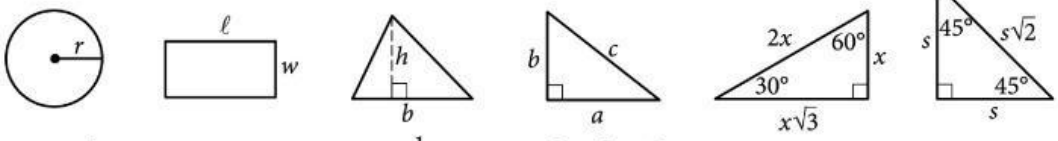
The questions in this section address a number of important math skills.
Use of a calculator is permitted for all questions.

NOTES

Unless otherwise indicated:

- All variables and expressions represent real numbers.
- Figures provided are drawn to scale.
- All figures lie in a plane.
- The domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE



$A = \pi r^2$
$C = 2\pi r$

$A = \ell w$

$A = \frac{1}{2}bh$

$c^2 = a^2 + b^2$

Special Right Triangles



$V = \ell wh$

$V = \pi r^2 h$

$V = \frac{4}{3}\pi r^3$

$V = \frac{1}{3}\pi r^2 h$

$V = \frac{1}{3}\ell wh$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π.

The sum of the measures in degrees of the angles of a triangle is 180.

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CONTINUE
LIVEWORKSHEETS

For multiple-choice questions, solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For student-produced response questions, solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find **more than one correct answer**, write and circle only one answer.
- Your answer can be up to 5 characters for a **positive** answer and up to 6 characters (including the negative sign) for a **negative** answer, but no more.
- If your answer is a **fraction** that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a **decimal** that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a **mixed number** (such as $3\frac{1}{2}$), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

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CONTINUE
LIVEWORKSHEETS

1

The function f is defined by $f(x) = 8x$. For what value of x does $f(x) = 72$?

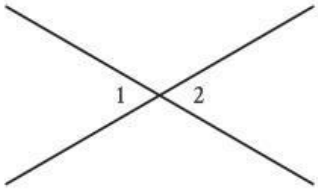
A) 8

B) 9

C) 64

D) 80

2



Note: Figure not drawn to scale.

In the figure, two lines intersect at a point. Angle 1 and angle 2 are vertical angles. The measure of angle 1 is 72°. What is the measure of angle 2?

A) 72°

B) 108°

C) 144°

D) 288°

3

On a street with 7 houses, 2 houses are blue. If a house from this street is selected at random, what is the probability of selecting a house that is blue?

A) $\frac{1}{7}$

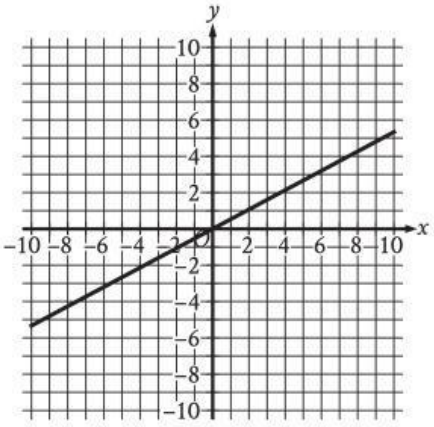
B) $\frac{2}{7}$

C) $\frac{5}{7}$

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

4

The graph of function f is shown, where $y = f(x)$.



Which of the following describes function f ?

A) Increasing linear

B) Decreasing linear

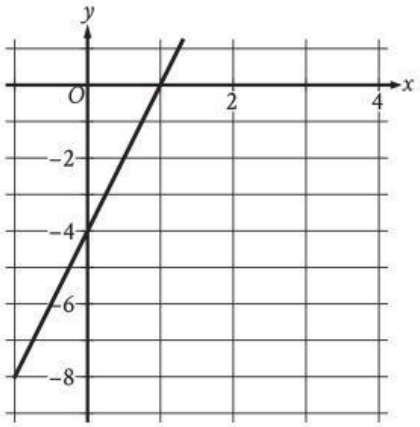
C) Increasing exponential

D) Decreasing exponential

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CONTINUE
LIVEWORKSHEETS

5



The graph of the function f is shown, where $y = f(x)$. What is the y-intercept of the graph?

A) $(0, -1)$

B) $(0, -4)$

C) $(0, 1)$

D) $(0, 4)$

6

$$x = 8$$
$$x + 3y = 26$$

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

7

The amount of Hanna's bill for a food order was \$50. Hanna gave a tip of 20% of the amount of the bill. What is the amount, in dollars, of the tip Hanna gave?

8

Which expression is equivalent to $5x^5 - 6x^4 + 8x^3$?

A) $x^4(5x - 6)$

B) $x^3(5x^2 - 6x + 8)$

C) $8x^3(5x^2 - 6x + 1)$

D) $6x^5(-6x^4 + 8x^3 + 1)$

9

The ratio of the length of line segment XY to the length of line segment ZV is 6 to 1. If the length of line segment XY is 102 inches, what is the length, in inches, of line segment ZV ?

A) 17

B) 96

C) 102

D) 612

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CONTINUE
LIVEWORKSHEETS

10

$$7(2x - 3) = 63$$

Which equation has the same solution as the given equation?

A) $2x - 3 = 9$

B) $2x - 3 = 56$

C) $2x - 21 = 63$

D) $2x - 21 = 70$

11

The function f defined by $f(t) = 14t + 9$ gives the estimated length, in inches, of a vine plant t months after Tavon purchased it. Which of the following is the best interpretation of 9 in this context?

A) Tavon will keep the vine plant for 9 months.

B) The vine plant is expected to grow 9 inches each month.

C) The vine plant is expected to grow to a maximum length of 9 inches.

D) The estimated length of the vine plant was 9 inches when Tavon purchased it.

12

$$(x + 2)(x - 5)(x + 9) = 0$$

What is a positive solution to the given equation?

A) 3

B) 4

C) 5

D) 18

13

Brian saves $\frac{2}{5}$ of the \$215 he earns each week from his job. If Brian continues to save at this rate, how much money, in dollars, will Brian save in 9 weeks?

14

A rectangle has an area of 155 square inches. The length of the rectangle is 4 inches less than 7 times the width of the rectangle. What is the width of the rectangle, in inches?

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CONTINUE
LIVEWORKSHEETS

15

4, 10, 18, 4, 4, 5, 6, 5

What is the median of the data set shown?

A) 4

B) 5

C) 7

D) 14

16

A right circular cylinder has a volume of 432 cubic centimeters. The area of the base of the cylinder is 24 square centimeters. What is the height, in centimeters, of the cylinder?

A) 18

B) 24

C) 216

D) 10,368

17

$$x^2 = -841$$

How many distinct real solutions does the given equation have?

A) Exactly one

B) Exactly two

C) Infinitely many

D) Zero

18

Line k is defined by $y = 7x + \frac{1}{8}$. Line j is perpendicular to line k in the xy-plane. What is the slope of line j ?

A) -8

B) $-\frac{1}{7}$

C) $\frac{1}{8}$

D) 7

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LIVEWORKSHEETS