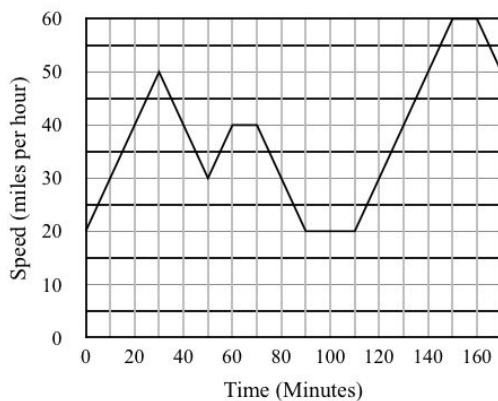


Test One: Math with Calculator
Additional Problems

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

Question 1

Sarah drives at different speeds while going on a road trip. The graph below shows her speed at different times during her road trip. On which intervals does Sarah's speed remain constant?



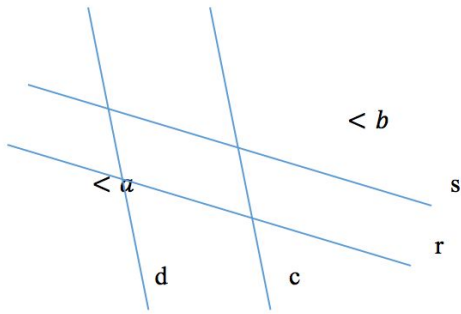
- A) $(60,70) \cup (90,110) \cup (150,160)$
- B) $(0,30) \cup (50,60) \cup (110,150)$
- C) $(60,70) \cup (150,160)$
- D) $(30,50) \cup (70,90) \cup (160,170)$

Written by Nicole D'Onofrio

Question 2

If $y = nx$, and n is a constant which makes $y = 18$ when $x = 6$, what is the value of y when $x = 9$?

- A) 36
- B) 42
- C) 45
- D) 27

Question 3

In the figure above, lines d and c are parallel and lines r and s are parallel. If $\angle b$ is equal to 115° , what is the value of $\angle a$?

- A) 125°
- B) 115°
- C) 245°
- D) 124°

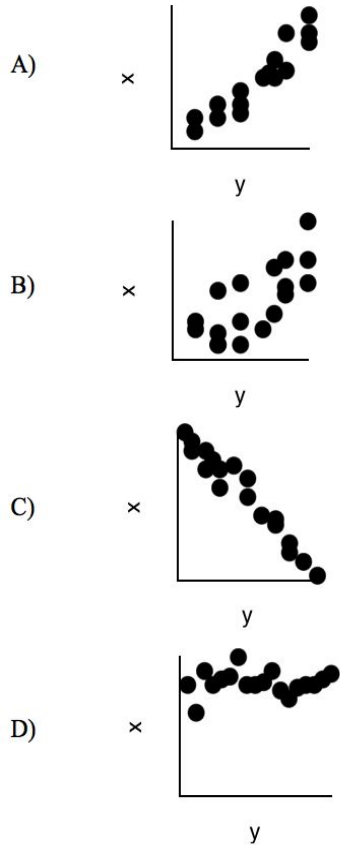
Question 4

If $15 + 6x = 17$ what is the value of $2 + 12x$?

- A) 8
- B) 4
- C) 6
- D) 10

Question 5

Which of the following graphs best shows a weak, positive, linear association between x and y?



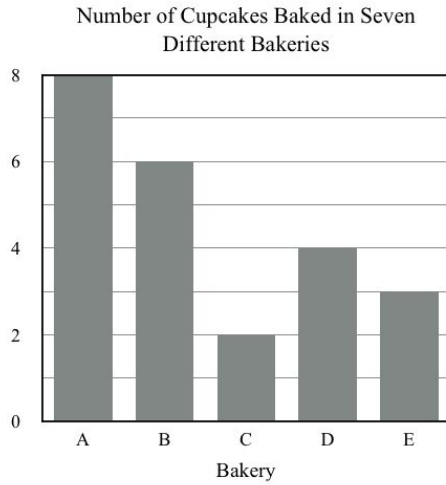
Written by Nicole D'Onofrio

Question 6

1 Kilometer = 1000 meters
1 meter = 100 centimeters

On his way home from college, John takes the train 618 Kilometers from the University Richmond back to New Jersey. How many total centimeters does John travel from on his journey?

- A) $6.18 \cdot (10)^7$
- B) $6.18 \cdot (10)^6$
- C) $6.18 \cdot (10)^8$
- D) $6.17 \cdot (10)^5$

Question 7

The number of cupcakes baked in five different bakeries on a certain day is shown in the graph above. If the total number of cupcakes baked in Bakery B and Bakery D combined is 1,000, what is the appropriate label for the vertical axis of the graph?

- A) Number of cupcakes (in tens)
- B) Number of cupcakes (in hundreds)
- C) Number of cupcakes (in thousands)
- D) Number of cupcakes (in ones)

Question 8

For what combinations of n is $|n - 4| + 2 = 7$

- A) 1,9
- B) 9,0
- C) -1,9
- D) -2,8

Question 9

A certain relationship is modeled by $y = \frac{8}{x-1}$
rewrite the equation as x in terms of y . ($x =$)

- A) $x = 8 + y$
- B) $x = \frac{8+y}{2}$
- C) $x = \frac{8+y}{2y}$
- D) $x = \frac{8+y}{y}$

Question 10

If $y = 4$ for the model in Question 8, what is the value of x ?

- A) 12
- B) $\frac{8}{3}$
- C) 3
- D) 6

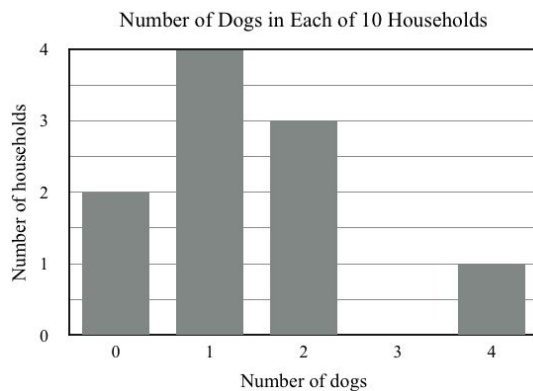
Written by Elise Favia

Question 11

Which of the following is not a solution to the inequality $6x - 4 \geq 4x - 3$?

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

4

Question 12

Based on the histogram above, of the following, which is closest to the average (arithmetic mean) number of dogs per household?

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

Written by Nicole D'Onofrio

Question 13

	Chemistry	Biology	Physics	Total
Male	76	45	68	189
Female	132	72	63	267
Total	208	117	131	456

A Group of 11th grade students are surveyed regarding which science class they participate in. The break down of the survey is displayed in the table above.

Which group most closely represents 44% of all survey respondents?

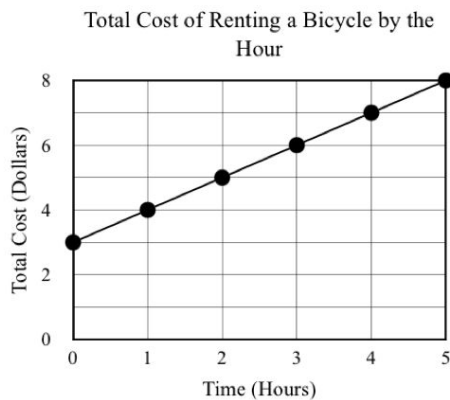
- A) Male Chemistry students and Female Physics students
- B) Female Biology students and Male Chemistry students
- C) Female Physics students and Male Biology students
- D) Female Chemistry students and Male Physics students

Question 14

13	14	14	14	15
15	16	16	16	16
17	18	20	21	23

In the table above, which value represents the mode?

- A) 13
- B) 23
- C) 16
- D) 15.5

Question 15

The graph above displays the total cost, in dollars, of renting a bicycle for up to five hours.

What is the initial cost, in dollars, of renting a bicycle?

- A) 0 dollars
- B) 8 dollars
- C) 2 dollars
- D) 3 dollars

Written by Nicole D'Onofrio

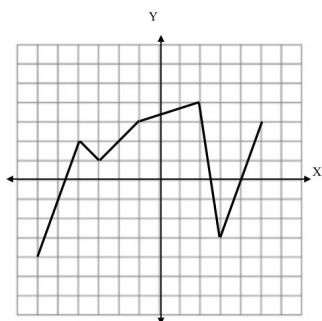
Question 16

Use the graph from *Question 15*. What is the relationship between the total cost, C , in dollars, and the number of hours the bike is rented, h ?

- A) $C=3h$
- B) $C=2h+1$
- C) $C=h+3$
- D) $h=3C$

Written by Elise Favia

Question 17



The complete graph of the function f is shown in the xy -plane above. What are the coordinates for the absolute maximum of this function?

- A) $(-4, 2)$
- B) $(5, 3)$
- C) $(2, 4)$
- D) None of the above

Written by Nicole D'Onofrio

Question 18

$$y < (-2x + 2) + a$$

$$y > (2x - 2) + b$$

If $(1, 0)$ is a solution to the inequality, what must be true regarding a and b ?

- A) $b > a$
- B) $a = b$
- C) $a > b$
- D) $a = -b$

4

Question 19

An Ice cream truck sells Ice cream pops for \$2.50 each and water bottles for \$1 each. If the truck sells only these two goods, and if the truck sold \$117.5 worth of product, which of the following could be the number of ice cream pops sold on that day?

- A) 32
- B) 35
- C) 46
- D) 44

Written by Nicole D'Onofrio

Question 20

Liam bought an SAT Prep Book at a retailer which offered him a 30% discount. Liam also had to pay a 6% sales tax on the discounted price of the book. If the price that Liam paid was p dollars, what is the price of the original book in terms of p ?

- A) $\frac{p}{(0.06)(0.7)}$
 B) $\frac{(0.7)p}{1.06}$
 C) $(1.06)(0.7)p$
 D) $\frac{p}{(1.06)(0.7)}$

Written by Nicole D'Onofrio

Question 21

of AP level courses taken Senior Year

	1	2-3	4	5	Total
Boy	35	65	30	10	140
Girl	39	70	40	11	160
Total	74	135	70	21	300

The chart above was constructed by surveying Seniors taking AP level courses at Scotch Plains Fanwood High School. If a student is selected at random, what is the probability that this student is a girl who is taking more than 3 AP exams.

- A) $\frac{51}{300}$
 B) $\frac{51}{160}$
 C) $\frac{91}{300}$
 D) $\frac{70}{160}$

Written by Nicole D'Onofrio

Questions 22 and 23 refer to the following information.

Annual Budgets for Different Programs in Kansas, 2007 to 2010

Program	Year			
	2007	2008	2009	2010
Agriculture/natural resources	373,904	358,708	485,807	488,106
Education	2,164,607	2,413,984	2,274,514	3,008,036
General government	14,347,325	12,554,845	10,392,107	14,716,155
Highways and transportation	1,468,482	1,665,636	1,539,480	1,773,893
Human resources	4,051,050	4,099,067	4,618,444	5,921,379
Public safety	263,463	398,326	355,935	464,233

The table above lists the annual budget, in thousands of dollars, for each of six different state programs in Kansas from 2007 to 2010.

Question 22

What's the difference in the average rate of change between public safety and agriculture/natural resources from 2007-2010?

- A) 38,067,333 dollars
- B) 28,856,000 dollars
- C) 66,923,333 dollars
- D) 86,568,000 dollars

Question 23

Of the following, which program's ratio of its 2008 to 2010 (2008:2010) budget is closest to 1?

- A) General Government
- B) Public Safety
- C) Education
- D) Highways and Transportation

Question 24

Find the equation of the circle in the xy -plane with center $(3,2)$ and a radius with endpoint at $(7,4)$.

- A) $(x - 2)^2 + (y - 3)^2 = 8$
- B) $(x - 2)^2 + (y - 3)^2 = 20$
- C) $(x - 3)^2 + (y - 2)^2 = 20$
- D) $(x - 3)^2 + (y - 2)^2 = 8$

Question 25

$$h = -4t^2 + 28t + 32$$

The equation above represents the height of a ball, h , in feet, in terms of time, t , seconds. After approximately how many seconds after being fired does the ball hit the ground?

- A) -1 seconds
- B) 4 seconds
- C) 16 seconds
- D) 8 seconds

Question 26

Emma and John grow Clementines. If Emma grows 13% more Clementines than John, about how many less Clementines does John grow than Emma if Emma grows 322 Clementines?

- A) 280 Clementines
- B) 42 Clementines
- C) 84 Clementines
- D) 126 Clementines

Question 27

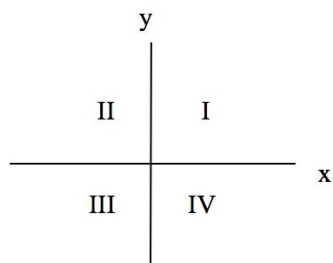
A square field measures 10 meters by 10 meters. Ten students each mark off a randomly selected region of the field; each region is square and has side lengths of 1 meter, and no two regions overlap. The students count the earthworms contained in the soil to a depth of 5 centimeters beneath the ground's surface in each region. The results are shown in the table below.

Region	Number of earthworms	Region	Number of earthworms
A	107	F	141
B	147	G	150
C	146	H	154
D	135	I	176
E	149	J	166

What is the average number of earth worms per every 10 square meters of the field?

- A) 147.1
- B) 150.1
- C) 152.6
- D) 156.2

Question 28



If the system of inequalities $y \leq 3x + 2$ and $y < 6x - 1/2$ is graphed in the xy -plane above, which quadrant contains no solution to the set of inequalities.

- A) Quadrant I
- B) Quadrant 2
- C) Quadrant 3
- D) Quadrant 4

Question 29

For a polynomial $g(x)$, the value of $g(-2)$ is 7. Which of the following must be true about $g(x)$?

- A) The remainder when $g(x)$ is divided by $(x + 2)$ is 7.
- B) The remainder when $g(x)$ is divided by $(x - 7)$ is -2.
- C) The remainder when $g(x)$ is divided by $(x + 7)$ is 7.
- D) The remainder when $g(x)$ is divided by $(x + 2)$ is -7.

Question 30

What is the y -value when the graph of $y = x^2 - 6x + 8$ is at its minimum?

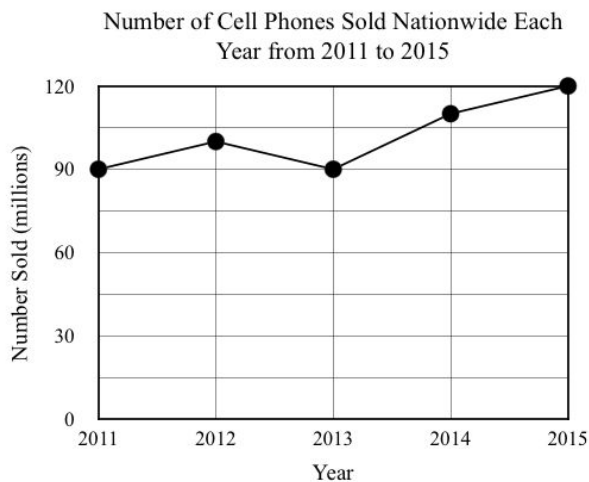
- A) $y = -1$
- B) $y = 3$
- C) $y = 2$
- D) $y = 4$

Question 31

John can eat between 17 and 36 doughnuts an hour.
If John eats a total of 306 doughnuts, what is a possible amount of time, in hours, it could take John to eat all the doughnuts?

Question 32

A train crosses a bridge that can support a maximum of 500,000 pounds. If the train itself weighs 350,000 pounds, and if every passenger weighs 145 pounds, what is the total number of people that the train may carry before the bridge collapses?

Question 33

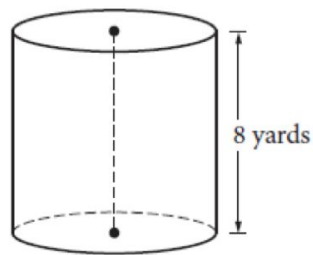
According to the line graph above, the number of cell phones sold nationwide in 2015 is what percentage of the number of cell phones sold in 2011 and 2013 combined?

Written by Nicole D'Onofrio

Question 34

A local radio station sells commercial spots at 1 minute intervals for 300 dollars. If the radio station must show at least 22 hours of actual programming per day, what is the maximum amount of money the radio station can make over the course of 3 days?

Question 35



A distiller stores whiskey in a right cylindrical barrel like the one above. If the volume of the barrel is 128π , what is the circumference of the barrel?

Question 36

$$L(x) = \frac{1}{(x-4)^2 + 4(x-2) - 4}$$

For what value of x is the above expression undefined?

Question 37

Eddie is a bad investor. Every year Eddie loses 87 percent of what he initially invests. If Eddie originally invests 1,000 dollars, and the value of his investments is modeled by the equation $1,000(x)^t$, what is the value of x in the equation?

Question 38

Eddie's friend Liam finds a stable account that yields 2% interest compounded annually. About how much more money does Liam have after 3 years than Eddie does if both initially deposit 1,000 dollars in their respective accounts?

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