23

Agricultural Land as a Percent of
Total Land Area, 2014

Country	Percent of Total Land Area
Brazil	33.8%
Canada	7.2%
Greenland	0.6%
Latvia	30.1%
Mexico	54.9%
New Zealand	42.2%
Russian Federation	13.3%
Turkey	50.1%
United States	44.6%

The World Bank measures the amount of land devoted to agriculture among all 196 countries in the world. The results from 9 of the countries are given in the table above. The median percent of agricultural land for all 196 countries is 34.95%. What is the difference between the median percent of agricultural land for these 9 countries and the median for all 196 countries?

A)   1.15%

B)   4.19%

C)   9.65%

D)   19.95%

24

To ship figurines, the figurines are placed in a rectangular box and then small packing pellets are added. The base of the box has an area of 4.4 in², and the height of the box is 6.5 in. If the volume of the air in the box after the figures and pellets are added is 8.0 in³, which of the following is closest to the combined volume of the figurines and pellets in the box?

A)   1.9 in³

B)   20.6 in³

C)   28.6 in³

D)   117.84 in³

25

The economy of Argentina as measured by its Gross Domestic Product (GDP) is shrinking at a rate of 2.6% per year. In 2015, the GPD of Argentina was $630 billion. Which of the following functions represents Argentina's GPD, A, in billions of dollars, y years since 2015 ?

A) $A(y) = 630 - (1 - 0.26)y$

B) $A(y) = 630(1 - 0.26)^y$

C) $A(y) = 630 - (1 - 0.026)y$

D) $A(y) = 630(1 - 0.026)^y$

CONTINUE

Questions 26 and 27 refer to the following information.

Weights of Modern U.S. Coins

Coin	Grams	Drams
Penny	2.50	1.41
Nickel	5.00	2.82
Dime	2.25	1.27

The table above gives the average weight, expressed in both grams and drams, of three types of modern U.S. coins.

26

If y grams is equivalent to d drams, of the following, which best represents the relationship between y and d?

A) $y = 1.8d$

B) $d = 1.8y$

C) $yd = 1.8$

D) $y = 0.56d$

27

If a bag of coins weighing 225 grams is filled with p pennies, n nickels, and d dimes, which of the following expresses d in terms of n and p?

A) $100 - \dfrac{10}{9}(p + 2n)$

B) $100 + \dfrac{10}{9}(p + 2n)$

C) $100 - \dfrac{10}{9}(p - 2n)$

D) $100 + \dfrac{10}{9}(p - 2n)$

28

$$(x - 2)^2 + (y + 5)^2 = 36$$

If a circle in the xy-plane has the equation above, which of the following does NOT lie on the exterior of the circle?

A) $(2, 1)$

B) $(2, 5)$

C) $(5, 2)$

D) $(-1, 1)$

29

Month	Number of Peppers
June	2,200
July	2,640

A farmer counted the number of peppers produced by a certain field in June and July. The number counted for each month was recorded in the table above. The farmer estimates that the percent increase from June to July would be half the percent increase from July to August. How many peppers does the farmer expect the field to produce in August?

A) 2,860

B) 2,904

C) 3,520

D) 3,696

30

$(-8, 2)$

$y = h(x)$
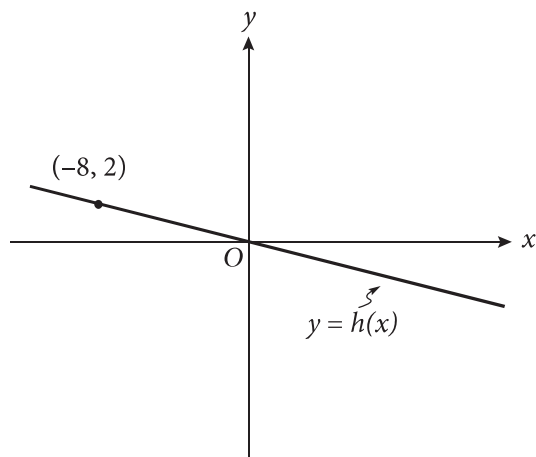
In the xy-plane above, a point (not shown) with coordinates (a, b) lies on the graph of the linear function h. If a and b are nonzero integers, what is the ratio of b to a ?

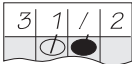A) −4 to 1

B) −2 to 1

C) −1 to 2

D) −1 to 4

CONTINUE

DIRECTIONS

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

1. 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 circles accurately. You will receive credit only if the circles are filled in correctly.

2. Mark no more than one circle in any column.

3. No question has a negative answer.

4. Some problems may have more than one correct answer. In such cases, grid only one answer.

5. **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 as $3\frac{1}{2}$.)

6. **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. Fraction line. Grid in result.

Answer: 2.5 — Decimal point

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

Answer: 201 – either position is correct

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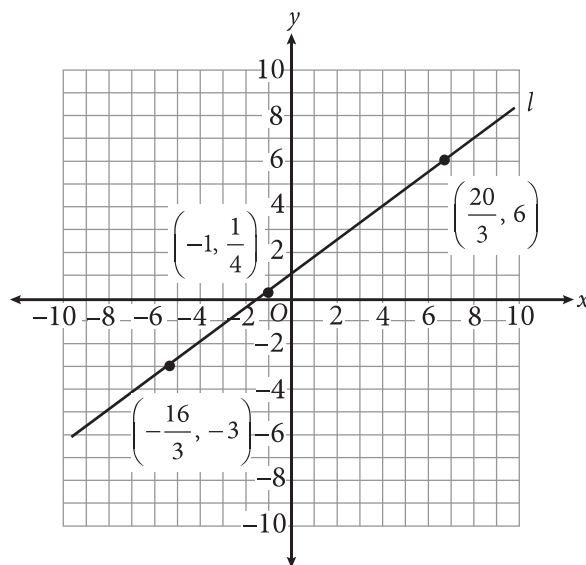
CONTINUE

31

The raw score on a certain standardized test is determined by subtracting $\frac{1}{4}$ of the number of incorrect answers from the number of correct answers. If a student answered 30 questions and received a raw score of 20, how many questions did the student answer incorrectly?

32

One of the first diets to limit the intake of carbohydrates was prescribed by Dr. William Harvey in 1862. This diet consisted of three meals a day containing equal amounts of protein per meal. If protein contains 4 dietary calories per gram, and the diet consisted of 672 dietary calories of protein per meal, how much protein, to the nearest ounce, was in each meal? (1 ounce is approximately 28 grams.)

33
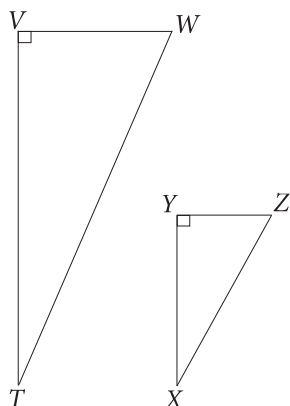

What is the slope of line l shown in the xy-plane above?

34

$$-9 - a = b$$
$$a^2 - 6a - 9 = b$$

If the ordered pair (a, b) satisfies the system of equations above, what is one possible value of a ?
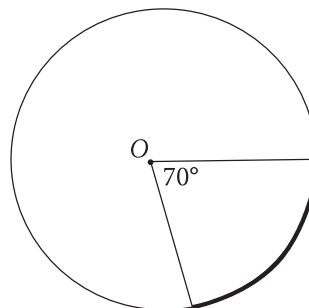
CONTINUE

35

In the figure above, $\sin T = \dfrac{5}{13}$. If $TV = 24$, $XZ = 13$,

and $\angle W \cong \angle Z$, what is $VW - YZ$?

36

Point O is the center of the circle above. What fraction of the circumference of the circle is the length of the bolded arc?

What is the mean number of bullseyes each participant threw on Day 2 ?

▲

Questions 37 and 38 refer to the following information.

Number of Participants by Number of Bullseyes Thrown and Day

	Day 1	Day 2	Day 3	Total
0 Bullseyes	2	3	4	9
1 Bullseyes	1	3	1	5
2 Bullseyes	2	3	7	12
3 Bullseyes	5	2	1	8
4 Bullseyes	3	2	0	5
5 Bullseyes	2	2	2	6
Total	15	15	15	45

The same 15 participants, on each of 3 days, threw 5 darts in order to win a bullseye contest. The number of players throwing a given number of bullseyes on each day is shown in the table above.

No participant threw the same number of bullseyes on two different days. If a participant is selected at random, what is the probability that the selected participant threw 3 bullseyes on Day 1 or Day 2, given that the contestant threw 3 bullseyes on one of the three days?

STOP

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

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