

Math: Question 1

Which of the following is an equivalent form of the expression $15x + 24ax$?

- A. $39ax^2$
- B. $39(a + 2x)$
- C. $(5 + 8a)x$
- D. $(15 + 24a)x$

Math: Question 2

The formula $d = rt$ is used to calculate the distance an object travels over a period of time, t , at a constant rate, r . Based on this formula, what is the rate, r , in terms of d and t ?

- A. $r = \frac{d}{t}$
- B. $r = dt$
- C. $r = \frac{t}{d}$
- D. $r = d - t$

Math: Question 3

Which of the following ordered pairs (x, y) satisfies both equations $y = x^2 + 3x - 4$ and $x = y - 4$?

- A. $(0, -4)$
- B. $(2, 6)$
- C. $(3, 14)$
- D. $(5, 9)$

Math: Question 4

Which of the following is a solution to the equation $2x^2 + 4x = 3 + 3x^2$?

- A. -1
- B. 0
- C. 3
- D. 6

Math: Question 5

$$-3x - 4y = 20$$

$$X - 10y = 16$$

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

- A. -14
- B. -12
- C. -4
- D. 16

Math: Question 6

The equation $y = 36 + 18x$ models the relationship between the height y , in inches, of a typical golden delicious apple tree and the number of years, x , after it was planted. If the equation is graphed in the xy -plane, what is indicated by the y -intercept of the graph?

- A. The age, in years, of a typical apple tree when it is planted
- B. The height, in inches, of a typical apple tree when it is planted
- C. The number of years it takes a typical apple tree to grow
- D. The number of inches a typical apple tree grows each year

Math Question 7

Giovanni wants to buy shirts that cost \$19.40 each and sweaters that cost \$24.80 each. An 8% sales tax will be applied to the entire purchase. If Giovanni buys 2 shirts, which equation relates the number of sweaters purchased, p , and the total cost in dollars, y ?

- A. $1.08(38.80 + 24.80p) = y$
- B. $38.80 + 24.80p = 0.92y$
- C. $38.80 + 24.80p = 1.08y$
- D. $0.92(38.80 + 24.80p) = y$

Math Question 8

A line is graphed in the xy -plane. If the line has a positive slope and a negative y -intercept, which of the following points cannot lie on the line?

- A. $(-3, -3)$
- B. $(-3, 3)$
- C. $(3, -3)$
- D. $(3, 3)$

Math Question 9

A parachute design uses 18 separate pieces of rope. Each piece of rope must be at least 270 centimeters and no more than 280 centimeters long. What inequality represents all possible values of the total length of rope x , in centimeters, needed for the parachute?

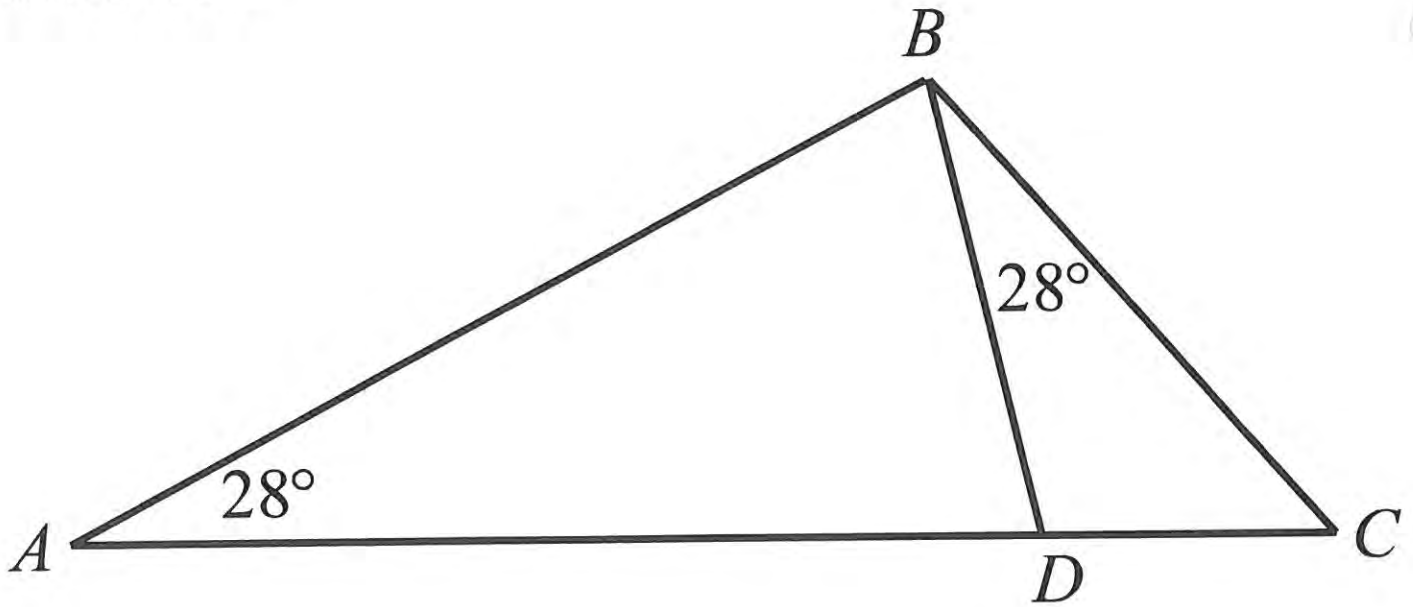
- A. $270 \leq x \leq 280$
- B. $4,860 \leq x \leq 4,870$
- C. $4,860 \leq x \leq 5,040$
- D. $5,030 \leq x \leq 5,040$

Math Question 10

A carpenter has \$60 with which to buy supplies. The carpenter needs to buy both nails and screws. Nails cost \$12.99 per box, and screws cost \$14.99 per box. If n represents the number of boxes of nails and s represents the number of boxes of screws, which of the following systems of inequalities models this situation?

- A.
$$\begin{cases} 12.99n + 14.99s \geq 60 \\ n + s \leq 1 \end{cases}$$
- B.
$$\begin{cases} 12.99n + 14.99s \leq 60 \\ n + s \leq 1 \end{cases}$$
- C.
$$\begin{cases} 12.99n + 14.99s \geq 60 \\ n \geq 1 \\ s \geq 1 \end{cases}$$
- D.
$$\begin{cases} 12.99n + 14.99s \leq 60 \\ n \geq 1 \\ s \geq 1 \end{cases}$$

Math Question 11



In the figure above, which of the following ratios has the same value as $\frac{AB}{BC}$?

- A. $\frac{BD}{DC}$
- B. $\frac{BC}{AC}$
- C. $\frac{AD}{BD}$
- D. $\frac{DC}{BC}$

Math Question 12

$$(x^2y^3)^{\frac{1}{2}}(x^2y^3)^{\frac{1}{3}} = x^{\frac{a}{3}}y^{\frac{a}{2}}$$

If the equation above, where a is a constant, is true for all positive values of x and y , what is the value of a ?

- A. 2
- B. 3
- C. 5
- D. 6

Math Question 13

If the equation $y = (x - 6)(x + 12)$ is graphed in the xy -plane, what is the x -coordinate of the parabola's vertex?

- A. -6
- B. -3
- C. 3
- D. 6

Math Question 14

$$21x + 14 = 7(3x + a)$$

In the equation above, a is a constant. For what value of a does the equation have an infinite number of solutions?

Math Question 15

Julienne practiced her dance routine for twice as many minutes on Monday as she did on Tuesday. She practiced her routine those two days for a total of 2 hours and 15 minutes. For how many minutes did Julienne practice her dance routine on Monday?

Math Question 16

In the expression below, a is an integer.

$$12x^2 + ax - 20$$

If $3x + 4$ is a factor of the expression above, what is the value of a ?

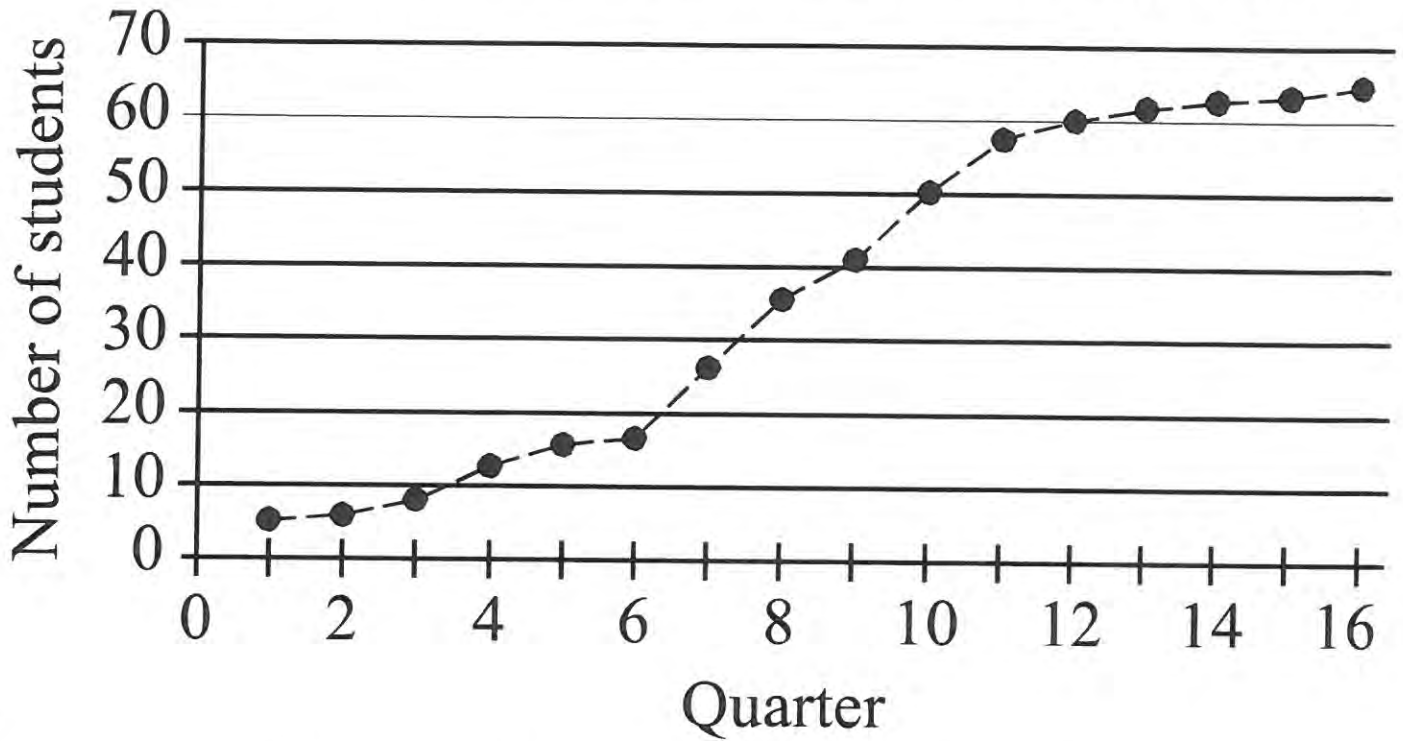
Math Question 17

$$(ax + by)(cx - dy)$$

In the expression above, a , b , c , and d are non-zero constants and $ad = bc$. If $ac = 18$ and $bd = 50$, what is the value of the coefficient of the xy term when the expression is multiplied out and the like terms are collected?

With Calculator Released Items

Number of Students with Part-Time Jobs



During which of the following periods is the increase in the number of students with part-time jobs largest?

- A. Quarters 4 through 6
- B. Quarters 7 through 10
- C. Quarters 11 through 14
- D. Quarters 13 through 16

Math: Question 2

Eli saves money each month to buy a new computer. The total amount he has saved, T , can be calculated by the equation $T = 83 + 30m$, where m is the number of months since he started saving. What does the number 83 represent in the equation?

- A. The amount of money Eli started with
- B. The number of months Eli has been saving
- C. The amount of money Eli saves each month
- D. The total amount of money Eli wants to save

Math: Question 3

According to the Department of Agriculture, consuming 100 grams of banana provides 0.15 milligram of zinc. Which of the following is closest to the number of milligrams of zinc provided by 140 grams of banana?

- A. 0.15
- B. 0.21
- C. 0.25
- D. 0.93

Math: Question 4

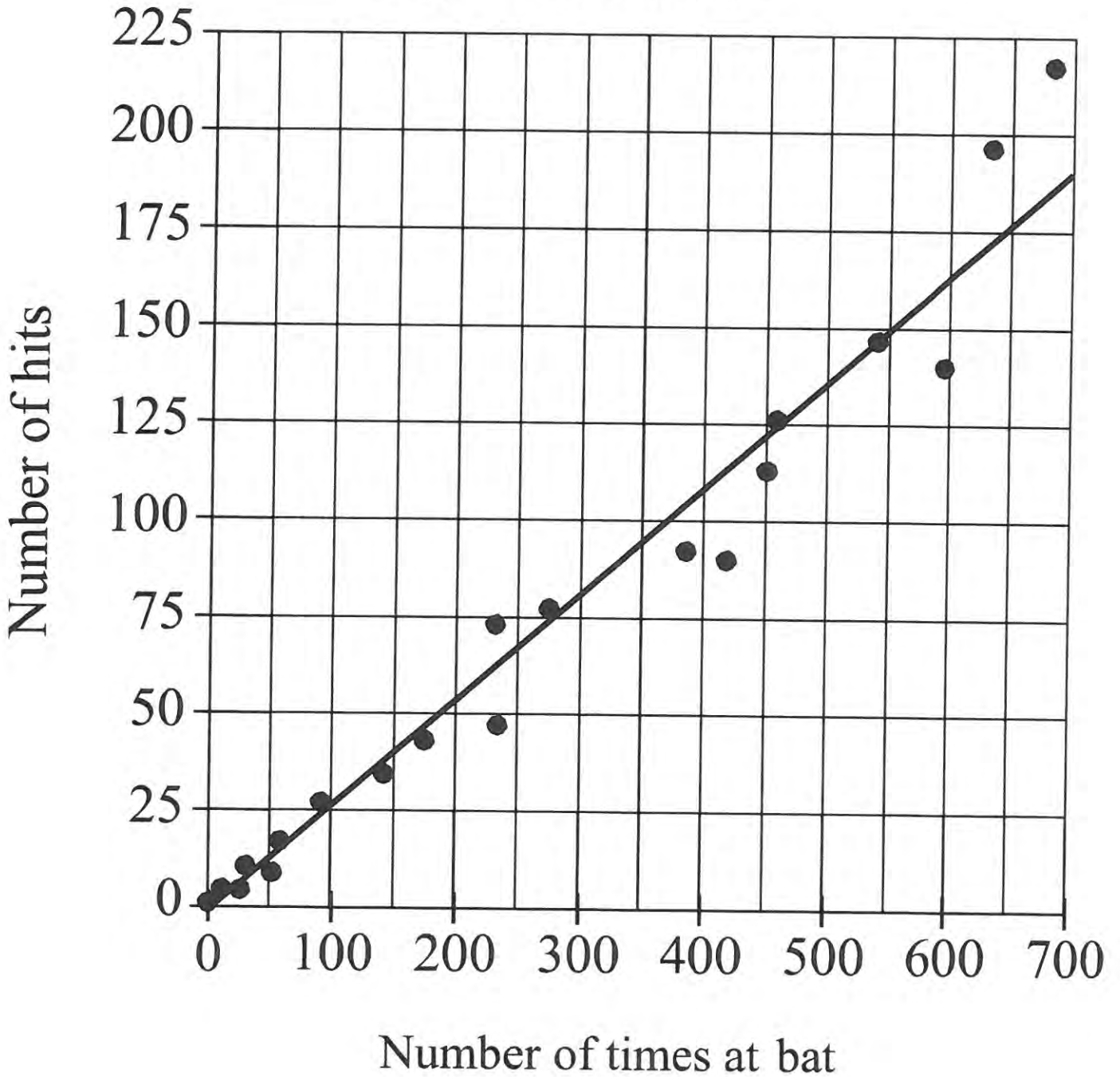
When the equation $y = 5x + p$, where p is a constant, is graphed in the xy -plane, the line passes through the point $(-2, 1)$. What is the value of p ?

- A. -9
- B. -2
- C. 3
- D. 11

Math: Question 5

Questions 5 and 6 refer to the following information.

The number of hits and times at bat by players on a major league baseball team



Math: Question 5 cont'd

The scatterplot above shows the number of hits and the number of times at bat by each of 20 players on a major league baseball team. The line of best fit for the data is also shown.

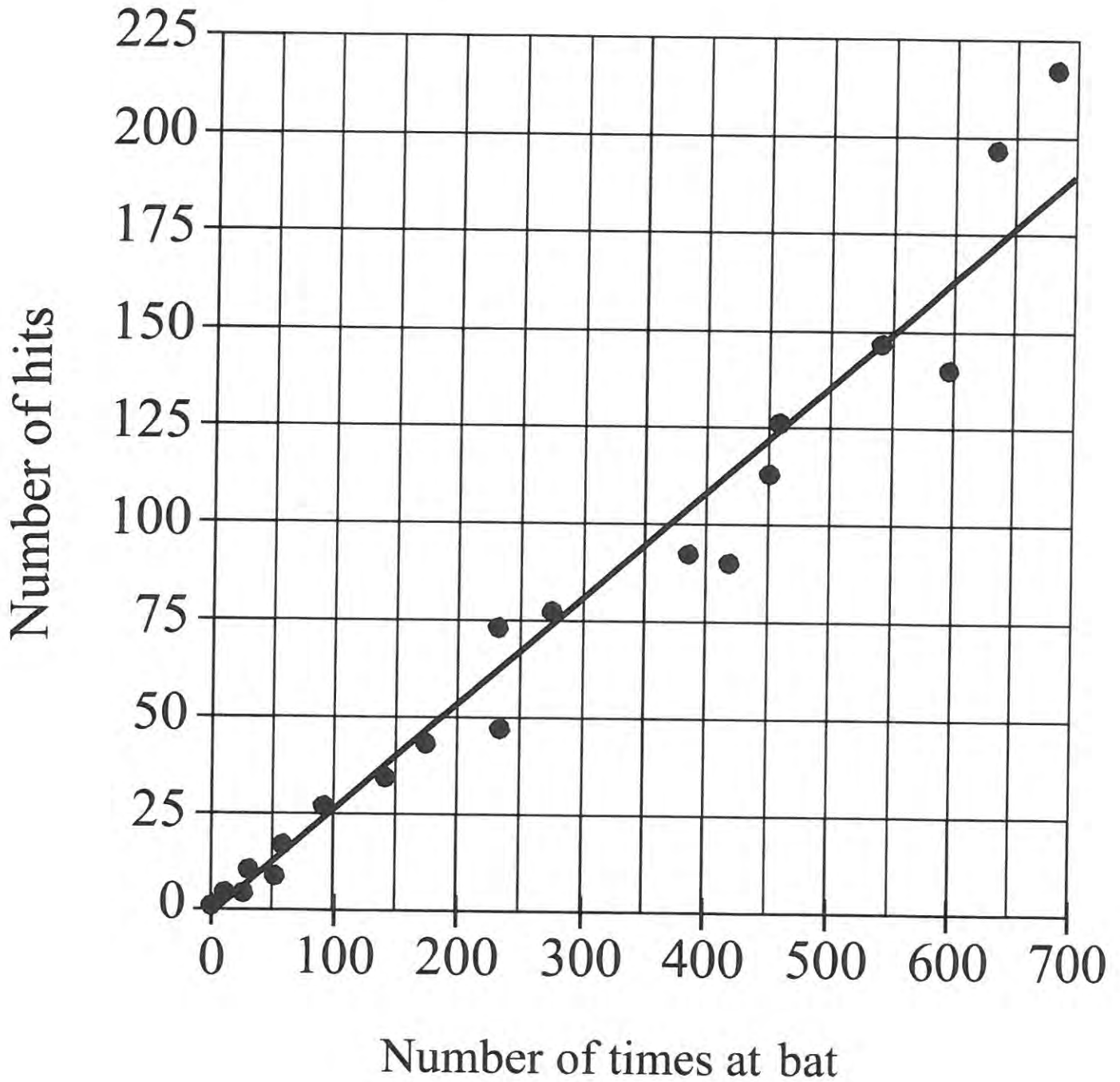
Which of the following statements about the relationship between the number of times at bat and the number of hits is true?

- A. As the number of times at bat increases, the number of hits decreases.
- B. As the number of times at bat increases, the number of hits increases.
- C. As the number of times at bat increases, the number of hits remains constant.
- D. As the number of times at bat decreases, the number of hits increases.

Math: Question 6

Questions 5 and 6 refer to the following information.

The number of hits and times at bat by players on a major league baseball team



Math: Question 6 cont'd

The scatterplot above shows the number of hits and the number of times at bat by each of 20 players on a major league baseball team. The line of best fit for the data is also shown.

For the player with 450 times at bat, the actual number of hits the player had is approximately how many fewer than the number of hits predicted by the line of best fit?

- A. 10
- B. 20
- C. 30
- D. 40

Math: Question 7

An advertisement states that the printing rate of a certain printer is 400 characters per second. According to the convention that 1 word consists of 5 characters, what would be the advertised printing rate, in words per minute?

- A. 2,000
- B. 4,800
- C. 24,000
- D. 120,000

Math: Question 8

Year	0	1	2	3	4
Salary	38,000	39,140	40,314	41,524	42,769

The table above shows the yearly salary, in dollars, of an employee at a company. Which of the following best describes the type of model that fits the data in the table?

- A. Linear, increasing by approximately \$1,140 per year
- B. Linear, increasing by approximately \$1,245 per year
- C. Exponential, increasing by approximately 3% each year
- D. Exponential, increasing by approximately 9% each year

Math: Question 9

$$(x^2y - 3y^2 + 5xy^2) - (-x^2y + 3xy^2 - 3y^2)$$

Which of the following is equivalent to the expression above?

- A. $2x^2y + 2xy^2$
- B. $8xy^2 - 6y^2$
- C. $2x^2y + 8xy^2 - 6y^2$
- D. $x^4y^2 + 9xy^4 - 15xy^2$

Math: Question 10

$$4x - \frac{1}{2}x - 7 = 7\left(\frac{1}{2}x - 7\right)$$

Which of the following describes the solution to the equation above?

- A. $x = 0$
- B. $x = 10\frac{1}{2}$
- C. The equation has infinitely many solutions.
- D. The equation has no solutions.

Math: Question 11

The table below shows the monthly electricity bills of Joseph and Samuel for the first five months of a year.

Electricity Bills

Month	Joseph	Samuel
January	\$184.66	\$188.99
February	\$193.12	\$181.27
March	\$175.99	\$176.35
April	\$145.30	\$149.23
May	\$180.33	\$185.66

Based on the information in the table, which of these statements is true about the ranges and medians of the bills?

- A. Both the range and median of Joseph's bills are less than the range and median of Samuel's bills.
- B. Both the range and median of Joseph's bills are greater than the range and median of Samuel's bills.
- C. The range of Joseph's bills is less than the range of Samuel's bills, while the median of Joseph's bills is greater than the median of Samuel's bills.
- D. The range of Joseph's bills is greater than the range of Samuel's bills, while the median of Joseph's bills is less than the median of Samuel's bills.

Math: Question 12

Cars in Service on a Railroad

	In service less than 10 years	In service 10 or more years
Single level	215	497
Double-decker	16	82

The table above presents information about the 810 train cars in service on a railroad. Approximately what percentage of the train cars in service are double-decker cars that have been in service for less than 10 years?

- A. 2 percent
- B. 7 percent
- C. 10 percent
- D. 16 percent

Math: Question 13

A moving company uses plastic wrap to bundle groups of boxes together. If a portion of plastic wrap that measures 900 inches in length is used to bundle each group of boxes, how many groups of boxes can be bundled using 1,500 feet of the same type of plastic wrap?

- A. 15
- B. 20
- C. 25
- D. 30

Math: Question 14

Calories in a Cheeseburger

Restaurant	Calories
Blue Jay	810
Clear Lake Cafe	900
Molly's	740
Riverside Diner	1,120
Maya's Bistro	1,050
Tom's Place	700

What is the difference in the number of calories in a cheeseburger at the Riverside Diner and the median number of calories in cheeseburgers at all six restaurants?

- A. 190
- B. 233
- C. 265
- D. 390

Math: Question 15

A circle is graphed in the xy -plane. If the circle has a radius of 3 and the center of the circle is at $(4, -2)$, which of the following could be an equation of the circle?

- A. $(x + 4)^2 + (y - 2)^2 = 3$
- B. $(x + 4)^2 - (y - 2)^2 = 3$
- C. $(x - 4)^2 + (y + 2)^2 = 9$
- D. $(x - 4)^2 - (y + 2)^2 = 9$

Math: Question 16

Questions 16-18 refer to the following information.

A high school developed a program called Propel, which offers extra guidance and support during the 9th-grade year. Before the school year began, 327 rising 9th graders were selected at random to participate in a study; 109 of those students were randomly assigned to enroll in the Propel program and the remaining students served as a control group. A summary of the year-end grade point averages (GPA) for the 327 9th-grade students who were chosen for the study is shown in the table below.

GPA for the 327 9th-Grade Students

<u>GPA</u>	<u>Enrolled in Propel</u>	<u>Not enrolled in Propel</u>
3.0 or greater	61	95
Less than 3.0	48	123

If a 9th-grade student at the high school is chosen at random, which of the following is closest to the probability that the student will have a GPA of 3.0 or greater?

- A. 0.64
- B. 0.48
- C. 0.33
- D. 0.19

Math: Question 17

Questions 16-18 refer to the following information.

A high school developed a program called Propel, which offers extra guidance and support during the 9th-grade year. Before the school year began, 327 rising 9th graders were selected at random to participate in a study; 109 of those students were randomly assigned to enroll in the Propel program and the remaining students served as a control group. A summary of the year-end grade point averages (GPA) for the 327 9th-grade students who were chosen for the study is shown in the table below.

GPA for the 327 9th-Grade Students

<u>GPA</u>	<u>Enrolled in Propel</u>	<u>Not enrolled in Propel</u>
3.0 or greater	61	95
Less than 3.0	48	123

What is the difference, to the nearest whole percent, between the percentage of students enrolled in Propel who had a GPA of 3.0 or greater and the percentage of students not enrolled in Propel who had a GPA of 3.0 or greater?

- A. 4%
- B. 8%
- C. 10%
- D. 12%

SHOW WORK

SAT Practice
(YES Calculator)

Name _____

Period _____ A# _____

Math: Question 18

Questions 16-18 refer to the following information.

A high school developed a program called Propel, which offers extra guidance and support during the 9th-grade year. Before the school year began, 327 rising 9th graders were selected at random to participate in a study; 109 of those students were randomly assigned to enroll in the Propel program and the remaining students served as a control group. A summary of the year-end grade point averages (GPA) for the 327 9th-grade students who were chosen for the study is shown in the table below.

GPA for the 327 9th-Grade Students

<u>GPA</u>	<u>Enrolled in Propel</u>	<u>Not enrolled in Propel</u>
3.0 or greater	61	95
Less than 3.0	48	123

Of the students enrolled in the Propel program, the ratio of boys to girls is approximately 2:3. Which of the following is the best estimate of the number of girls enrolled in the program?

- A. 44
- B. 65
- C. 73
- D. 131

Math: Question 19

An artist is creating a sculpture using bendable metal rods of equal length. One rod is formed into the shape of a square and another rod into the shape of an equilateral triangle. If each side of the triangle is 2 inches longer than each side of the square, how long, in inches, is each rod?

- A. 16
- B. 18
- C. 24
- D. 30

Math: Question 20

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

A rational function is defined above. Which of the following is an equivalent form that displays values not included in the domain as constants or coefficients?

- A. $f(x) = \frac{x - 2}{x^2 + x - 2}$
- B. $f(x) = \frac{2(x - 2)}{2(x + 2)(x - 1)}$
- C. $f(x) = \frac{1}{x + 1}$
- D. $f(x) = \frac{1}{2x^2}$

Math: Question 21

A landscaper is designing a rectangular fountain with a 4-foot-wide path around it. The equation $A = 4p + 64$ will relate the area A , in square feet, of the path to the perimeter p , in feet, of the fountain. In the design, how many feet will the perimeter of the fountain increase for each additional square foot of the path's area?

- A. $\frac{1}{64}$
- B. $\frac{1}{4}$
- C. 4
- D. 64

Math: Question 22

In the xy -plane the graph of the function q is a parabola. The graph intersects the x -axis at $(-1, 0)$ and $(r, 0)$. If the vertex of q occurs at the point $(2, 4)$, what is the value of r ?

- A. 0
- B. 3
- C. 4
- D. 5

Math: Question 23

Liquid going through a cooling system is chilled so that its temperature decreases at a constant rate from 100°C to 25°C in 5 seconds. Which of the following functions represents the temperature C , in degrees Celsius, as a function of the time t , in seconds, after chilling began, for $0 \leq t \leq 5$?

- A. $C = -25 + 15t$
- B. $C = 25 - 15t$
- C. $C = 25 + 15t$
- D. $C = 100 - 15t$

Math: Question 24

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

The formula for the volume of a sphere with radius r is shown above. The radius of the planet Jupiter is about 11 times the radius of planet Earth. Assuming that planets are spheres, about how many times larger is the volume of Jupiter than the volume of Earth?

- A. 11
- B. 121
- C. 1,331
- D. 1,775

Math: Question 25

The population of squirrels in a park has been doubling every 15 years. Which of the following statements describes the type of function that best models the relationship between the population of squirrels in the park and the number of 15-year time periods?

- A. Exponential growth, because the population of squirrels is increasing by the same amount each 15-year time period
- B. Exponential growth, because the population of squirrels is increasing by the same percentage each 15-year time period
- C. Linear growth, because the population of squirrels is increasing by the same amount each 15-year time period
- D. Linear growth, because the population of squirrels is increasing by the same percentage each 15-year time period

Math: Question 26

If function f is defined by $f(x) = 3x^2 - 5x + 4$, what is $f(x - 4)$?

- A. $f(x - 4) = 3x^2 - 5x$
- B. $f(x - 4) = 3x^2 - 5x + 72$
- C. $f(x - 4) = 3x^2 - 29x + 52$
- D. $f(x - 4) = 3x^2 - 29x + 72$

Math: Question 27

$$x = \frac{1}{3}y$$

$$154 - 4y = 10x$$

The equations of two lines are shown above. If the lines are graphed in the xy -plane, which of the following ordered pairs represents the point at which the lines would intersect?

- A. (1, 3)
- B. (3, 9)
- C. (5, 15)
- D. (7, 21)

Math: Question 28

<u>Type of meal</u>	<u>Fat (g)</u>	<u>Carbohydrates (g)</u>
Stir-fry	4	40
Szechuan chicken	5	35

A grocer carries two types of frozen meals that have the fat and carbohydrate content shown in the table above. John wants to purchase a combination of the two types of meals with no more than 350 grams of fat and no more than 2975 grams of carbohydrates. If John purchases 10 Szechuan chicken meals, what is the greatest number of stir-fry meals he can purchase so that the combination will satisfy the requirements?

Math: Question 29

$$y = x^2 - 4x + 3$$

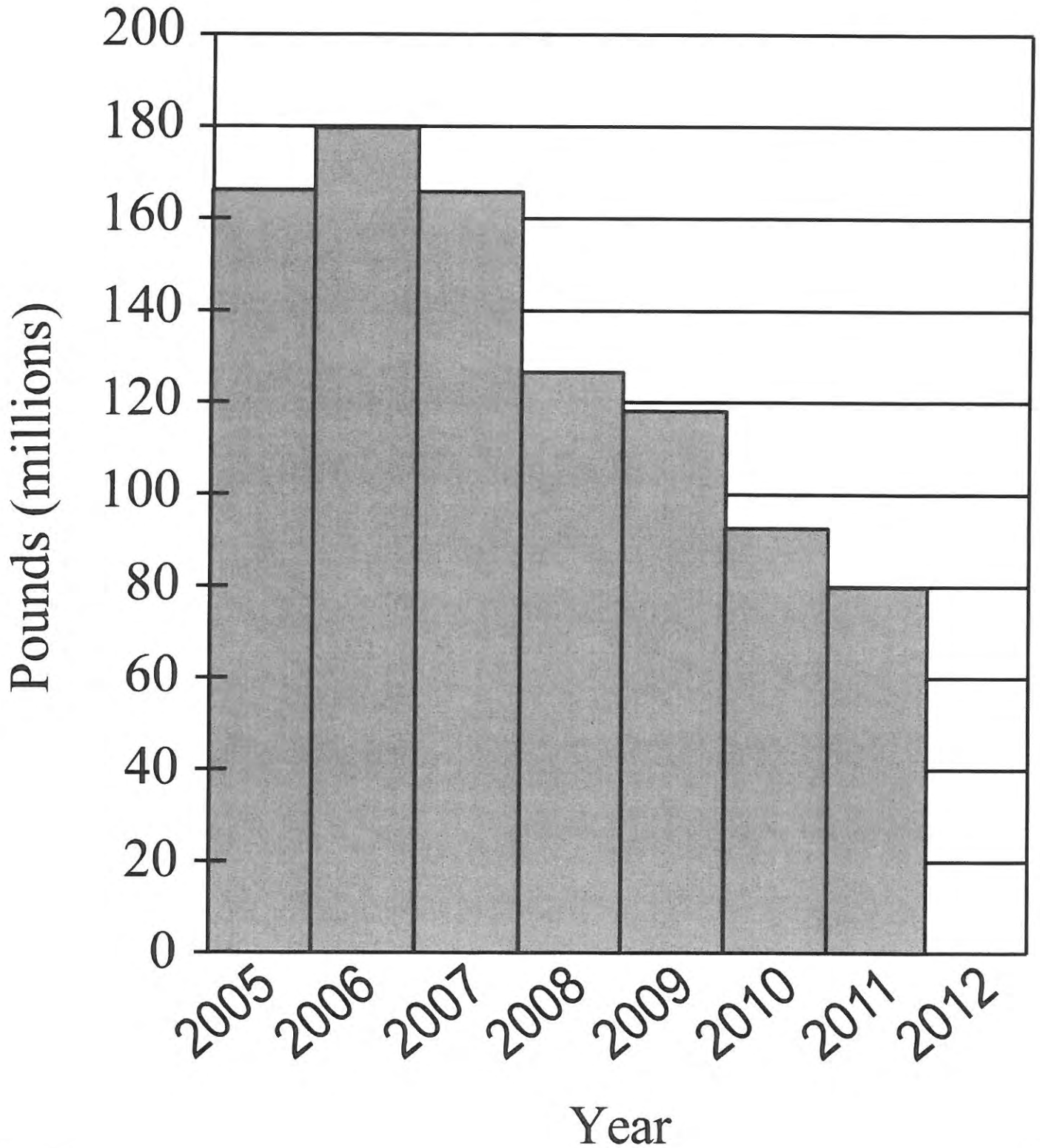
$$y = x - 1$$

If (x, y) is a solution to the system of equations above, what is one possible value of the product of x and y ?

Math: Question 30

Questions 30 and 31 refer to the following information.

King Crab Supply from 2005–2012



Math: Question 30 cont'd

The graph above shows the supply, in millions of pounds, of king crab harvested and sold from 2005 to 2011. The information for the year 2012 is not included in the graph.

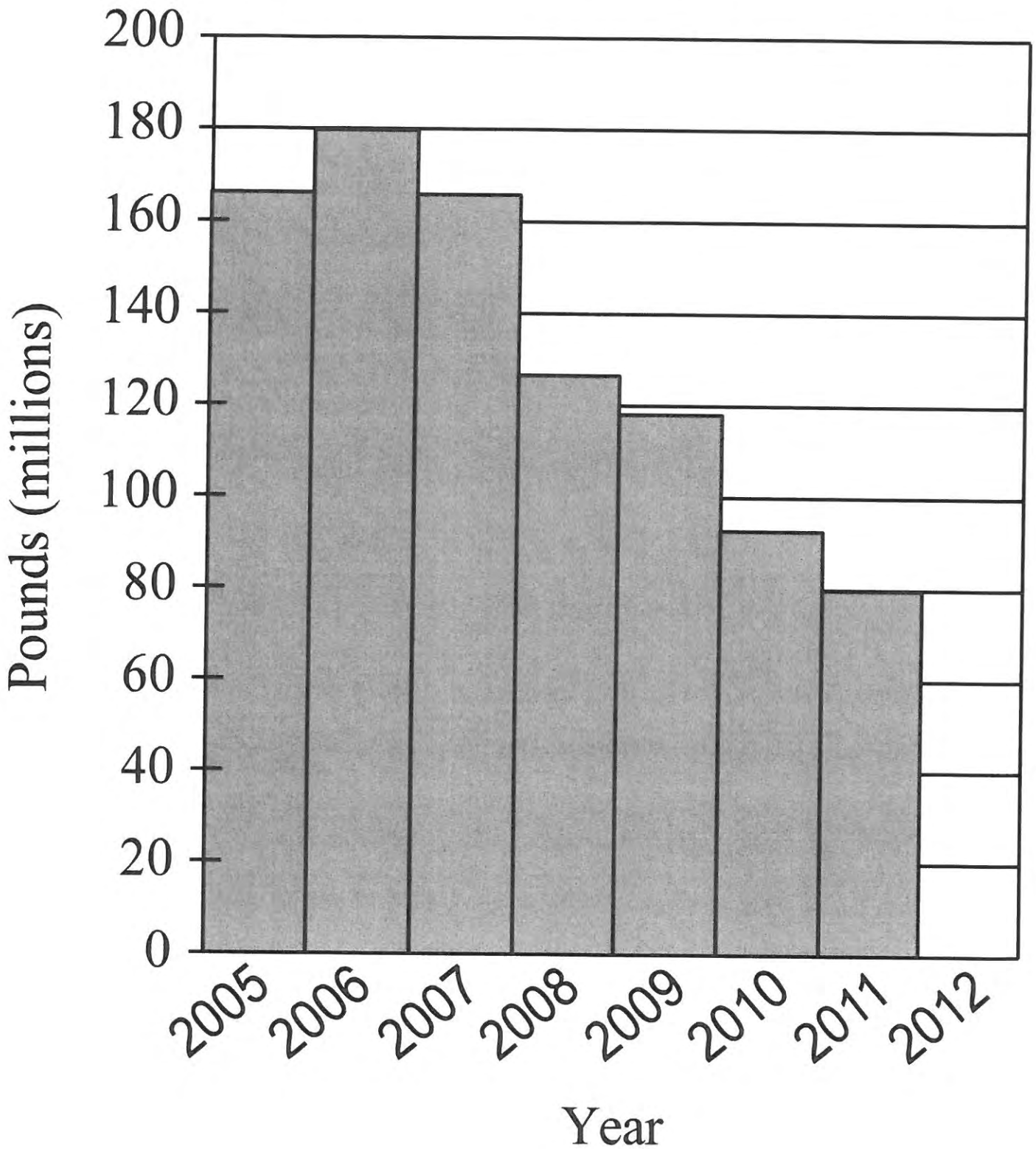
In 2006, the price of king crab was \$8 per pound at the beginning of the year and dropped to \$7 per pound toward the end of the year. If 60% of the king crab supply was sold at the higher price per pound and the rest was sold at the lower price per pound, what was the total revenue generated, in millions of dollars, from the sales of king crab in 2006 ? (Disregard the \$ when gridding your answer.)

Click on the answer box and type in a number. Backspace to erase.

Math: Question 31

Questions 30 and 31 refer to the following information.

King Crab Supply from 2005–2012



Math: Question 31 cont'd

The graph above shows the supply, in millions of pounds, of king crab harvested and sold from 2005 to 2011. The information for the year 2012 is not included in the graph.

In 2011, the price of king crab was \$17 per pound. In 2012, x million pounds of king crab were sold at \$16 per pound. If the total money generated from sales each year was the same, what is the value of x ?