

MATHS

BOOKS - PRINCETON MATHS (ENGLISH)

PRACTICE TEST 1

Math Test No Calculator

1. Which of the following is equivalent to

$$10 + 2(x - 7)$$
?

A.
$$-14x + 10$$

B.
$$2x + 24$$

C.
$$2x + 3$$

$$\mathsf{D.}\,2x-4$$

Answer: D



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2.
$$3x - \frac{y}{3} = 21$$

$$x = y + 7$$

Which ordered pair (x,y) satisfies the system of equations shown above?

A. (0,-7)

B. (4,27)

C. (7,0)

D. (9,-16)

Answer: C



3.a + b = 15

The equations above relates the number of hours, a, Kevin spends doing homework each week and the number of hours he spends watching television each week. If kevin spends a total of 15 hours doing homework and watching television each week, what does the variable b represent?

A. The number of hours spent watching television for each hour spent doing homework

- B. The number of hours spent watching television each week
- C. The number of hour spent doing homwork each week
- D. The total number of hours spent doing homework and watching television each week

Answer: B



4. Josephine purchase a computer for \$4,590. the computer decrease in value at a constant rate for 9 years, after which it is considered not to have any monetary value. How much is the computer worth 6 years after it is purchased?

- A. 1530
- B. 2295
- C. 3060
- D. 4080

Answer: A



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5. For $i=\sqrt{-1}$, which of the following complex number is equivalent to $\left(10i+4i^2\right)-(7-3i)$?

A.
$$-11 + 7i$$

$$B. -11 + 13i$$

$$C. 3 - 13i$$

D.
$$11 - 7i$$

Answer: B



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6. What is the value of f(-2) if f(x) =

$$\frac{x^2+4x-8}{x-2}$$
?

A. -3

B. -1

C. 1

D. 3

Answer: D



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7. Heinrich must buy at least 100 shares of stock for his portfolio. The shares he buys will be from stock X. Which costs \$22 per share and Stock Y. Which costs \$35 per share. His budget for buying stock is no more than \$4,500. He must buy at least 20 shares of Stock X and 15 shares of Y. WHich of the following represents the situation described if a is the number of shares of Stock X purchased and b is the number of shares of stock Y purchased?

A.
$$22a + 35b \leq 4,500$$

$$a+b \ge 100$$

$$a \leq 20$$

$$b \leq 15$$

B.
$$22a + 35b \le 4,500$$

$$a+b \leq 100$$

$$a \leq 20$$

 $b \leq 15$

C. $22a + 35b \le 4,500$

 $a+b \leq 100$

 $a \geq 20$

 $b \ge 15$

D. $22a + 35b \le 4,500$

 $a+b \ge 100$

 $a \ge 20$

 $b \geq 15$

Answer: D



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8. $x^2 - 8x + 5$

Which of the following is equivalent to the expression above?

A.
$$(x-4)^2-11$$

B.
$$(x-4)^2+11$$

C.
$$(x+4)^2-11$$

D.
$$(x+4)^2+11$$

Answer: A



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9. Juliet a selling photographs as part of a project for her entrepreneurship class. She sells the first 20 photographs for \$10 each. Because the first 20 photographs sold so quickly, she raised the price of the photographs to \$15 each for the rest of the project. After her expenses, Juliet earns a profit of 80% of the revenues from her sales. What is

the least number of photographs she must sell for the rest of the project of earn a profit of at least \$400?

- A. 18
- B. 20
- C. 24
- D. 32

Answer: B



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10.
$$\frac{p^{\frac{1}{4}}q^{-3}}{p^{-2}q^{\frac{1}{2}}}$$

Which of the following is equivalent to the expression above, where p>1 and q>1?

A.
$$rac{p^2\sqrt[4]{p}}{q^3\sqrt{q}}$$

B.
$$\frac{p^2\sqrt{p}}{q^3\sqrt{q}}$$

C.
$$\frac{\sqrt[4]{p}}{q^3\sqrt{q}}$$

D.
$$\frac{\sqrt[4]{p}}{\sqrt[3]{q^2}}$$

Answer: A



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11. The graph of function g in the xy-plane is a

parabola defined by g(x) = (x-2)(x-4).

Which of the following intervals contains the x-coordinate of the vertex of the graph?

$$\mathrm{A.}\,6 < x < 8$$

B.
$$4 < x < 6$$

$$\mathsf{C}.-2 < x < 4$$

D.
$$-4 < x < -2$$

Answer: C



12.
$$xa^3 + ya^2 + za = 0$$

In the equation above,x,y and z are constants.

IF the equations has roots -6,0 and 4, which of the following is a factor of xa^3+ya^2+za ?

A. a-2

B. a+4

C. a-6

D. a+6

Answer: D



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13. If the expression $\frac{1}{2}(x+c)(x-c)$, where c is a positive constant, can be rewritten as $\frac{1}{2}x^2-5$, what is the value of c?

A.
$$\sqrt{5}$$

B.
$$\sqrt{10}$$

Answer: B



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14. Which of the following is equivalent to

$$\frac{z^2 + 7z - 3}{z + 2}$$
?

A.
$$z + 5 - \frac{13}{z+2}$$

$$\mathtt{B.}\,z+5-\frac{7}{z+2}$$

C.
$$z+9-rac{21}{z-2}$$

D.
$$z+9-rac{15}{z-2}$$

Answer: A



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15. A homeowners' association limits the dimensions of the pools that it will allow in a particular subdivision. The bylaws state that permits will only be granted for pools shaped like rectangular prisms, for which the sum of the length of the pool and the perimeter of the vertical side containing the ladder cannot exceed 200 meters. the perimeters of the

ladder side is determined using the width and the depth of the pool . IF a pool has a length of 75 meters and its width is 1.5 times its depth, which of the following shows the allowable depth a, in meters, of the pool?

A.
$$0 < a < 62\frac{1}{2}$$

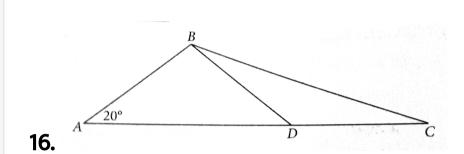
B. $0 < a \le 50$

$$\mathsf{C.}\,0 < a \leq 31\frac{1}{4}$$

D. $0 < a \leq 25$

Answer: D

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In the figure above, point D is on line AC, AB=BD=CD, and AD=15. What is the measure, in degrees, of $\angle BCD$? (Disregard the degree symbol when gridding your answer).



17. IF 15-3b=21, what is the value of 5-b?

A. 3

B. 9

C. 14

D. 7

Answer: 7



18. The graph of line in the xy-plane passes through the point (-2,k) and crosses the x-axis at the point (-4,0) The line crosses the y-axis at the point (0,12). What is the value of k?



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19.
$$5(10x^2 - 300) + (9844 + 50x^2)$$

The expression above can be rewritten in the from cx^2+d , where c and d are constants, What is the value of d-c?

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20. IF n is a constant equal to the number of degrees in an angle measuring 3π radians, what is the value of n?

A. 240

B. 320

C. 270

D. 540

Answer: 540

Math Test Calculator

1. A certain homeowner uses a gas edger to clean up his lawn every time he mows. If the edger uses 160 milliliters of fuel each time, what is the maximum number of times the homeowner can edge his lawn with 8 litres of fuel?(1 liter = 1,000 milliliters)

A. 5

- B. 50
- C. 100
- D. 1000

Answer: B



Assignment Choice for Two Physics Classes

	Dr. Soper	Mr. Coelho	Total
Lab Report Only	17	21	38
Lab Report and Final Exam	3	2	5
Total	20	23	43

2.

The table above shows the number of students who chose to be grated on lab reports and finals exams in Dr. Soper's and Mr. Coelho's physics classes. What fraction of the students in Dr. Soper's class chose to be graded on the lab report and final exam?

A.
$$\frac{3}{43}$$

B.
$$\frac{5}{43}$$

c.
$$\frac{3}{20}$$

D.
$$\frac{3}{5}$$

Answer: C



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3.
$$(4-a^2)-(2a^2-6)$$

Which of the following expressions is equivalent to the one above?

A.
$$a^2-2$$

B. $a^2 + 10$

 $C. -3a^2 - 2$

D. $-3a^2 + 10$

Answer: D



I. x + 3y > 0

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4. The ordered pairs (3,-1) satisfies which of the following inequalities?

II. 2x + 3y > 2

III. x + y < 0

A. I only

B. II only

C. I and III only

D. II and III only

Answer: B

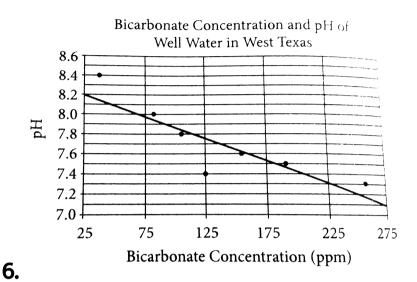


5. A psychology student randomly selected 300 people from a group of people who indicated that they preferred to work alone. Those 300 people were given a task to work on individually and then asked whether they were happy or unhappy while doing the task. OF those surveyed ,5% stated they are unhappy while doing the task. Which of the following inferences can appropriately be drawn from this survey result?

- A. Few people who prefer working alone will be unhappy doing this task
- B. Few people who do not prefer working alone will be happy doing this task
- C. Less than 5% of people will be happy doing this task if they do not work alone
- D. Less than 5% of people will be unhappy doing this task if they work alone.

Answer: A





The scatterplot above shows the pH of seven well water samples in West Texas with respect to the bicarbonate concentration in ppm(parts per million). The line of best fit is also shown.

According to the scatterplot, which of the

following statements about the relationship between a well's pH and its bicarbonate concentration is true?

another well will have a pH twice that of the other well

A. A well with half as much bicarbonate as

B. Wells that have more bicarbonate tend to have higher pH

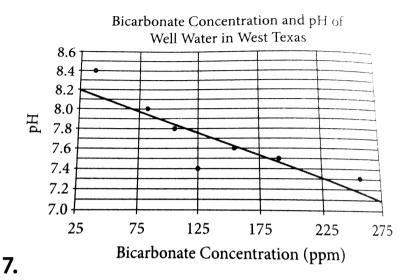
C. Wells that have more bicarbonate tend to have lower pH

D. The bicarbonate concentration of the

well water is unrelated to its pH.

Answer: C





The scatterplot above shows the pH of seven well water samples in West Texas with respect to the bicarbonate concentration in ppm(parts per million). The line of best fit is also shown.

A new well is discovered in West Texas with a bicarbonate concentration of 225 ppm.

According to the line of best fit, which of the following best approximates the pH of the well water?

- A. 7.1
- B. 7.3
- C. 7.4
- D. 8.4

Answer: B



8.
$$25 = (ky - 1)^2$$

In the equation above y=-2 is one solution. If K is a constant, what is a possible value of k?

- A. -13
- B. -3
- C. 0
- D. 5

Answer: B



9. Andrew works out for 30 minutes every other days. If he spends 35% of his workout time one day waiting for the weight rack, how many seconds of that day's workout did he spend waiting for the weight rack?

A. 630

B. 35

C. 21

D. 10.5

Answer: A



10. If
$$8x-8yz+2=74$$
. What is the value of

x-yz?

A. 2

B. 6

C. 9

D. 16

Answer: C

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11. A chef trimmed fat off a steak and was left with a steak weighing 8.80 ounces. If the weight of the fat was equal to 12 percent of the original weight, what was the original weight, in ounces, of the steak?

A. 8.92

B. 9.20

 $\mathsf{C.}\ 10.00$

D. 11.20

Answer: C



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12. A backpacker is packing survival rations that consists of granola bars and packets of peanuts butter. A granola bar has 470 food calories and a packet of peanut butter has 90 food calories.The backpacker is packing survival rations using a total of 10 granola bars and packets of peanut butter combined, and the granola bars and packets of peanut

Which of the following systems of equations can be used to determine the number of granola bars g, and packets of peanut butter p, that are in the survival rations?

butter have a total of 1,660 food calories.

$$g - p = 10$$

B. 90q + 470p = 1,660

C. 90q + 470p = 1,660

A. 280(g+p) = 1,660

$$g - p = 10$$

$$q=10-p$$

$$\mathsf{D.}\,470g + 90p = 1,660$$

$$g = 10 - p$$

Answer: D



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13. Ten floorboards with equals widths laid down side to side cover a width of approximately $7\frac{3}{4}$ feet. At this rate, which of the following is the closest to the number of

boards laid side-to-side needed to cover a width of 32 feet?

A. 15

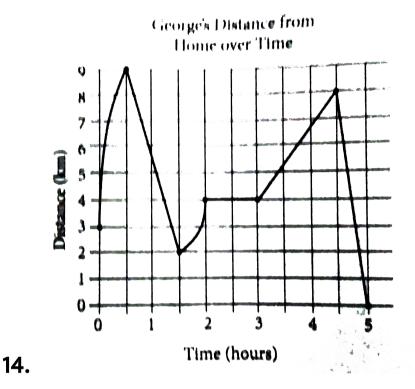
B. 20

C. 30

D. 40

Answer: D





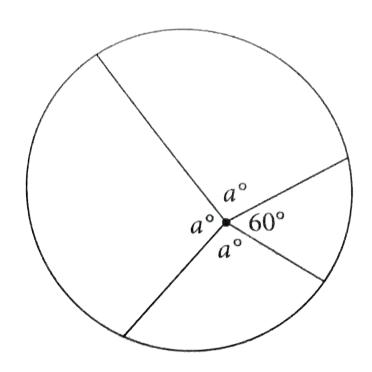
George recorded his distance from home over a five-hour period, his distance and time are shown in the graph above. According to the graph, which of the following is NOT true about the five-hour period?

- A. George's distance from home increased at a constant rate during the first hour of the five-hour period.
- B. George's distance from home reached its maximum during the first hour.
- C. George remained a constant distance from his home for one hour.
- D. George was moving further from his home for a longer period of time than he was moving closer to his home.

Answer: A



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15.

In the figure above, what is the value of a?

A. 40

B. 60

C. 100

D. 130

Answer: C



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16. y = -75x + 5,000

the equation above models the amount of money y, in dollars, remaining in Bo's bank account x days after the start of the fall semester. The amount of money in Bo's bank account is based on the money he earned over the summer and how much he spends per day during the fall semester. When the equation is graphed in the xy-plane, what does the slope of the graph represent in terms of the model?

A. The total amount in Bo's bank account

B. Daily spending of \$5,000

C. Daily spending of \$75

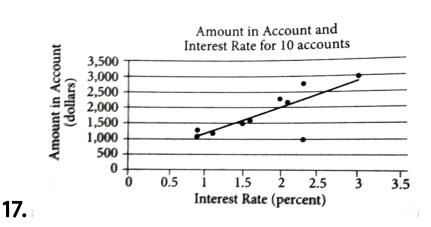
D. The amount of money Bo earned over

the summer

Answer: C



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The scatterplot above shows data for ten

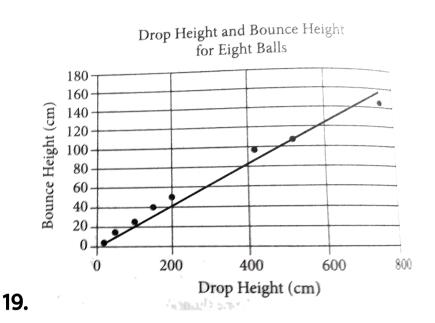
accounts opened by a company, along with the line of best fit. For the account that contains the least amount of money, which of the following is closest to the difference of the actual amount and the amount predicted by the line of best fit? A. 200 B. 500 C. 900 D. 1200 Answer: D

18. If
$$\frac{x}{3}=4$$
 and x+y=32, what is the value of x-y?

D. 32

Answer: B

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The scatterplot above shows the height in centimeters for both the drop and bounce of eight different balls of the same type. The line of best fit for the data is also shown.

According to the lines of best fit, which of the

following is closest to the predicted increase in bounce height, in centimeters, for every increase of 100 centimeters in drop height?

- A. 25
- B. 20
- C. 15
- D. 10

Answer: B



20. Formula A: $BMI = \frac{w}{h^2}$ Formula B: $BMI = \frac{4w-100}{5}$

The formulas above are used in nutrition to estimate the body mass index BMI, in kilograms per square meter, of adults whose weight w ranges between 50 and 100 kilograms and whose height h is measured in meters.

Based on formula B, what is w in terms of BMI?

Based on Formula B, what is w in terms in BMI?

A. w=5BMI+25

B.
$$w=5BMI-25$$

C.
$$w=rac{5BMI+100}{4}$$

D.
$$w=rac{5BMI-100}{4}$$

Answer: C



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21. Formula A: $BMI = rac{w}{h^2}$

Formula B:
$$BMI = rac{4w-100}{5}$$

estimate the body mass index BMI, in

The formulas above are used in nutrition to

kilograms per square meter, of adults whose weight w ranges between 50 and 100 kilograms and whose height h is measured in meters.

Based on formula B, what is w in terms of BMI?

IF both formulas A and B give the same estimate for BMI, which of the following expressions is equivalent to 4w-100?

A.
$$\frac{w}{h^2}$$

B.
$$\frac{5w}{h^2}$$

C.
$$\frac{5w}{4h^2}$$

D.
$$\frac{5w+100}{4h^2}$$

Answer: B



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22. The number of bacteria colonies h hours after the beginning of an experiment is given by the function $C(h)=3^h-2h+20$. What does the number 20 represent in the function?

A. The final rate of growth, in colonies per hour.

B. The initial rate of growth, in colonies per hour

C. One less than the initial number of bacteria colonies

D. One more than the final number of bacteria colonies.

Answer: C



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 of agrilcultural land for all 196 countries in 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. 0.0115

B. 0.0419

C. 0.0965

D. 0.1995

Answer: A



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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 $4.4 \in ^2$, 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 $8.0 \in ^3$, which of the following is closest to the combined volume of the figurines and pellets in the box?

A. $1.9 \in {}^{3}$

B. $20.6 \in ^3$

 $\mathsf{C.}\ 28.6 \in \real^3$

D. $117.84 \in {}^{3}$

Answer: B



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25. The economy of Argentina as measured by its Gross Domestic product (GDP) is shrinking at a rate of 2.6% per year. In 2.15, 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.
$$A(y) = 630 - (1 - 0.26)y$$

$$\mathsf{B.}\,A(y) = 630(1-0.26)^y$$

$$\mathsf{C.}\,A(y) = 630 - (1 - 0.026)y$$

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

Answer: D



Weights of Modern US Coms

Coin	Grams	Drams	
Penny	2.50	1.41	
Nickel	5.00	2,82	
Dime	2.25	1.27	

26.

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

IF y grams is equivalent to d drams, of the following. Which best represent the relationship between y and d?

A. y=1.8d

B. d=1.8y

Answer: A



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Weights of Modern U.S. Coins

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

27.

The table above gives the average weight, expressed in both grams and drams, of three

types of modern U.S. coins.

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.
$$100 - \frac{10}{9}(p+2n)$$

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

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

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

Answer: A



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)

Answer: A

Month Number of Peppers

29. 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 the percent increase from June and July would be half the the percent increase

From July to August. How many peppers does

the farmer expect the field to produce in August?

A. 2860

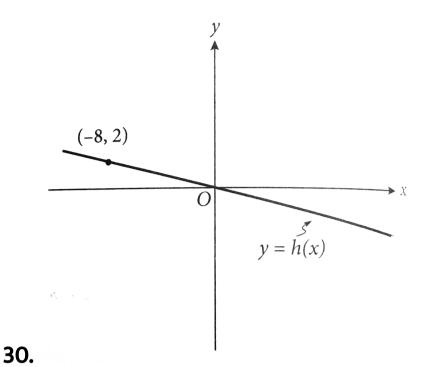
B. 2904

C. 3520

D. 3696

Answer: D





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 non zero integers, what is the ratio of b to a?

A.
$$-4
ightarrow 1$$

$$\mathsf{B.}-2 o 1$$

$$\mathsf{C.}-1 o 2$$

$$D.-1 \rightarrow 4$$

Answer: D



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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

question and received a raw score of 20, how many question did the student answer incorrectly?

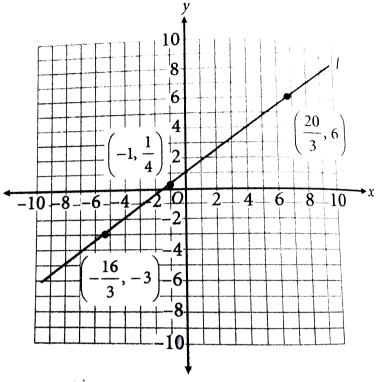


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32. One of the first diets to limit the intake of carbohydrates was prescribed by Dr. William Harvey in 1862. The diet consisted of three meals a day containing equal amounts of protein per meal. IF protein contains 4 dietary calories per gram, and 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. (4) (4)

What is the slope of line I shown in the xyplane above?

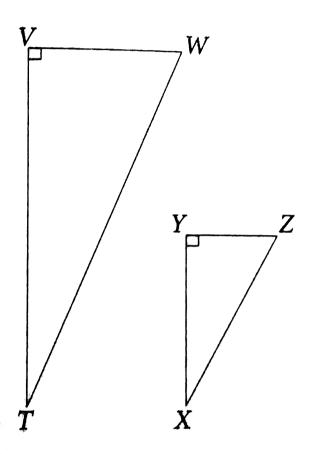


34. -9 - a = b

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

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

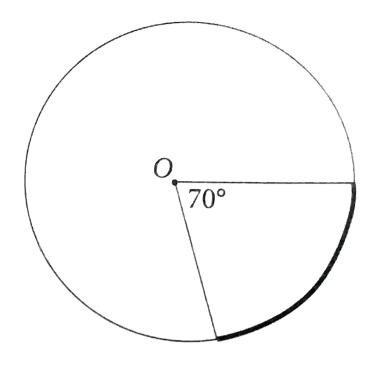




In the figure above, $\sin T = \frac{5}{13}.$ IF TV=24,

XZ=13, and $\angle W\cong \angle Z$, what is VW-YZ?





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



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 DAY2, given that the
contestant threw 3 bullseyes on one of the
three days?



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Number of Participants by Number of Bullseves 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

38.

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.

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

