

March 2020

Math tests

The SAT

Question- and-Answer Service

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Math Test – No Calculator

25 MINUTES, 20 QUESTIONS

Turn to Section 3 of your answer sheet to answer the questions in this section.

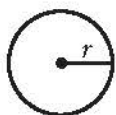
DIRECTIONS

For questions 1-15, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 16-20, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 16 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

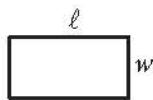
- The use of a calculator **is not permitted**.
- All variables and expressions used represent real numbers unless otherwise indicated.
- Figures provided in this test are drawn to scale unless otherwise indicated.
- All figures lie in a plane unless otherwise indicated.
- Unless otherwise indicated, the domain of a given function f is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE

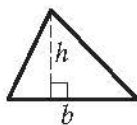


$$A = \pi r^2$$

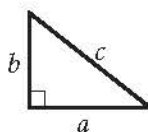
$$C = 2\pi r$$



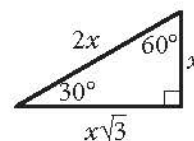
$$A = \ell w$$



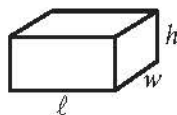
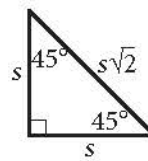
$$A = \frac{1}{2}bh$$



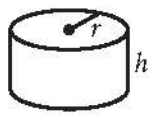
$$c^2 = a^2 + b^2$$



Special Right Triangles



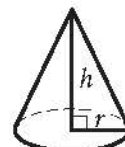
$$V = \ell wh$$



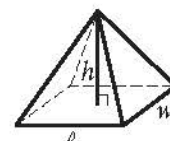
$$V = \pi r^2 h$$



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



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



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

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.



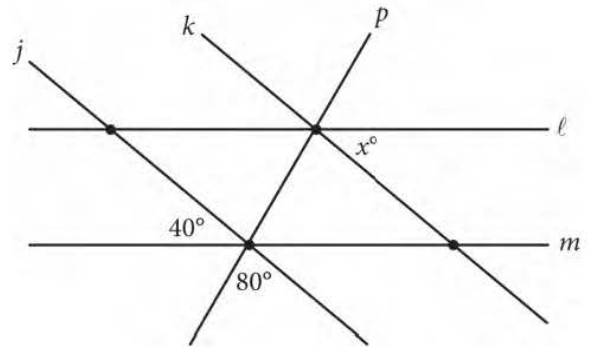
1

x	-1	0	1	2	3
y	1	2	3	4	5

The table above shows some values of x and their corresponding values of y . Which of the following equations shows a possible relationship between x and y ?

- A) $y = x + 2$
- B) $y = x - 2$
- C) $y = 2x + 3$
- D) $y = 3x - 2$

2



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

- A) 40
- B) 60
- C) 80
- D) 100

3

The function f is defined by $f(x) = x^2 - 5x + 6$. What is the value of $f(4)$?

- A) 0
- B) 2
- C) 12
- D) 30



4

Aracely can spend up to a total of \$20 on streamers and balloons for a party. Streamers cost \$1.49 per pack, and balloons cost \$4.39 per pack. Which of the following inequalities represents this situation, where s is the number of packs of streamers Aracely can buy, and b is the number of pack of balloons Aracely can buy? (Assume there is no sales tax.)

- A) $1.49s - 4.39b \leq 20$
- B) $1.49s + 4.39b \leq 20$
- C) $1.49s - 4.39b \geq 20$
- D) $1.49s + 4.39b \geq 20$

5

Bill is planning to drive 1,000 miles to visit his family. If he plans to drive 250 miles per day, which of the following represents the remaining distance d , in miles, that Bill will have to drive to reach his family after driving for n days?

- A) $d = 1,000 + 250n$
- B) $d = 1,000n - 250$
- C) $d = 250n - 1,000$
- D) $d = 1,000 - 250n$

6

$$(x^3 + x) + (x^2 - x)$$

Which of the following is equivalent to the given expression?

- A) $x^5 - x^2$
- B) $x^5 - x^4 + x^3 - x^2$
- C) $x^3 + x^2$
- D) $x^3 + x^2 + 2x$

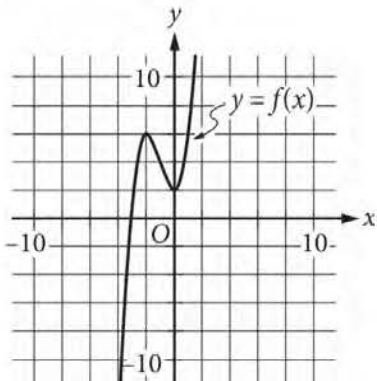


7

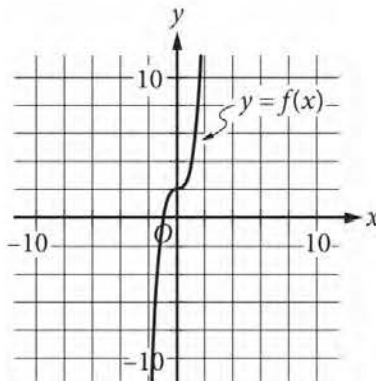
x	$f(x)$
-2	-2
-1	3
0	2
1	7
2	30

The table gives some values of x and the corresponding values of $f(x)$ for polynomial function f . Which of the following could be the graph of f in the xy -plane, where $y = f(x)$?

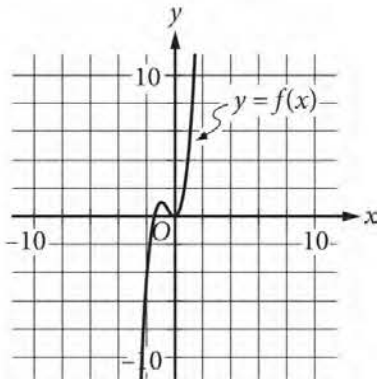
A)



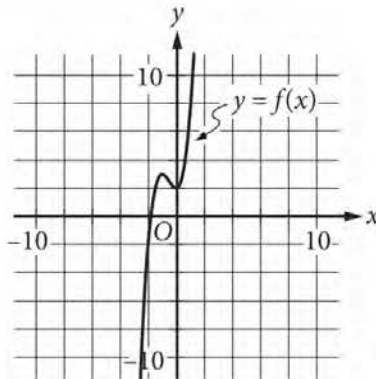
B)



C)



D)





8

$$\frac{x+2}{(x+2)^2}$$

Which of the following expressions is equivalent to the given expression, where $x \neq -2$?

- A) $x + 2$
- B) $\frac{1}{x+2}$
- C) $x^2 + 2x + 4$
- D) $\frac{1}{x^2 + 2x + 4}$

9

Which of the following is an equation of the line in the xy -plane that contains the points $(1, 3)$ and $(5, 15)$?

- A) $y = 3x$
- B) $y = 2x + 5$
- C) $y = x + 2$
- D) $y = \frac{1}{3}x$



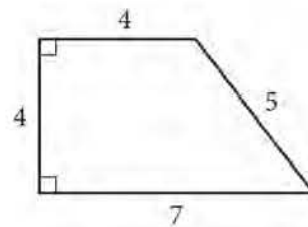
10

$$\frac{4x + b}{2} = 2x + 8$$

In the given equation, b is a constant. If the equation has infinitely many solutions, what is the value of b ?

- A) 2
- B) 4
- C) 8
- D) 16

11



What is the area, in square units, of the figure shown?

- A) 20
- B) 22
- C) 24
- D) 28



12

What is the y -intercept of the graph of $y = 4^x$ in the xy -plane?

- A) (1, 4)
- B) (1, 0)
- C) (0, 1)
- D) (4, 1)

13

$$x^2 - 14x + 40 = 2x + 1$$

What is the sum of the solutions to the given equation?

- A) -16
- B) -14
- C) 14
- D) 16



14

$$L = S\sqrt{1 - \frac{v^2}{c^2}}$$

When the speed of an object approaches the speed of light, its length as seen by an observer changes. When the object is stationary relative to an observer, its length is S , and when the same object is moving at speed v relative to the observer, its length is L . The formula above expresses L in terms of S , v , and c , the speed of light. Which of the following gives the speed of the object in terms of the other quantities?

- A) $v = c\sqrt{1 - \frac{L^2}{S^2}}$
- B) $v = c\sqrt{1 + \frac{L^2}{S^2}}$
- C) $v = c^2\left(1 - \frac{L^2}{S^2}\right)$
- D) $v = c^2\left(1 + \frac{L^2}{S^2}\right)$

15

The half-life of a certain substance in an aquatic environment is about 150 years. Which of the following exponential functions best models the amount $A(t)$, in grams, of the substance t years after 200 grams of the substance is applied to the aquatic environment? (The half-life is the length of time needed for an amount of the substance to decrease to one-half of that amount.)

- A) $A(t) = 150\left(\frac{1}{2}\right)^{\frac{t}{200}}$
- B) $A(t) = 150\left(\frac{1}{2}\right)^{200t}$
- C) $A(t) = 200\left(\frac{1}{2}\right)^{150t}$
- D) $A(t) = 200\left(\frac{1}{2}\right)^{\frac{t}{150}}$

**DIRECTIONS**

For questions 16-20, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
- Mark no more than one bubble in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If

3	1	/	2
---	---	---	---

 is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
- Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

Write answer in boxes. →

Answer: $\frac{7}{12}$

7	/	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
<input checked="" type="radio"/>	7	7	7
8	8	8	8
9	9	9	9

← Fraction line

Answer: 2.5

	2	.	5
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Grid in result.

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
<input type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8

.	6	6	6
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8

.	6	6	7
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8

Answer: 201 – either position is correct

	2	0	1
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3

2	0	1	
<input type="radio"/>	<input checked="" type="radio"/>	<input checked="" type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3

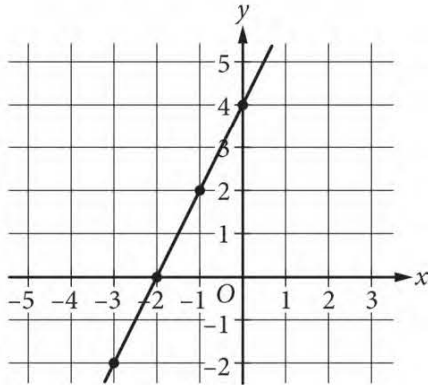
NOTE:

You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.



16

The graph of $y = mx + b$, where m and b are constants, is shown in the xy -plane.



What is the value of m ?

17

$$\begin{aligned}x + y &= 5 \\ 2x &= 5\end{aligned}$$

If (x, y) is the solution to the given system of equations, what is the value of y ?

18

$$5(x - 3)(x + 1) = 0$$

What positive value of x satisfies the equation above?

19

$$3x - 0.6 = 1.8$$

What value of x satisfies the equation above?

20

A square is inscribed in a circle with radius $6\sqrt{2}$ inches. What is the perimeter of the square in inches?

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section.**



Math Test – Calculator

55 MINUTES, 38 QUESTIONS

Turn to Section 4 of your answer sheet to answer the questions in this section.

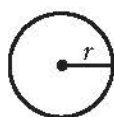
DIRECTIONS

For questions 1-30, solve each problem, choose the best answer from the choices provided, and fill in the corresponding circle on your answer sheet. For questions 31-38, solve the problem and enter your answer in the grid on the answer sheet. Please refer to the directions before question 31 on how to enter your answers in the grid. You may use any available space in your test booklet for scratch work.

NOTES

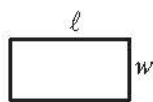
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- All variables and expressions used represent real numbers unless otherwise indicated.
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- All figures lie in a plane unless otherwise indicated.
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REFERENCE

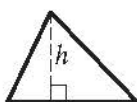


$$A = \pi r^2$$

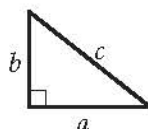
$$C = 2\pi r$$



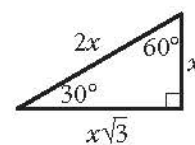
$$A = \ell w$$



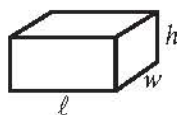
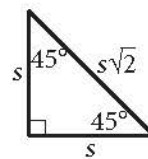
$$A = \frac{1}{2}bh$$



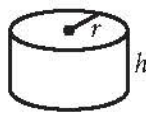
$$c^2 = a^2 + b^2$$



Special Right Triangles



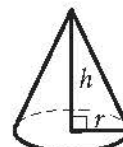
$$V = \ell wh$$



$$V = \pi r^2 h$$



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



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



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

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.



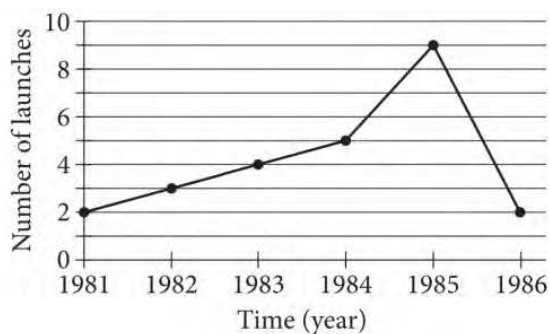
1

If $s = 4$, what is the value of $20s - 15s$?

- A) 4
- B) 5
- C) 15
- D) 20

2

The line graph shows the number of space shuttle launches by the United States from 1981 through 1986.



During which year of this time period was the number of space shuttle launches the greatest?

- A) 1982
- B) 1983
- C) 1984
- D) 1985

3

American marsupials and Australian marsupials are two primary groups of marsupials. The table shows the number of species in each order of living marsupial, by group.

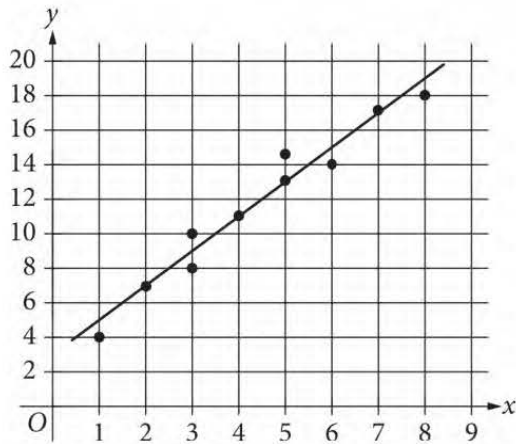
Group	Order	Number of species
American	Didelphimorphia	93
	Paucituberculata	6
Australian	Microbiotheria	1
	Dasyuromorphia	71
	Peramelemorphia	24
	Notoryctemorphia	2
	Diprotodontia	137

Based on the table, what fraction of the Australian marsupial species are from the order Peramelemorphia?

- A) $\frac{24}{211}$
- B) $\frac{24}{235}$
- C) $\frac{24}{334}$
- D) $\frac{235}{334}$



4



Ten data points are in the scatterplot shown, along with a line of best fit. Which of the following best estimates the predicted value of y when $x = 6.5$?

- A) 2
- B) 8
- C) 13
- D) 16

5

What is 120% of 2,000?

- A) 240
- B) 400
- C) 2,400
- D) 4,000

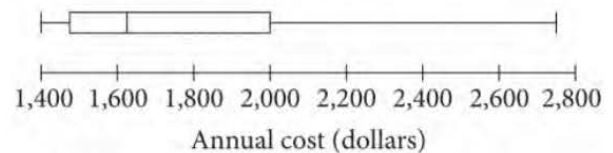
6

A field has a perimeter of 960 feet. Of the following, which is closest to the perimeter of the field, in meters? (1 foot = 0.3048 meter)

- A) 89
- B) 290
- C) 3,200
- D) 10,000

7

Automobile Insurance in a Certain US City



The box plot summarizes the data for the annual cost of automobile insurance for automobile owners in a certain US city. Which of the following could be the median annual cost of automobile insurance for automobile owners in this city?

- A) \$1,625
- B) \$2,000
- C) \$2,100
- D) \$2,750



8

Speed (km/h)	Pulse (bpm)
4	77
6	87
8	97

The table lists selected values of Sam's walking speed, in kilometers per hour (km/h), and his corresponding pulse, in beats per minute (bpm). There is a linear relationship between Sam's speed, x , and his pulse, $f(x)$. Which of the following equations describes $f(x)$?

- A) $f(x) = x + 57$
- B) $f(x) = -x + 97$
- C) $f(x) = 5x + 57$
- D) $f(x) = -5x + 97$

9

Based on the 2010 US census, the population of Milwaukee, Wisconsin, was about 96% of the population of Baltimore, Maryland. In 2010, if Milwaukee's population was about 595,000, which of the following is the best approximation of Baltimore's population?

- A) 620,000
- B) 570,000
- C) 300,000
- D) 95,000

10

In 1855, Louis Remme traveled from Sacramento, California, to Portland, Oregon, stopping to rest for only 10 hours of the 143 hours it took him to reach Portland. If his average speed while traveling without resting was 5 miles per hour, how many miles did Louis Remme travel?

- A) 665
- B) 705
- C) 715
- D) 765

11

Interval	Frequency
1 to 10	7
11 to 20	5
21 to 30	3
31 to 40	8
41 to 50	2

Each of the 25 data values in a data set is a different integer between 1 and 50, inclusive. The table gives the frequency of the data for five intervals. Which of the following intervals contains exactly $\frac{2}{5}$ of the values in the data set?

- A) 1 to 20
- B) 11 to 30
- C) 21 to 40
- D) 31 to 50



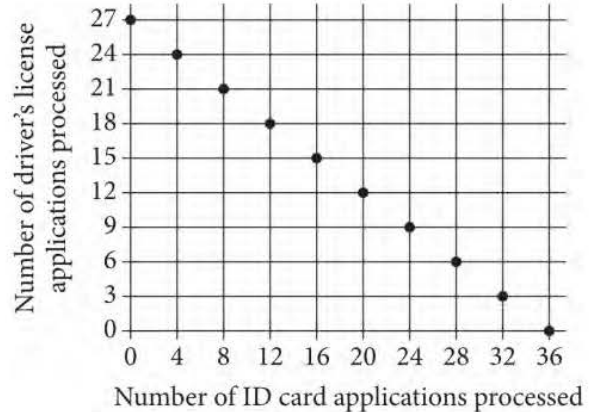
12

Number of activities	Percent of students
None	5%
One	30%
Two	55%
More than two	10%

The table above shows the distribution of the number of extracurricular activities that students at a middle school participate in. If the number of students who participate in two extracurricular activities is 120 more than the number of students who participate in one extracurricular activity, what is the total number of students who attend the middle school?

- A) 240
- B) 480
- C) 600
- D) 900

13



For her job, Natasha spent a total of n minutes processing ID card applications and driver's license applications. It takes Natasha 15 minutes to process an ID card application and 20 minutes to process a driver's license application. The graph above represents all possible combinations for the number of ID card applications and the number of driver's license applications that Natasha could have processed in the n minutes. What is the value of n ?

- A) 720
- B) 540
- C) 420
- D) 360

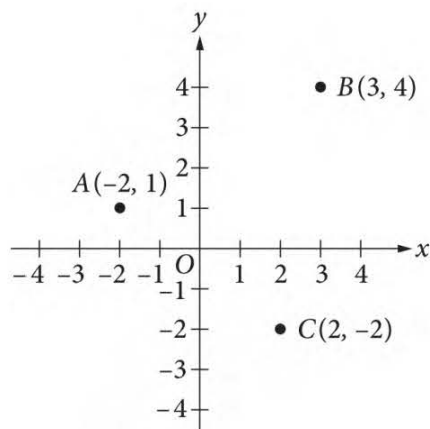


14

In the xy -plane, what is the y -coordinate of the y -intercept of the graph of the equation $y = \frac{3x - 12}{x + 2}$?

- A) -6
- B) -2
- C) 3
- D) 4

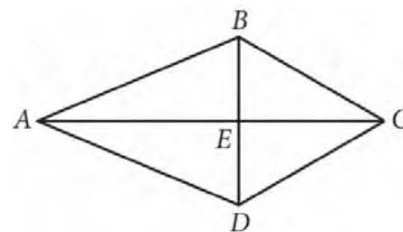
15



The coordinates of points A , B , and C are shown in the xy -plane above. For which of the following inequalities will each of the points A , B , and C be contained in the solution region?

- A) $y > -x - 2$
- B) $y \geq -x$
- C) $y < x + 3$
- D) $x < 3$

16

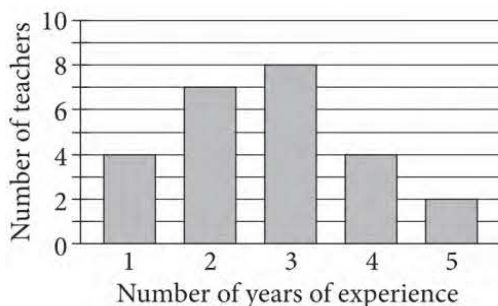


In the figure above, $AB = AD$, $BC = CD$, $BE = 2$, $BC = 4$, and $AC = 10$. What is the area of triangle ABD ?

- A) $40 - 8\sqrt{3}$
- B) $30 - 6\sqrt{3}$
- C) $20 - 4\sqrt{3}$
- D) $10 - 2\sqrt{3}$



17



The graph above shows the distribution of the number of years of experience for 25 teachers enrolled in an advanced-degree program at a particular university. If a 26th teacher with 2 years of experience is added to the program and to the data set, what will be the effect on the mean and median of the data set?

- A) The mean and median will both decrease.
- B) The mean and median will both remain the same.
- C) The mean will decrease and the median will remain the same.
- D) The mean will remain the same and the median will decrease.

18

A sports store had 60 backpacks in stock, some with wheels and some without wheels, before a new shipment of backpacks arrived. The number of wheeled backpacks in the new shipment was twice the number of wheeled backpacks already in stock, and the number of backpacks without wheels in the new shipment was five times the number of backpacks without wheels already in stock. After the new shipment arrived, there were 330 backpacks in the store. Before the shipment, there were x wheeled backpacks and y backpacks without wheels. Which of the following equations can be used with $x + y = 60$ to solve for x and y ?

- A) $2x + 5y = 330$
- B) $2x + 5y = 270$
- C) $5x + 2y = 270$
- D) $5x + 2y = 330$

19

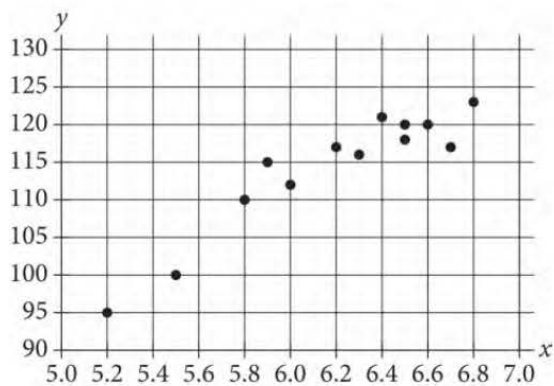
$$h(x) = (x - 5)(x + 5)$$

The function h is defined as shown. For what value of x does the function h reach its minimum value?

- A) -25
- B) -5
- C) 0
- D) 5



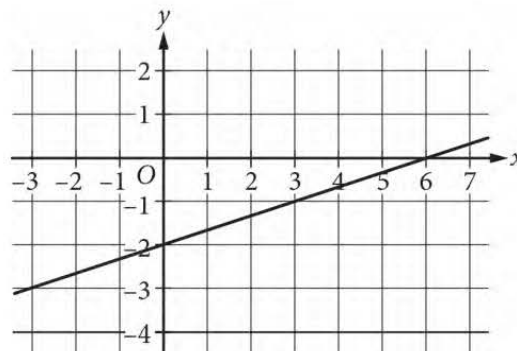
20



A set of data is represented by the scatterplot in the portion of the xy -plane shown. Which of the following linear equations best fits the data?

- A) $y = -15.2 + 1.6x$
- B) $y = 15.2 + 1.6x$
- C) $y = -15.2 + 16x$
- D) $y = 15.2 + 16x$

21



An equation of the graph shown is $ax + by = 6$, where a and b are constants. What is the value of b ?

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



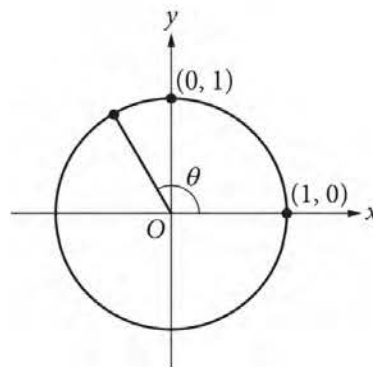
22

$$W(L) = 0.04(1.22)^L$$

The function W gives the estimated weight $W(L)$, in pounds, of a rainbow trout based on its length L , in inches. Which of the following is the best interpretation of the number 1.22 in this context?

- A) For each increase of 1 pound in weight, the estimated length of the trout, in inches, increases by 22%.
- B) For each increase of 1 inch in length, the estimated weight of the trout, in pounds, increases by 22%.
- C) For each increase of 1 pound in weight, the estimated length of the trout increases by 1.22 inches.
- D) For each increase of 1 inch in length, the estimated weight of the trout increases by 1.22 pounds.

23



In the given figure, θ is an angle. If $\sin \theta = \frac{\sqrt{3}}{2}$, what is $\cos \theta$?

- A) $\frac{\sqrt{3}}{2}$
- B) $\frac{1}{2}$
- C) $-\frac{1}{2}$
- D) $-\frac{\sqrt{3}}{2}$



24

Change in Value of 50 Stocks

	Increased in July	Decreased in July	Total
Increased in August	21	9	30
Decreased in August	4	16	20
Total	25	25	50

The two-way table categorizes the change in value in July and August for 50 stocks. If one of the stocks that increased in value in August is chosen at random, what is the probability that the stock also increased in value in July?

- A) 0.42
- B) 0.60
- C) 0.70
- D) 0.84

25

Minato drove 390 miles. Part of the drive was along local roads, where his average speed was 20 miles per hour, and the rest was along a highway, where his average speed was 60 miles per hour. The drive took 8 hours. What distance, in miles, did Minato drive along local roads?

- A) 30
- B) 45
- C) 90
- D) 120

26

$$x^2 + bx + 16 = 0$$

In the quadratic equation shown, b is a constant. For what values of b does the equation have only one solution?

- A) -4 only
- B) -8 only
- C) -4 and 4
- D) -8 and 8

27

The function f is defined for all real numbers, and the graph of $y = f(x)$ in the xy -plane is a line with a negative slope. Which of the following must be true?

- I. If $a < b$, then $f(a) > f(b)$.
- II. If $a < 0$, then $f(a) > 0$.
- III. If $a > 0$, then $f(a) < 0$.

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



28

$$y = bx(x - a)(x - a)(x + b)(x - b)$$

In the equation above, a and b are positive constants and $a \neq b$. How many distinct x -intercepts does the graph of the equation in the xy -plane have?

- A) Two
- B) Three
- C) Four
- D) Five

29

$$\frac{1}{3}(x - k) = kx$$

In the given equation, k is a constant. If the equation has no solution, what is the value of k ?

- A) -1
- B) $-\frac{1}{3}$
- C) 0
- D) $\frac{1}{3}$

30

The expressions $x^2 + bx + 10$ and $(x - 3)^2 + c$, where b and c are constants, are equivalent. What is the value of $b + c$?

- A) 7
- B) 4
- C) 3
- D) -5

**DIRECTIONS**

For questions 31-38, solve the problem and enter your answer in the grid, as described below, on the answer sheet.

- Although not required, it is suggested that you write your answer in the boxes at the top of the columns to help you fill in the bubbles accurately. You will receive credit only if the bubbles are filled in correctly.
- Mark no more than one bubble in any column.
- No question has a negative answer.
- Some problems may have more than one correct answer. In such cases, grid only one answer.
- Mixed numbers** such as $3\frac{1}{2}$ must be gridded as 3.5 or 7/2. (If

3	1	/	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

 is entered into the grid, it will be interpreted as $\frac{31}{2}$, not $3\frac{1}{2}$.)
- Decimal answers:** If you obtain a decimal answer with more digits than the grid can accommodate, it may be either rounded or truncated, but it must fill the entire grid.

Answer: $\frac{7}{12}$

Write answer in boxes. →

7	/	1	2
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
<input checked="" type="radio"/>	7	7	7
8	8	8	8
9	9	9	9

← Fraction line

Grid in result.

Answer: 2.5

	2	.	5
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

← Decimal point

Acceptable ways to grid $\frac{2}{3}$ are:

	2	/	3
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8

.	6	6	6
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8

.	6	6	7
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8

Answer: 201 – either position is correct

	2	0	1
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3

2	0	1	
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
1	1	1	1
2	2	2	2
3	3	3	3

NOTE:

You may start your answers in any column, space permitting. Columns you don't need to use should be left blank.



31

$$(x - 3)^4 = 0$$

What value of x makes the equation above true?

32

4, 13, 5, 8, R , 5, 11

In the data set shown, R is an integer. If the median of the data set is 8 and $R < 11$, what is a possible value of R ?

33

$$4x + y = 4$$

$$8x + y = 5$$

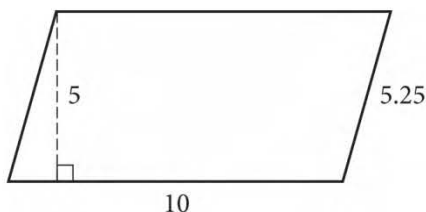
If (x, y) is the solution of the system of equations above, what is the value of x ?



34

One serving of a certain brand of microwave popcorn provides 150 calories, 90 of which are from fat. One serving of a certain brand of low-sodium pretzels provides 120 calories, 12 of which are from fat. How many more calories from fat are provided by a 100-calorie serving of the microwave popcorn than are provided by a 100-calorie serving of the pretzels?

35



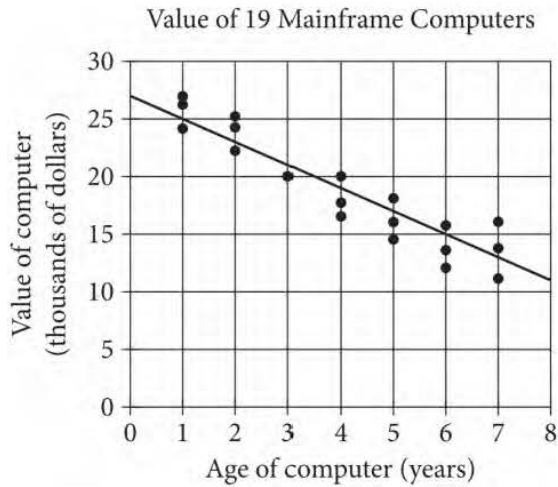
The length, in meters, of the sides and the height of a parallelogram are shown in the figure. What is the area, in square meters, of the parallelogram?

36

The linear function f is defined by $f(x) = cx + d$, where c and d are constants. If $f(50) = 27,000$ and $f(100) = 38,000$, what is the value of c ?



Questions 37 and 38 refer to the following information.



A large company has 19 mainframe computers of a certain class. The scatterplot above shows the value and age for each of the 19 computers. A line of best fit for the data is also shown.

37

Based on the line of best fit, the estimated value of a 6-year-old computer is k thousand dollars, where k is an integer. What is the value of k ?

38

What is the number of computers for which the line of best fit predicts a value less than the actual value?

STOP

**If you finish before time is called, you may check your work on this section only.
Do not turn to any other section.**

CONVERSION TABLES

Raw Score Conversion – Section and Test Scores

Section and Test Scores

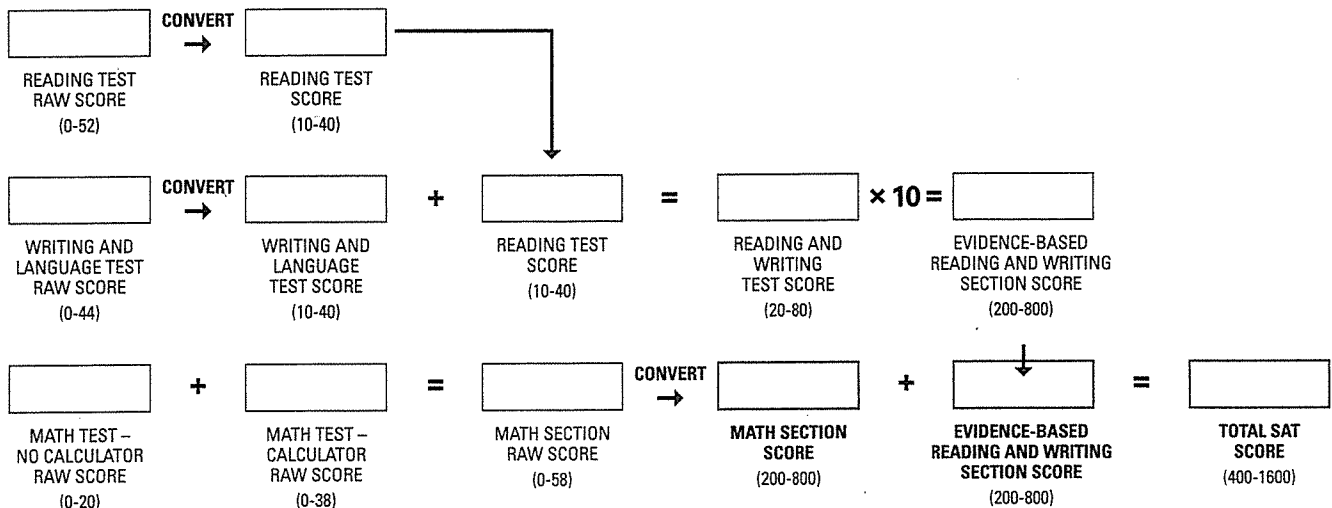
RAW SCORE CONVERSION TABLE 1

Raw Score (# of correct answers)	Math Section Score	Reading Test Score	Writing and Language Test Score
0	200	10	10
1	210	10	10
2	220	10	10
3	230	11	11
4	250	12	12
5	260	13	12
6	280	13	13
7	290	14	14
8	310	15	15
9	320	16	16
10	330	17	16
11	340	17	17
12	360	18	18
13	370	18	19
14	380	19	19
15	390	19	20
16	400	20	21
17	410	20	21
18	420	21	22
19	440	22	22
20	450	22	23
21	460	23	24
22	470	23	24
23	480	24	25
24	490	25	26
25	500	25	26
26	510	26	27
27	520	26	27
28	520	27	28
29	530	27	29

Raw Score (# of correct answers)	Math Section Score	Reading Test Score	Writing and Language Test Score
30	540	28	29
31	550	28	30
32	550	29	31
33	560	29	31
34	570	30	32
35	580	30	33
36	590	31	33
37	590	31	34
38	600	32	35
39	610	32	35
40	620	33	36
41	630	33	37
42	640	34	38
43	650	34	39
44	660	35	40
45	670	35	
46	680	36	
47	690	36	
48	700	37	
49	710	38	
50	720	38	
51	740	39	
52	750	40	
53	760		
54	780		
55	790		
56	790		
57	800		
58	800		

Section and Test Scores

CONVERSION EQUATION 1



	Reading	Writing	No Calc	Calc
1	B	B	A	D
2	D	C	A	D
3	B	D	B	B
4	D	D	B	D
5	D	D	D	C
6	A	B	C	B
7	B	D	D	A
8	C	C	B	C
9	A	A	A	A
10	C	A	D	A
11	B	C	B	D
12	D	A	C	B
13	C	B	D	B
14	B	A	A	A
15	D	D	D	A
16	A	B	2	C
17	D	C	5/2, 2.5	C
18	C	B	3	B
19	D	C	4/5, .8	C
20	D	A	48	D
21	C	D		A
22	B	A		B
23	C	D		C
24	D	A		C
25	B	C		B
26	A	D		D
27	A	C		A
28	D	C		C
29	C	D		D
30	A	A		D
31	C	B		3
32	C	A		8, 9, 10
33	A	B		.25, 1/4
34	B	B		50
35	C	A		50
36	B	C		220
37	A	B		15
38	C	D		9
39	D	A		
40	B	C		
41	A	B		
42	D	B		
43	B	D		
44	A	B		
45	C			
46	C			
47	D			
48	A			
49	A			
50	B			
51	D			
52	D			