MATHS

BOOKS - PRINCETON MATHS (ENGLISH)

PRACTICE TEST 2

Math Test No Calculator

1. $\left(3x^4 + 2x^3 - 7\right) + \left(4x^6 - 5x^3 + 9\right)$

Which of the following expressions is

equivalent to the expressions above?

A. $4x^6 + 3x^4 - 3x^3 + 2$

B. $4x^6 + 3x^4 + 7x^3 + 2$

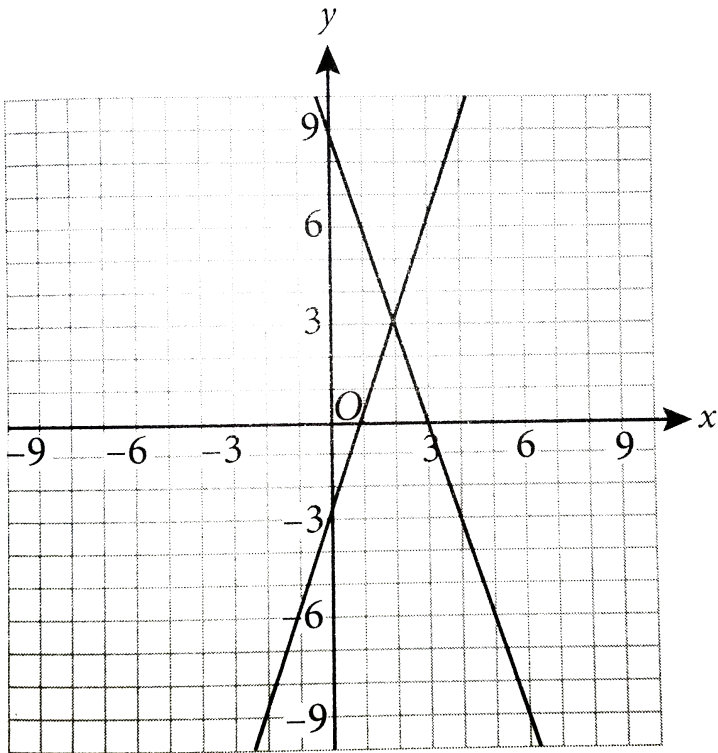C. $4x^6 + 3x^4 - 5x^3 + 2$

D. $7x^{10} - 3x^3 + 2$

Answer: A

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2.

The lines graphed in the xy-plane above represent a system of two linear equations. What is the solution (x,y) to the system?

A. (-1,-6)

B. (0,-3)

C. (2,3)

D. (3,0)

Answer: C

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3. Rosa has already eaten 10 pretzels from a bag that originally contained p pretzels. IF Rosa is able to eat each remaining pretzel in 18 seconds, which of the following represents

the amount of additional time, in seconds, needed for Rosa to eat all the pretzels in the bag?

A. 10(18-p)

B. 10(p-18)

C. 18(10-p)

D. 18(p-10)

Answer: D

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4. $0 = 7y - 5x + 9$

What are the y-intercept and the slope of the line defined by the equation above?

A. The slope is $-\dfrac{5}{7}$ and the y-intercepts is $-\dfrac{9}{7}$

B. The slope is $-\dfrac{5}{7}$, and the y-intercept is $\dfrac{9}{7}$

C. The slope is $\dfrac{5}{7}$, and the y-intercept is $-\dfrac{9}{7}$.

D. The slope is $\dfrac{5}{7}$, and the y-intercept is $\dfrac{9}{7}$.

Answer: C

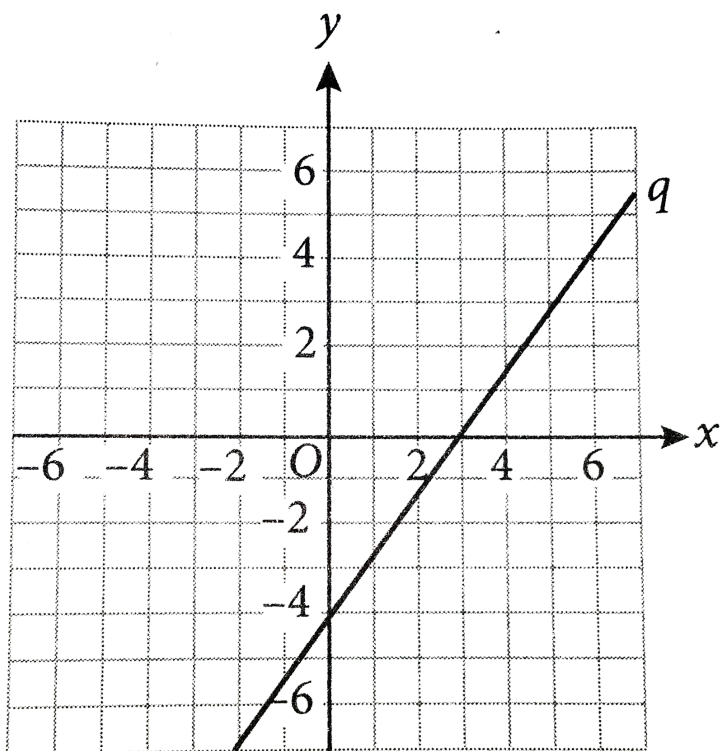**5.** IF $5 + n = 9 - \dfrac{1}{3}n$, what is the value of n?

A. 3

B. 4

C. 6

D. $\dfrac{21}{2}$

Answer: A

6.

Line p (not shown) is perpendicular to line q shown above and passes through the point

(0,4). Which of the following equations could represent line p?

A. $y = -\dfrac{4}{3}x + 4$

B. $y = -\dfrac{3}{4}x + 4$

C. $y = \dfrac{3}{4}x + 4$

D. $y = \dfrac{4}{3}x + 4$

Answer: B

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7. $(4 + 7i) - (6 + 2i)$

What complex number is equivalent to the expression above if i=$\sqrt{-1}$?

A. 2

B. 2-5i

C. $-2 + 5i$

D. $-10 - 9i$

Answer: C

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8. $\dfrac{4}{n-3} = \dfrac{5}{n+2}$

Given the equation above, what is the value of

n?

A. -7

B. -2

C. 8

D. 23

Answer: D

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9. What is the solution set to the equation $0 = (3a + 1)^2(a - 4)$?

A. $\left\{ \dfrac{1}{3}, \ -4 \right\}$

B. $\left\{ -\dfrac{1}{3}, 4 \right\}$

C. $\left\{ -\dfrac{1}{3}, \dfrac{1}{3}, \ -4 \right\}$

D. $\left\{ -\dfrac{1}{3}, \dfrac{1}{3}, 4 \right\}$

Answer: B

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10. What is the solution set to the equation

$$\frac{2}{7-m} = \frac{4}{m} - \frac{5-m}{7-m}?$$

A. {4,7}

B. {4,5}

C. {1,7}

D. {4}

Answer: D

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11. IF 3 is a root of the function $f(x) = x^2 + 13x + x$ and c is a constant, what is the value of c?

A. -48

B. -3

C. 5

D. 48

Answer: A

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12. $\dfrac{7}{12b^3} - \dfrac{3}{4b^3}$

The above expression is equivalent to which of the following expressions for all $b > 0$?

A. $-\dfrac{1}{6b^3}$

B. $-\dfrac{1}{4b^3}$

C. $\dfrac{1}{4b^3}$

D. $\dfrac{1}{6b^3}$

Answer: A

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13. $y = x^2 + 3$

$y = 15x - 33$

The system of equations shown above is graphed in the xy-plane. IF system has two solutions, what is the product of the x-coordinates of the two solutions?

A. 36

B. 4

C. -4

D. -36

Answer: A

14. $\left(-27a^{10} \right)^{\frac{3}{5}}$

For all values of a, which of the following is equivalent to the expression above?

A. $3a^6 \sqrt[5]{3}$

B. $-3a^6 \sqrt[5]{81}$

C. $3a^5 \sqrt[5]{81}$

D. $-3a^5 \sqrt[5]{3}$

Answer: B

15. The amount of carbon -15 in a given sample decays exponentially with time. IF the function $C(m) = 100\left(\dfrac{1}{2}\right)^{24m}$ models the amount of carbon -15 remaining in the sample after m minutes, which of the following must be true?

 A. The amount of carbon in the sample halves every minute

B. The amount of carbon in the sample halves every 24 minutes.

C. The amount of carbon in the sample halves 24 times every minute.

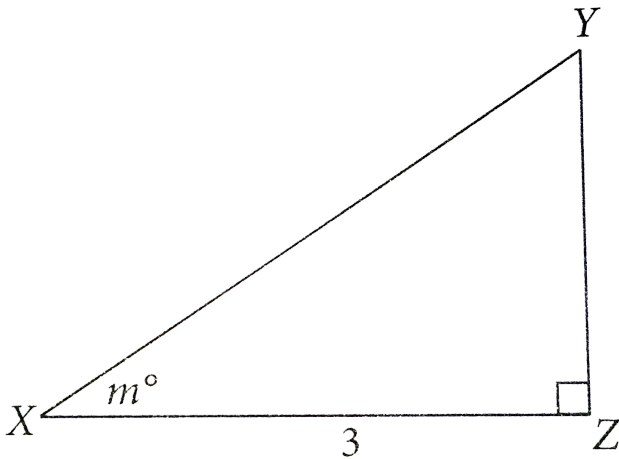D. The amount of carbon in the sample reduces by a factor of 24 every 2 minutes.

Answer: C

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16. IF $0 = \dfrac{2}{n-2} - \dfrac{6}{n+1}$, what is the value of n?

17.

In the figure above, triangle XYZ is a right triangle with XZ=3. If $\tan m = \sqrt{3}$, what is YZ?

18. An angle in the xy-plane has measure 5π radians What is the measure of the angle in degrees?

19. Robert is selling televisions at an electronics store. The televisions normally cost $545 each but are being sold at an 8%

discount. What is the minimum number of televisions Robert must sell if he wants to meet his quota of $1,00,000 in total sales?

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20. The linear function $y=g(x)$ is graphed in the xy-plane. IF $g(-3)=4$ and $g(2)=19$, what is the slope of line g?

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1. IF the function g is defined by g(x)=3x+5, what is the value of g(-5)?

    A. -20

    B. -10

    C. 20

    D. 60

Answer: B

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Number of Lightbulbs Produced at Levington Lights in a Day

	Working	Defective	Total
60-Watt	1,230	127	1,357
100-Watt	2,384	271	2,655
Total	3,614	398	4,012

2.

According to the table above, 100-Watt bulbs made up what fraction of the working lightbulbs?

A. $\dfrac{1,230}{3,614}$

B. $\dfrac{2,384}{3,614}$

C. $\dfrac{271}{398}$

D. $\dfrac{2,384}{2,655}$

Answer: B

3. The expression (4n-5)(5n-4) is equivalent to which of the following?

A. $20n^2 - 41n + 20$

B. $20n^2 - 39n + 9$

C. $9n^2 + 41n + 20$

D. $4n^2 - 18n + 9$

Answer: A

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4. The ratio of $\dfrac{2.7}{1.2}$ is equivalent to the ratio of $\dfrac{b}{4.8}$. What is the value of b?

    A. 2.13

    B. 4

    C. 6.3

D. 10.8

Answer: D

5. $60 = 15mn + 20$

What is the value of 3mn+4, according to the equation above?

A. 20

B. 15

C. 12

D. 4

Answer: C

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6. A high school principal is seeking to determine the likelihood that students is Santana High school will attend the upcoming dance. Which of the following data collection

methods is most likely to yield an accurate prediction by the principal?

A. Polling a randomly selected group of 1,500 teenagers in the town

B. Conducting a survey of 180 randomly selected students in the senior class at Santana High school

C. Polling a group of 250 randomly selected Santana High school students

D. Posting an internet poll on the school's website open only to Santana High school students.
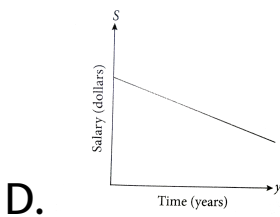
Answer: C

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7. Thomas was hired for a new job in 1977, with a starting salary of $40,000 . Beginning in 1978, Thomas received an annual rise, increasing his salary by $2,300 each year.

IF thomas retired at the end of 1999, what was his salary in his final year?

A. 90600

B. 76000

C. 54600

D. 40000

Answer: A

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8. Thomas was hired for a new job in 1977, with a starting salary of $40,000 . Beginning in 1978, Thomas received an annual rise, increasing his salary by $2,300 each year.

Which of the following must be true, given that Thomas's salary after y years was between $54,000 and $60,000?

    A. $3 < y < 6$

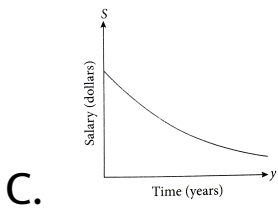   B. $6 < y < 9$

    C. $9 < y < 12$

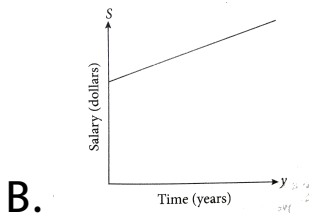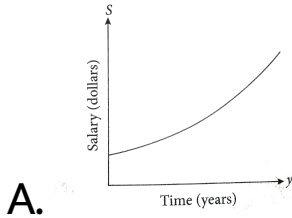D. $y > 12$

Answer: B

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9. Thomas was hired for a new job in 1977, with a starting salary of $40,000 . Beginning in 1978, Thomas received an annual rise, increasing his salary by $2,300 each year.

Which of the following graphs could represent

Thomas' s salary, S, in dollars, as a function of the number of years,y, after 1977?

A.
Salary (dollars)
Time (years)

B.
Salary (dollars)
Time (years)

C.
Salary (dollars)
Time (years)

D.
Salary (dollars)
Time (years)

Answer: B

10. An investor is deciding between two options for a short-term investment. One option has a return R, in dollars, t months after investment, and is modelled by the equation $R = 100(3^t)$. The other option has a return R, in dollars, t months after investment, and is modeled by the equation R=350 t. After 4 months, how much less in the return given

by the linear model than the return given by

the exponential model?

A. 1400

B. 4050

C. 6700

D. 8100

Answer: C

11. $n - \sqrt{2n - 22} = 1$

Given the equation above, which of the following is a possible value of n?

I. 7

II. -3

III. -5

   A. I only

   B. III only

   C. I and III only

   D. II and III only

Answer: A

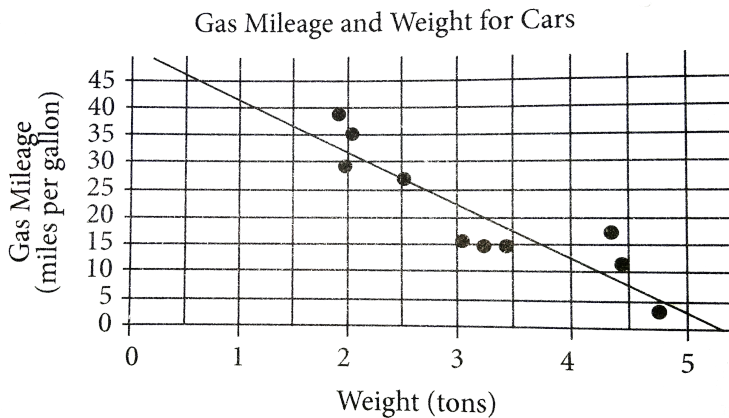**12.** $3x - 6 = 5x - 2$ Based on the equation above, what is the value of 2x-4?

A. -8

B. -2

C. 2

D. 6

Answer: A

Gas Mileage and Weight for Cars

13.

The scatterplot above shows the relationship between gas mileage, in miles per gallon, and weight , in tons, for 10 cars selected at random. The line of best fit models the gas

mileage based on the weight of the car. What is the weight, in tons, of the car for which the actual gas mileage was closest to the predicted value?
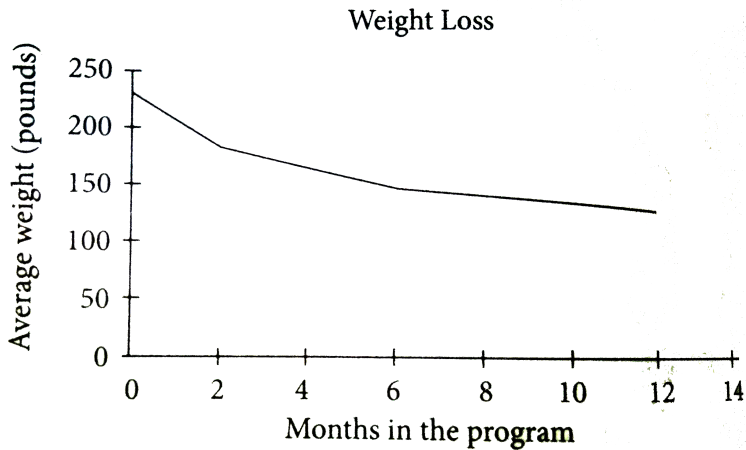
A. 2.5

B. 4.5

C. 15

D. 27

Answer: A

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Weight Loss

14.

The graph above shows the average weight for the members of a weight loss program,for each month a member is in the program. According to the information in the graph, which of the following must be true?

A. The average weight loss per month is the same regardless of the number of months a member is in the program.

B. The average weight loss per month for members who are in the program more than 150 months is less than that for members who are in the program less than 150 months.

C. The average weight loss per month for members who are in the program more
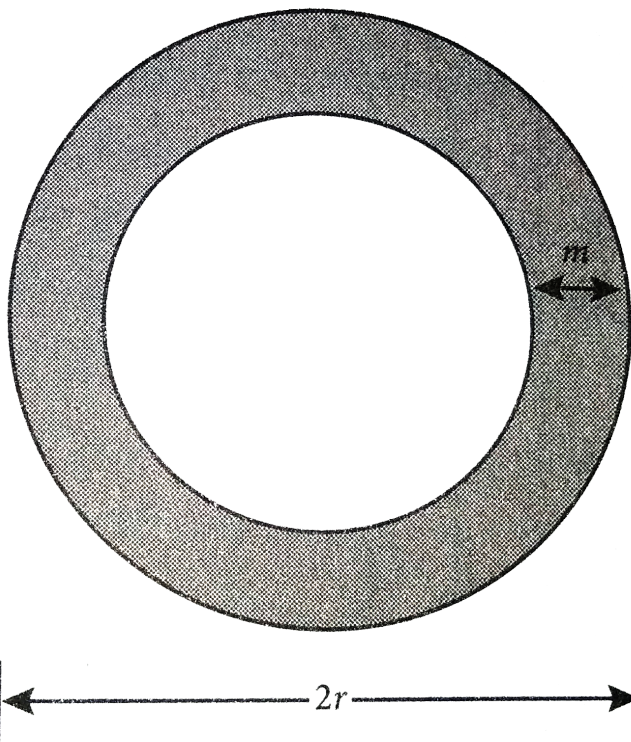
than 6 months is less than that for

members who are In the program less

than 6 months.

D. The average weight loss per month for

members who are in the program more

than 6 months is greater than that for

members who are in the program less

than 6 months.

Answer: C

15.

the figure above represents a circular lake with

the walking path that is m meters wide. If the

expression $\pi r^2 - \pi(r - m)^2$ represents the

area of the walking path, in square meters, what does the quantity (r-m) represent?

A. The radius of the lake

B. The combined radius of the lake and walking path

C. The combined area of the surface of the lake and walking path

D. The area of the surface of the lake

Answer: A

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16. Kanaka took 8 tests for her social studies class. Each test has a maximum score of 100 and a minimum score of 0. On the 8 tests, Kanaka's mean score was 90. More than a quarter of her tests have scores less than 85. IF the average of the remaining tests is x, which of the following must be true?

A. $x \leq 85$

B. $85 < x < 90$

C. $x = 90$

D. $x > 90$

Answer: D

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17. A poll of 400 randomly selected likely voters in Seanoa city was taken to determine the support for the mayoral candidates in the upcoming election. Of the likely voters selected,190 stated that they are likely to vote for Candidate A. If the conclusion is drawn

that "approximately 3,120 voters are likely to vote for Candidate A", which of the following is closest to the number of likely voters is Seanoa city?

A. 1482

B. 3120

C. 4741

D. 6568

Answer: D

18. $y^2 = 21 - x$

$x = 5$

The solutions to the system of equation above are (a_1, b_1) and (a_2, b_2). What are the values of b_1 and b_2?

    A. -4 and 4

    B. $-\sqrt{21}$ and $\sqrt{21}$

    C. -5 and 5

    D. $-\sqrt{26}$ and $\sqrt{26}$

Answer: A

19. The function p is defined as $p(x)=x^2-3x$. If the function q is defined as q(x)=p(x)-4, what is the value of q(10)?

A. -30

B. 6

C. 66

D. 70

Answer: C

20. If $c > 0$ and m and n are postive integers, which of the following is equivalent to $c^{\frac{m}{n}}$?
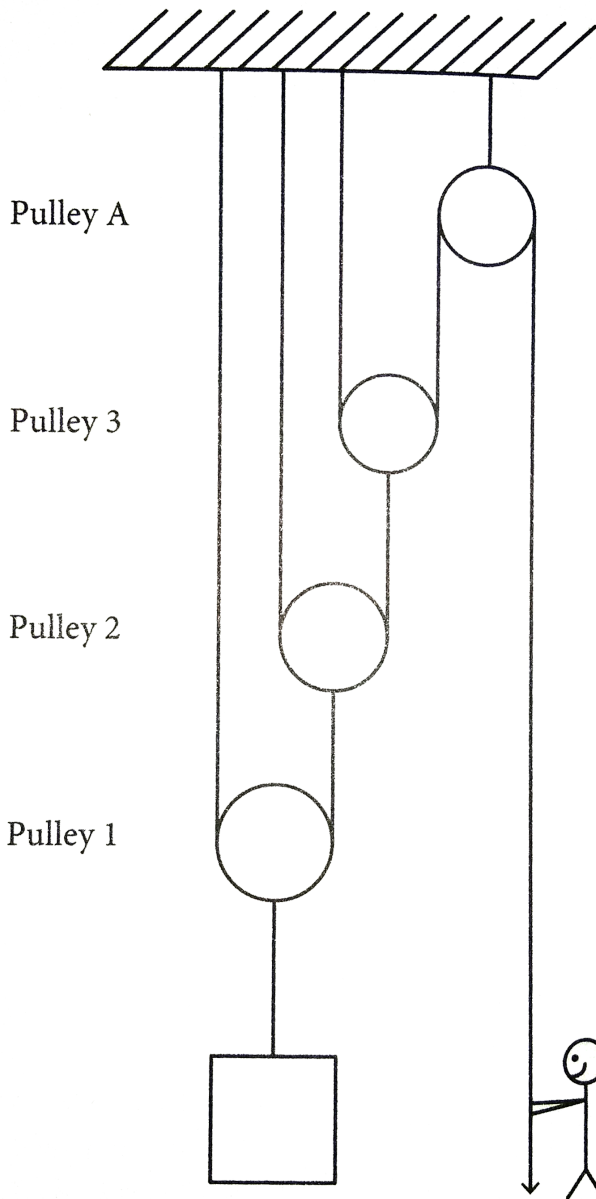
A. $\dfrac{c^m}{c^n}$

B. $cm - n$

C. $\left(\sqrt[m]{c}\right)^n$

D. $\left(\sqrt[m]{c}\right)^m$

Answer: D

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Pulley A

Pulley 3

Pulley 2

Pulley 1

21.

In the figure above, each pulley added to the

pulley system after Pulley A reduces the

amount of force required to lift an object to

50% of the original amount. If the system has

three additional pulleys. What would be the

approximate force,in Newtons. that is exerted

to lift a weight that normally requires 200

pounds of force to lift? (1 Newton =0.224

pounds)

A. 5.6

B. 11.2

C. 111.6

D. 223.2

Answer: C

22. $Q = 17.6T$

The equation above shows the heat energy ,Q, in Joules that is absorbed by a 10g block of wood as temperature T. in degrees Celsius, increases. Which of the following best

describes the meaning of the number 17.6 in this equation?

A. The heat energy absorbed by the block of wood at a constant temperature

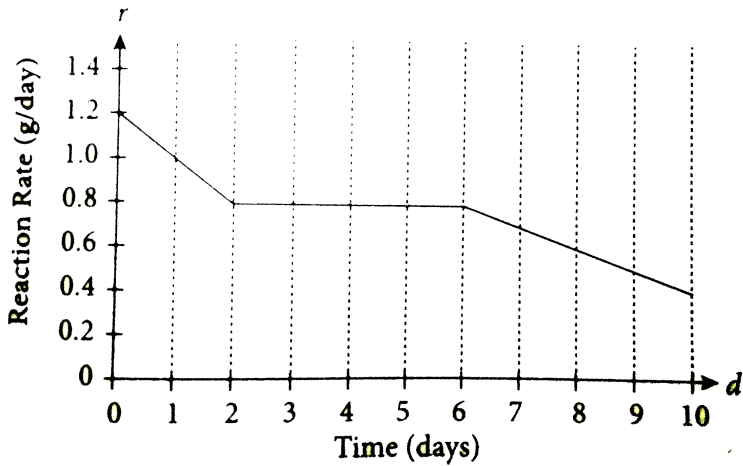B. The heat energy absorbed by the block of wood with a change in temperature of $T°C$

C. The heat energy absorbed by the block of wood with every increase in temperature of $1°C$

D. The heat energy absorbed by the block

of wood when the temperature reaches

$0°$

Answer: C

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23.

the graph above represents the reaction rate,r,

at which an unfinished iron nail rists in water

during the first 10 days of an experiment,

where d gives time measured in days. What

was the total amount of rust produced from
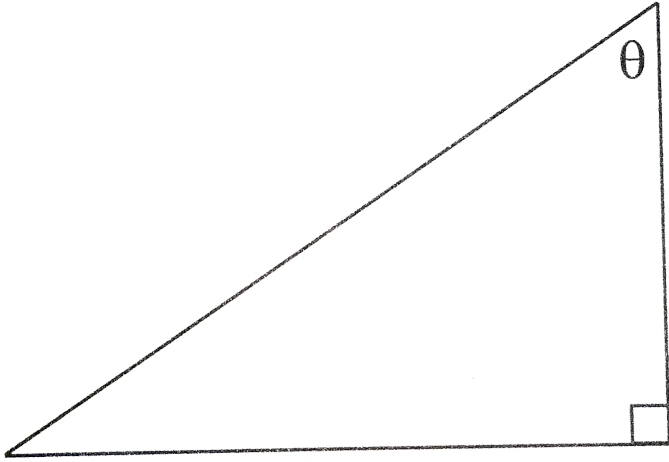
d=2 to d=6?

A. 0.8 grams

B. 1.6 grams

C. 2.4 grams

D. 3.2 grams

Answer: D

24.

In the figure above, IF $\cos \theta = \dfrac{3}{5}$, what is the

value of $\cos(90 - \theta)$?

A. $\dfrac{3}{5}$

B. $\dfrac{3}{4}$

C. $\dfrac{4}{5}$

D. $\dfrac{5}{4}$

Answer: C

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25. $x + 7y = -10$

$3x - 4y = k$

In the system of equation above,k is a constant. IF (a,b) is the solution to the system, what is the value of a, in terms of k?

A. $\dfrac{-k - 30}{25}$

B. $\dfrac{3k + 10}{25}$

C. $\dfrac{6k - 8}{25}$

D. $\dfrac{7k - 40}{25}$

Answer: D

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26. According to the U.S Department of Labor, the unemployment rate in January of 2012 in the United States was 8.3%. According to the same department, the unemployment rate in January of 2016 was 4.9% . According to the U.S

department of Labor, how did the

unemployment rate change from January 2012

to January 2016?

A. It decreased by 79%

B. If decreased by 41%

C. It decreased by 34%

D. It increased by 41%

Answer: B

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27. In a particular college, the test scores of the most recent test given for a particular Physics class and a particular Literature class were studied. Both tests were scored from 0 to 100 and had a total of 20 question, which were equally weighted with no partial credit. The physics class had 128 students and the Literature class had 75 students . The test results are shown in the two graphs below.

Literature Test Results
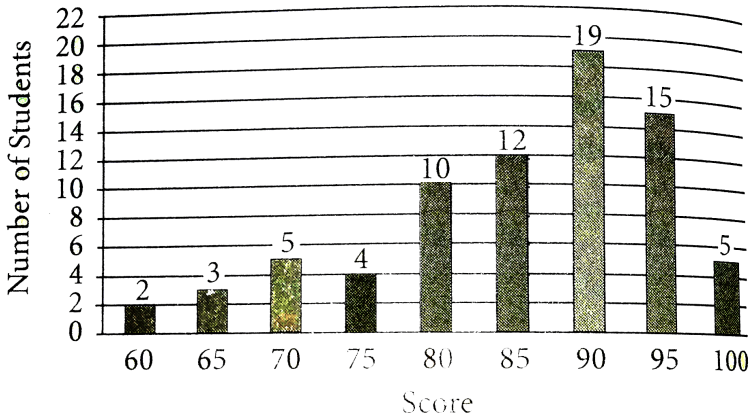
The dean of the college is comparing the scores from the two classes and calculates the median for each class. If the dean labels the median score of the Physics class P and the median score of the Literature class L, what is the sum of P and L?
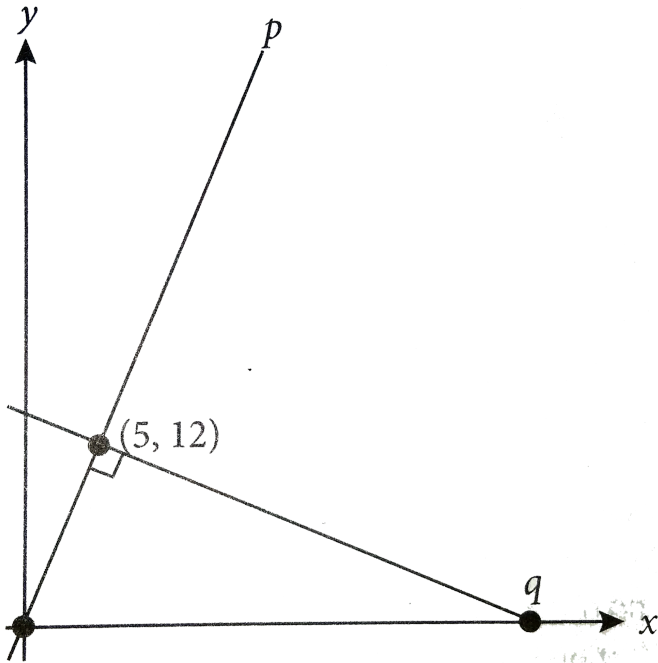
A. 175

B. 170

C. 85

D. 80

Answer: A

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28.

In the figure above, lines p and q are graphed

on the xy-plane. What is the x-intercept of line

q?

A. 24

B. 27.6

C. 33.8

D. 38.4

Answer: C

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29. $y = x^2 + 16x + 28$

The equation above represents the graph of a

parabola in the xy-plane. Which of the

following represents an equivalent form of the

equation that includes the minimum value of y

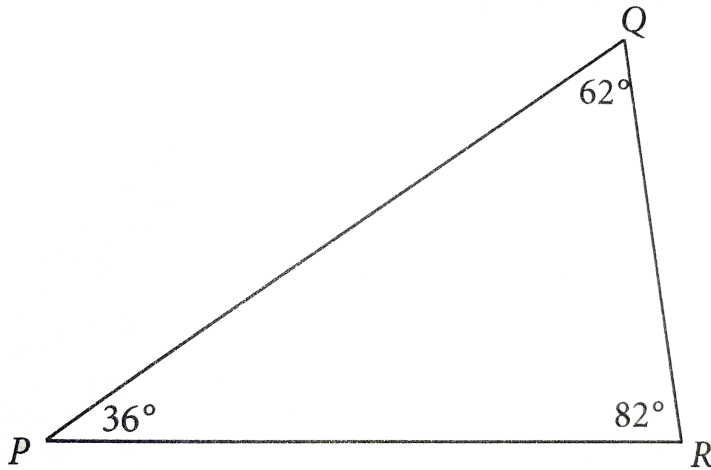as a constant?

A. $y - 28 = x(x + 16)$

B. $y = x^2 + 2(8x + 14)$

C. $y = x(x + 16) + 28$

D. $y = (x + 8)^2 - 36$

Answer: D

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30.

In the figure above, triangle PQR is a similar to triangle XYZ (not shown) . IF

$$PQ:XY = QR:YZ = PR:XZ = 4:5,$$

what is the measure , in degrees, of angle Y?

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31. A new homeowner drew a floor plan of her new house, in which 1 inch on the floor plan in equivalent to 18 inches on the actual floor. If the actual longest side of the floor in one of the bedrooms is 153 inches, what is the length of the longest side of the same bedroom in the floor plan?

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32. What is the number of pallets, each with an area of 60 square yards, that would be needed

to cover a field that in 3 acres in area? (1 acre=4,840 square yards)

33. IF $b + \dfrac{22}{25} = \dfrac{7}{5}b$, what is the value of b?

34. The point (p,0) lies on a circle in the xy-plane. The points (2,3.5) and (-2,0.5) are the

endpoints of a diameter of the circle . If $p > 0$, what is the value of p?

35. $7y = 11x$

$$\frac{1}{5}x - \frac{1}{4}y = -\frac{81}{80}$$

If (x,y) is the solution to the system of equations above, what is the value of $\frac{y}{x}$?

Sales Summary			
Day Number	Day	Daily Sales	Total Weekly Sales at the End of Each Day
1	Monday	$520	$520
2	Tuesday	$290	$810
3	Wednesday	$350	$1,160
4	Thursday	$810	$1,970
5	Friday	$480	$2,450

36.

A salesperson recorded her sales during a particular 5-day work week, shown in the table above, in order to study her daily sales.

The salesperson wants to increase her averages sales per day by 20% in the following week. Given the information in the chart above, what should her daily sales average be for the following week?

Sales Summary			
Day Number	Day	Daily Sales	Total Weekly Sales at the End of Each Day
1	Monday	$520	$520
2	Tuesday	$290	$810
3	Wednesday	$350	$1,160
4	Thursday	$810	$1,970
5	Friday	$480	$2,450

37.

A salesperson recorded her sales during a particular 5-day work week, shown in the table above, in order to study her daily sales.

During her eight-hour shift on Wednesday, the salesperson sold items that had an average price of $8.10. To the nearest tenth of an item,

what is the number of items she sold per hour on Wednesday?

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