



MATHS

BOOKS - PRINCETON MATHS (ENGLISH)

MATH PRACTICE SECTION -1

Mathematics Test

1. A magician performing at children 's birthday parties charges \$ 120.00 total for a

one hour performance with ten goody bags for children at the party . She will provide additional goody bags for \$ 2.50 each . For an additional \$ 25.00 she will also present a 15 - minute laser light show . If the magician performs exactly four shows one weekend , presents the light show at three of those performances , and collects \$635.00 total , how many additional goody bags did she provide ?

A. 26

B. 32

C. 48

D. 86

Answer: B



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2. A 24 - hour day is how many times as long as 60 seconds ?

A. 12

B. 30

C. 365

D. 1, 440

Answer: D



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3. A student reads a pages per day for d days and then reads b pages per day for $2d$ days. In terms of $a, b,$ and d , how many pages did the student read?

A. $ad + 2b$

B. $ad + 2bd$

C. $2ad + 2bd$

D. $2abd$

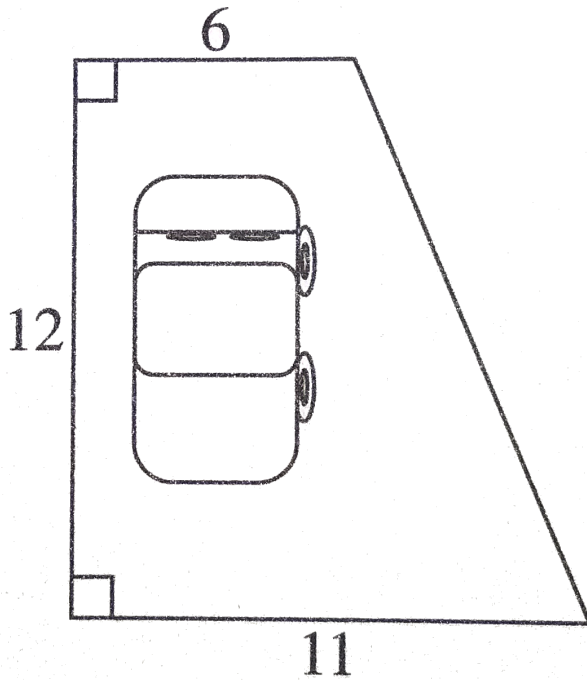
Answer: B



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4. A trapezoidal driveway has the dimensions in yards , given in the figure below . What is

the area ,in square yards , of the driveway?



A. 42

B. 72

C. 102

D. 156

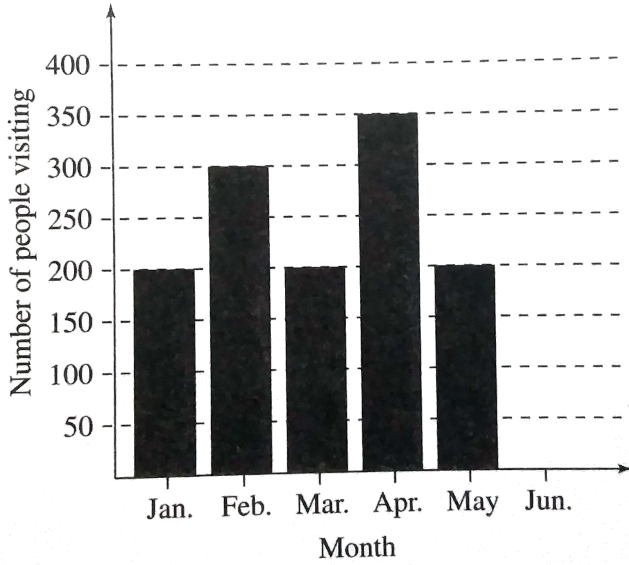
Answer: C



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5. The graph below shows the number of people visiting a museum during the first 5 months of the year . How many people need to visit the museum during june for the mean of the first 6 months to equal to mean of the first

5 months ?



A. 0

B. 200

C. 250

D. 500

Answer: C



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6. A graduation cap is tossed upward . It is f feet above the ground s seconds after it has been thrown . The relation ship between f and s is given by the equation $f = 60s - 17s^2$, where $0 \leq s \leq 3.5$. How many feet above the ground is the cap 3 seconds after it is thrown ?

A. 27

B. 41

C. 60

D. 80

Answer: A



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7. The highest and lowest test scores of five students in Mr . Canyon's science class are listed below . Which students had the greatest

range of scores ?

	High	Low
Alicia	93	76
Brandon	91	79
Cleo	99	81
David	74	56
Emily	89	70

A. Alicia

B. Brandon

C. Cleo

D. Emily

Answer: D



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8. Nita , Craig , and chris catch a total of 300 fish on their trip if Chris catches 45% of the fish and Craig catches 25 fish what fraction of the 300 fish does Nita catch ?

A. $\frac{23}{30}$

B. $\frac{41}{60}$

C. $\frac{1}{2}$

D. $\frac{7}{15}$

Answer: D



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9. Given that $f(x) = 4x^2$ and $g(x) = 3 - \frac{x}{2}$,

what is the value of $f(g(4))$?

A. 1

B. 4

C. 8

D. 16

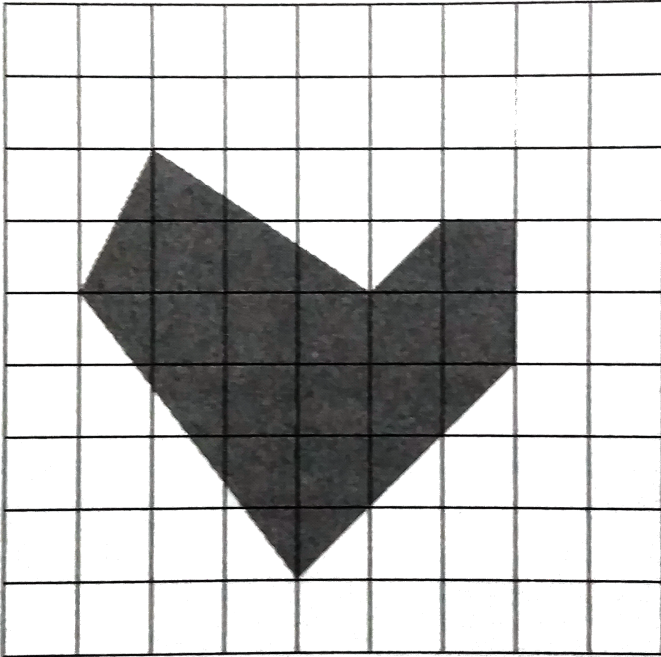
Answer: B



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10. In the grid shown below , each small square has a side length of 1 unit . In the shaded region , each vertex lies on a vertex of a small square . What is the area , in square units , of

the shaded region ?



A. 35

B. 25

C. 24

D. 19

Answer: D



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11. A ramp rises 6 inches for each 24 inches of horizontal run . Thus ramp rises many inches for 62 inches of horizontal run ?

A. $15\frac{1}{2}$

B. $20\frac{2}{3}$

C. 44

D. 80

Answer: A



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12. What is the value of $y^x + (2x - 2y)$ when $x=2$ and $y=-3$?

A. -10

B. 1

C. 7

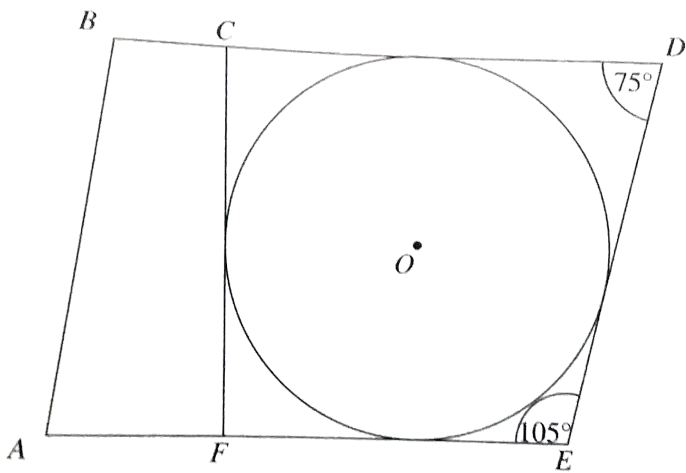
D. 19

Answer: D



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13. In the figure below, the circle with center O is tangent to \overline{AE} , \overline{BD} , and \overline{DE} . The measure of angle $\angle BDE$ is 75° and the measure of $\angle DEA$ is 105° .



The lines in which of the following pairs of lines are necessarily parallel ?

I. \overline{AB} and \overline{DE}

II. \overline{BD} and \overline{AE}

III. \overline{CF} and \overline{DE}

A. I only

B. II only

C. III only

D. I and II only

Answer: B



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14. The day a clothing store puts out a batch of brand - name T- shirts it sells 95 shirts at \$ 4.10 per shirt . However , each day the shirts are on the rack , the store reduces the price of the shirts by \$ 0.02 and consequently sells 1

additional shirt with each price reduction . if x represents the number of \$ 0.2 price reductions , which of the following expressions represents the amount of money , in dollars , that the store will take in daily in sales of these brand name T - shirts ?

A. $(4.10 + 2x)(95 + x)$

B. $(4.10 - 2x)(95 + x)$

C. $(4.10 + 0.02x)(95 + x)$

D. $(4.10 - 0.02x)(95 + x)$

Answer: D



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15. The expression $x^2 - 7x + 12$ is equivalent to :

A. $(x - 12)(x + 1)$

B. $(x - 4)(x - 3)$

C. $(x - 4)(x - 3)$

D. $(x - 6)(x - 2)$

Answer: B



16. When $x=5$ and $y=2$, the expression

$$\frac{xy}{70} + \frac{9}{5(x+y)} + \frac{1}{x+y} = ?$$

A. $\frac{19}{35}$

B. $\frac{58}{105}$

C. $\frac{1}{2}$

D. $\frac{4}{7}$

Answer: A



17. The minutes and seconds on a 60- minute digital timer are represented by 3 or 4 digits .

What is the largest product that can be obtained by multiplying the digits in one of these representations ?

(Note : when the timer displays 16:15 , the product of the digits is $(1)(6)(1)(5)=30$.)

A. 90

B. 2, 025

C. 3, 481

D. 3, 600

Answer: B



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18. The difference of two integers is 6. the sum of the same two integers is 42. what is the lesser of the two integers ?

A. 18

B. 19

C. 21

D. 23

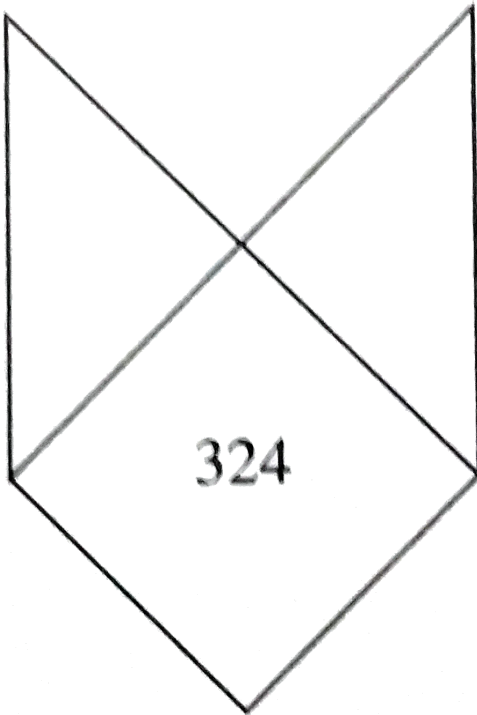
Answer: A



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19. The area of the square in the figure below is 324 square centimeters , and the two small isosceles right triangle are congruent . What is the combined area , in square centimeters , of

the two small triangles ?



A. 108

B. 162

C. 216

D. 324

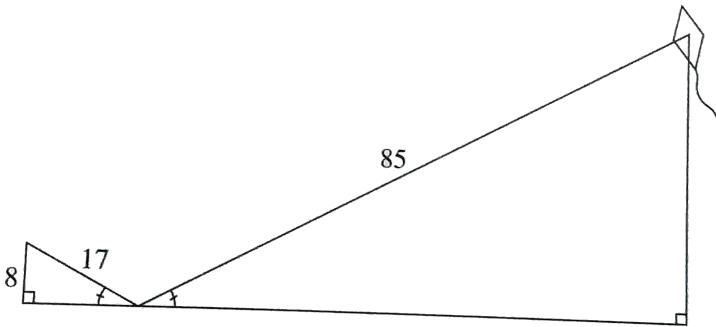
Answer: D



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20. Jasper wants to measure the altitude of his kite . He ties the kite string to a spike driven into the ground and measures the angle between the string and the ground . Then he creates two similar triangles by adjusting the distance between an-8 foot pole and the spike

until the angle created by a piece of string is the same as the angle he measured previously . the length of the string to the kite is 85 feet and the length of the string to the pole is 17 feet . which of the following is closest to the height , in feet , that the kite is above the ground ?



A. 25

B. 40

C. 102

D. 110

Answer: B



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21. For what value of x , if any, is the equation

$$(x - 1)^2 = (x - 7)^2 \text{ true?}$$

A. -4

B. -1

C. 0

D. 4

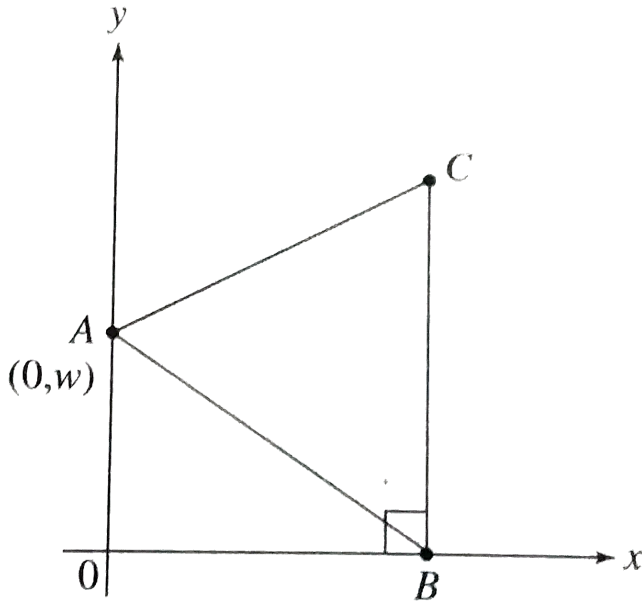
Answer: D



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22. $\triangle ABC$, shown below in the standard (x,y) coordinate plane is equilateral with vertex A at $(0,w)$ and vertex B on the x - axis as shown .

What are the coordinates of vertex C ?



- A. $(w, 0)$
- B. $(w, 2w)$
- C. $(w\sqrt{3}, w)$
- D. $(w\sqrt{3}, 2w)$

Answer: D



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23. The diagonal of a square quilt is $4\sqrt{2}$ feet long . What is the area of the quilt in square feet ?

A. $16\sqrt{2}$

B. 16

C. $4\sqrt{2}$

D. 4

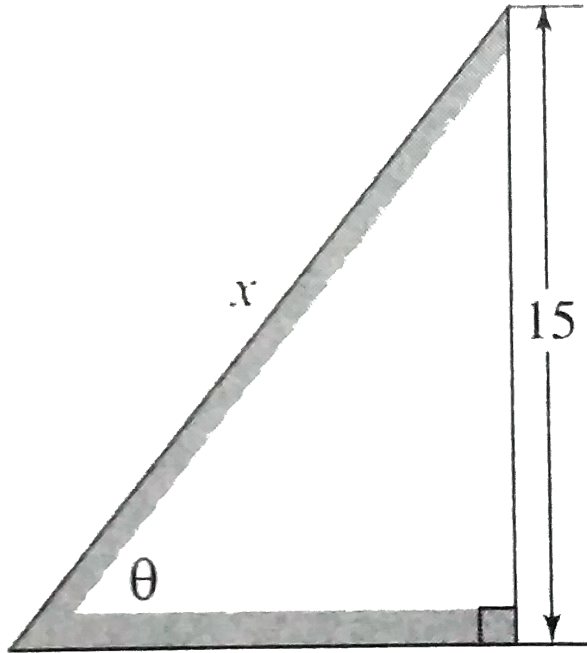
Answer: B



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24. A painter needs to reach the top of a tall sign in the middle of a flat and level field .He uses a ladder of length x to reach a point on the sign 15 feet above the ground . The angle formed where the ladder meets the ground is noted in the figure below as θ , which of the

following relation - ships must be true ?



A. $\sin \theta = \frac{15}{x}$

B. $\cos \theta = \frac{15}{x}$

C. $\tan \theta = \frac{15}{x}$

D. $\theta = \frac{15}{x}$

Answer: A



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25. The equation $\sqrt{45 + a} + \sqrt{a} = 15$ is true for what real value of a ?

A. 9

B. 16

C. 25

D. 36

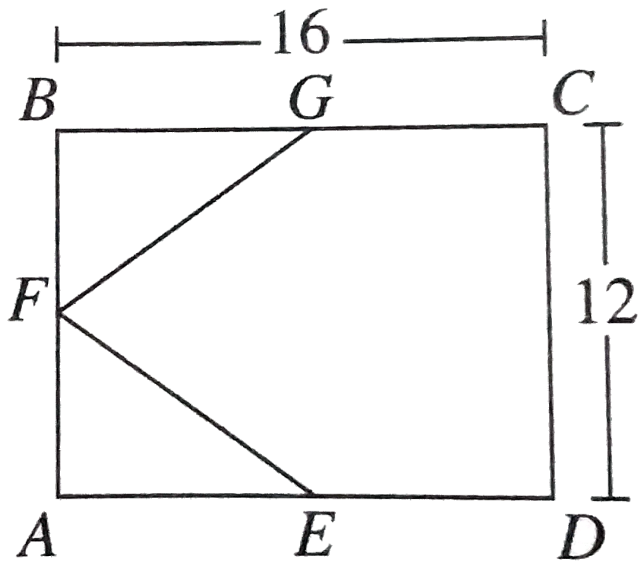
Answer: D



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26. In rectangle ABCD below , \overline{BC} is 16 inches long and \overline{CD} is 12 inches long . Points E,F and G are the midpoints of \overline{AD} , \overline{AB} and \overline{BC} respectively . What is the perimeter ,in inches ,

of pentagon CDEFG ?



A. 48

B. 56

C. 96

D. 144

Answer: A



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27. The table below details a recent census report about the commuting habits of U.S . Workers age 16 or over for the years 2004 , 2005 , and 2006.

U.S. workers category	2004	2005	2006
Group*			
Total	130.9	133.1	138.3
Male	70.9	72.1	74.7
Female	60.0	61.0	63.6
Commute time†			
Under 10 minutes	14.9%	14.7%	14.8%
More than 25 minutes	40.4%	41.1%	40.8%
Means of transportation†			
Car	87.8%	87.6%	86.7%
Public transportation	7.8%	7.9%	8.4%
Bicycle	1.4%	1.4%	1.6%
Walked	3.0%	3.1%	3.3%
*in millions of people, rounded to the nearest tenth of a million			
†in percent, rounded to the nearest tenth of a percent			
Source: U.S. Census Bureau			

The the nearest percent , what percent of all U.S workers age 16 or over in 2004 was female ?

A. 50 %

B. 48 %

C. 46 %

D. 44 %

Answer: C



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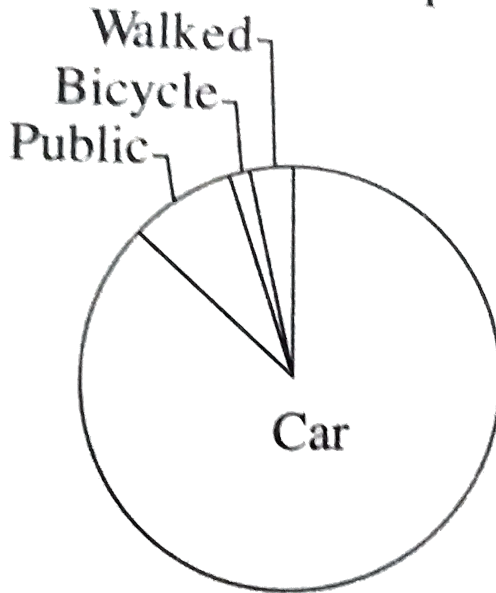
28. The table below details a recent census report about the commuting habits of U.S . Workers age 16 or over for the years 2004 , 2005 , and 2006.

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Walked	3.0%	3.1%	3.3%
*in millions of people, rounded to the nearest tenth of a million			
†in percent, rounded to the nearest tenth of a percent			
Source: U.S. Census Bureau			

The circle graph (pie chart) below represents the 2006 means of transportation for U.S . workers age 16 or over for the four transportation types listed . To the nearest degree , What is the measure of the central

angle for the " Public " sector ?

2006 Means of Transportation



A. 8°

B. 12°

C. 20°

D. 30°

Answer: D



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Bicycle	1.4%	1.4%	1.6%
Walked	3.0%	3.1%	3.3%
*in millions of people, rounded to the nearest tenth of a million			
†in percent, rounded to the nearest tenth of a percent			
Source: U.S. Census Bureau			

Expressed in millions of people , what was the average growth per year for female U.S workers age 16 or over from 2004 to 2006 , rounded to the nearest 0.1 million ?

A. 0.5

B. 0.9

C. 1.3

D. 1.8

Answer: D



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30. Two hoses attached to separate water sources are available to fill a cylindrical swimming pool. If both hoses are used , the time it will take to fill the pool can be

represented by the following equation :

$$\frac{1}{T_1} + \frac{1}{T_2} = \frac{1}{T_c},$$
 where T_1 and T_2 represent

the time needed for hoses 1 and 2 ,

respectively , to fill the pool on their own , and

T_c represents the time needed for hoses 1 and

2 to fill the pool working together . IF hose 1

alone can fill the pool in exactly 20 minutes

and hose 2 alone can fill the pool in exactly 60

minutes , how many minutes will it take to fill

the pool if both hoses work simultaneously ?

A. 3

B. 10

C. 15

D. 18

Answer: C



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31. A 5- sided die , which has sides 2,3,4,5 and 6 is thrown . What is the probability that the die will NOT land on a prime - numbered face ?

A. $\frac{4}{5}$

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

C. $\frac{2}{5}$

D. $\frac{1}{5}$

Answer: C



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32. For $f(x, y) = 7x + 9y$, what is the value of

$f(x, y)$ when $y = \left(\frac{5}{x}\right)^2$ and $x = 3$?

A. $\frac{68}{3}$

B. $\frac{214}{9}$

C. 36

D. 46

Answer: D



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33. What is the length in coordinate units , of a diagonal of a square in the standard (x,y) coordinate plane with vertices at points $(0,0)$, $(4,0)$, $(0,4)$ and $(4,4)$?

A. 3

B. 4

C. $4\sqrt{2}$

D. $4\sqrt{3}$

Answer: C



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34. What is the value of a if $\log_4 a = 3$?

A. 120

B. 64

C. 12

D. $\sqrt[4]{3}$

Answer: B



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35. A certain 18- quart stockpot is filled completely with water and exposed to a heat source so that the water boils away at a constant rate. The water remaining in the

stockpot can be approximated by the following: the pot has been heated for $0 \leq x \leq 90$, and y is the number of quarts remaining in the pot. According to this equation, which of the following statements is true about this stockpot?

A. After 0.2 minutes, 1 quart of water has boiled away.

B. After 1 minute, 0.2 quarts of water have boiled away.

C. After 18 minutes , 0.2 quarts of water has
boiled away .

D. After 36 minutes ,18 quarts of water have
boiled away.

Answer: B

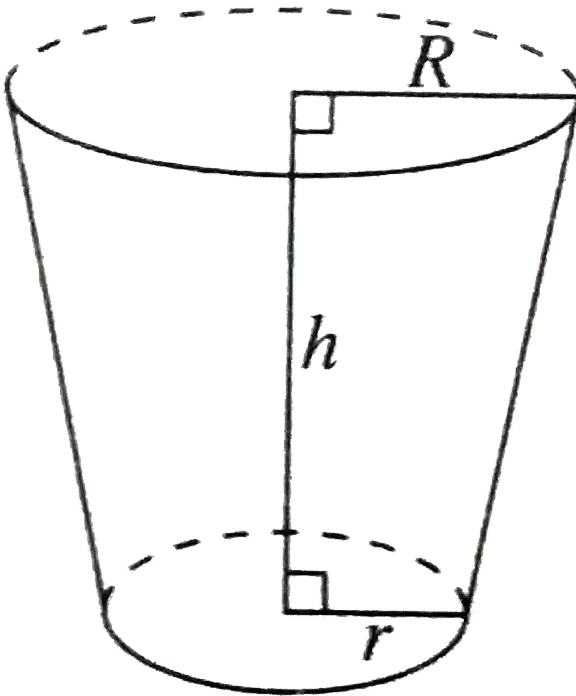


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36. The volume of a right circular cone with
the bottom removed to create a flat base can
be calculated with the following equation :

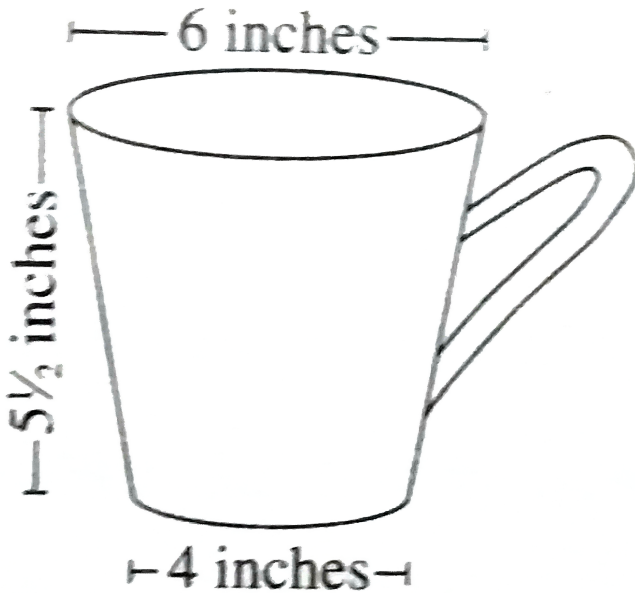
$$V = \frac{1}{3}\pi h(R^2 + r^2 + Rr), \quad \text{where } h$$

represents the height of the shape and R and r represent its radii , as shown in the figure below :



This formula can be determine the capacity of a large coffee mug .Approximately how many

cubic inches of liquid can the cup shown below hold if it is filled to the brim and its handle holds no liquid ?



- A. 19
- B. 50
- C. 105

D. 109

Answer: D



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37. Which of the following is the set of real solutions for the equation

$$9x + 12 = 3(3x + 4)?$$

A. the set of all real numbers

B. $\{0, 1\}$

C. $\{0\}$

D. $\left\{-\frac{4}{3}\right\}$

Answer: A



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38. The expression $\frac{\frac{\frac{3}{4}}{\frac{3}{4} - \frac{2}{3}}}{\frac{3}{4} - \frac{2}{3} + \frac{1}{2}}$ equals :

A. $\frac{3}{28}$

B. $\frac{4}{21}$

C. $\frac{21}{4}$

D. $\frac{108}{7}$

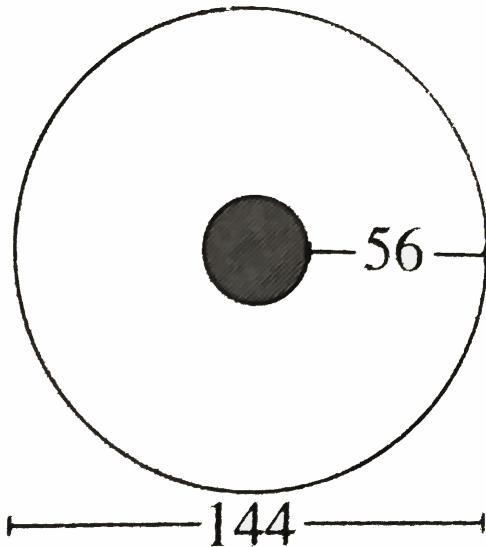
Answer: D



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39. a thin slice is cut from a bagel, creating the cross - section represented below . The diameter of the bagel is 144 mm and the width from the inner edge of the bagel to the outer edge is uniformly 56 mm. Which of the

following is closest to the area , in square millimeters , of the shaded empty space inside the cross -section of the bagel ?



A. 100

B. 450

C. 800

D. 3, 200

Answer: C



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40. For all nonzero real numbers $a, b,$ and c what is the value of $a^0 + b^0 + c^0$?

A. Undefined

B. $A + b + c$

C. 0

D. 3

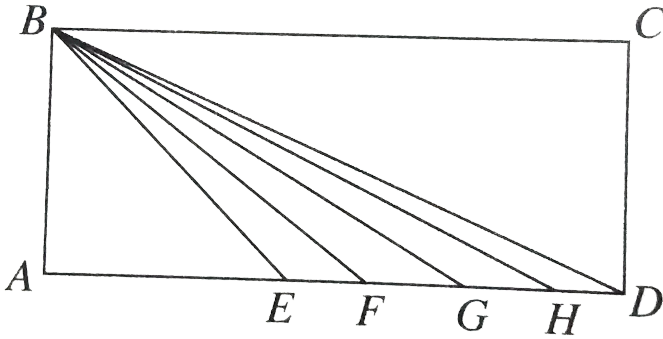
Answer: D



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41. In the figure below, $ABCD$ is a rectangle, $AB = AE$, and $E, F, G,$ and H lie on AD . Of the angles $\angle BEA$, $\angle BFA$, $\angle BGA$, $\angle BHA$, and $\angle BDA$,

which one has the greatest tangent ?



A. $\angle BEA$

B. $\angle BFA$

C. $\angle BGA$

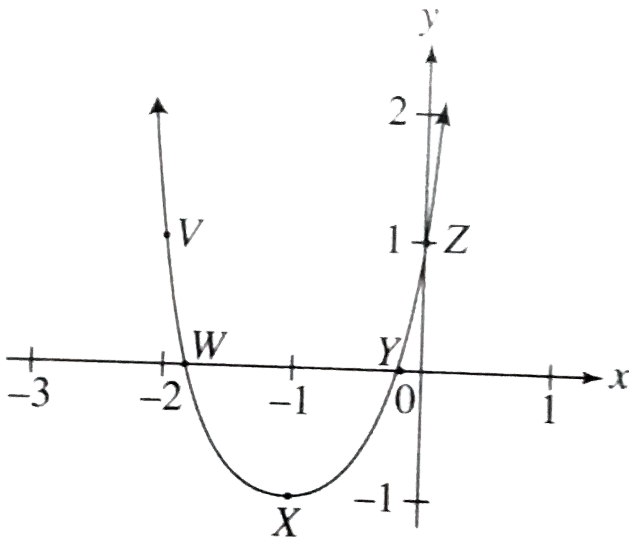
D. $\angle BHA$

Answer: A



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42. The graph of $y = f(x)$ is shown in the standard (x,y) coordinate plane below with points $V,W,X,Y,$ and Z labeled .



The y - intercept of the graph of $y=f(x)$ is located at which of the following points ?

A. V

B. W

C. X

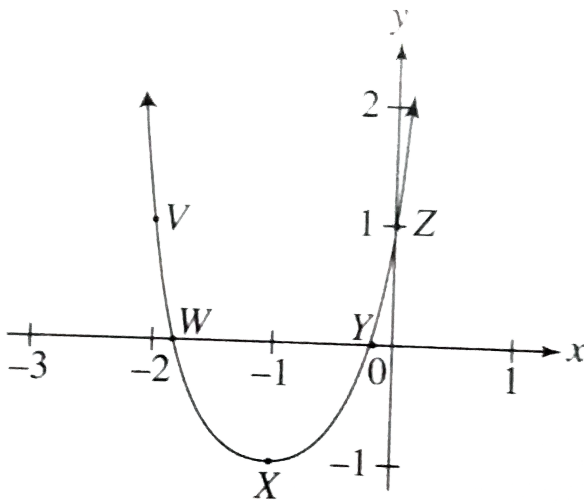
D. Z

Answer: D



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43. The graph of $y = f(x)$ is shown in the standard (x,y) coordinate plane below with points V,W,X,Y,and Z labeled .



the function $y=f(x)$ can be classified as one of which of the following types of function ?

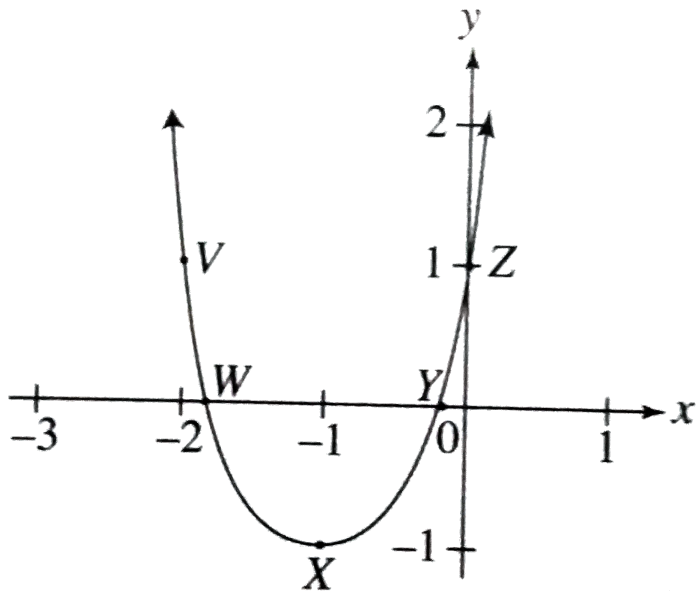
- A. Trigonometric
- B. Quadratic
- C. Absolute value
- D. Cubic

Answer: B

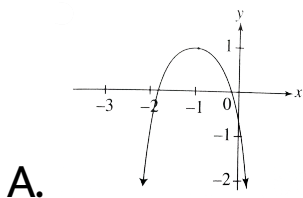


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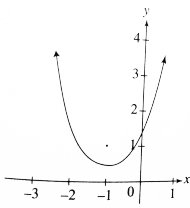
44. The graph of $y = f(x)$ is shown in the standard (x,y) coordinate plane below with points V,W,X,Y,and Z labeled .



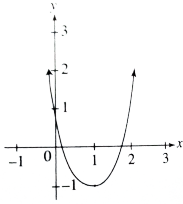
If $y=f(x)$ is to be reflected across the line $y=x$, which of the following graphs represents the result?



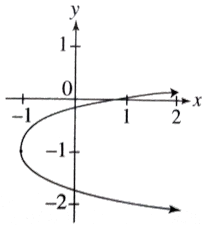
B.



C.



D.



Answer: D



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45. IF a is a factor of 32 and b is a factor of 45 ,
the product of a and b could NOT be which of
the following ?

A. 1, 440

B. 288

C. 80

D. 54

Answer: D



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46. For each positive integer k , let K_0 be the sum of all positive odd integers less than K .

For example, $6_0 = 5 + 3 + 1 = 9$ and

$7_0 = 5 + 3 + 1 = 9$. what is the value of

$17_0 \times 4_0$?

A. 16

B. 144

C. 256

D. 324

Answer: C



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47. IF $(a, -3)$ is on the graph of the equation $x - 4y = 14$ in the standard (x, y) coordinate plane , then $a = ?$

A. $-\frac{17}{4}$

B. -2

C. 2

D. 17

Answer: C



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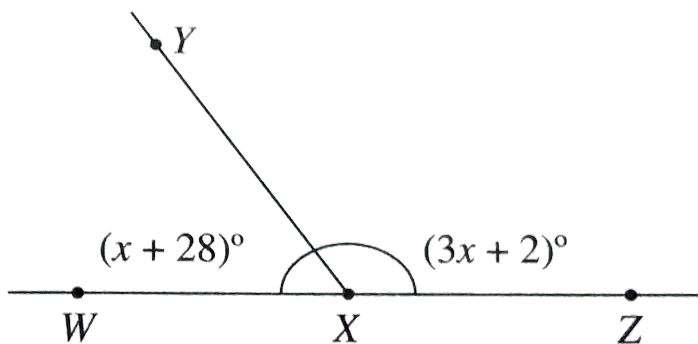
48. For all $t > 0$, $f(x) = \frac{t^2 - 1}{t - 1} - t$. Which of the following is true about $f(t)$?

- A. It increases in proportion to t .
- B. It increases in proportion to t^2 .
- C. It decreases in proportion to t .
- D. It remains constant .

Answer: D



49. In the figure below, x is in \overline{WZ} . If the angle measure are as shown, what is the degree measure of $\angle YXZ$?



A. 25°

B. $37\frac{1}{2}^\circ$

C. $65\frac{1}{2}^\circ$

D. $114\frac{1}{2}^\circ$

Answer: D



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50. Points (2,-2) and ((3,10) lie on the same line in the standed (x,y) coordinate plane . What is the slope of this line ?

A. 12

B. 8

C. $\frac{1}{12}$

D. -8

Answer: A



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51. What is the degree measure of an angle that measures $\frac{7\pi}{15}$ radians ?

A. $\left(\frac{360 - 7\pi}{15}\right)^\circ$

B. $\left(180 - \frac{7\pi}{15}\right)^\circ$

C. 252°

D. 84°

Answer: D



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52. Which of the following gives the equation for the circle in the standard (x,y) coordinate plane with a center at $(4, 8)$ and a circumference of 10π square coordinate units?

A. $(x - 4)^2 + (y - 8)^2 = 25$

B. $(x - 4)^2 + (y + 8)^2 = 100$

C. $(x - 8)^2 + (y + 4)^2 = 25$

D. $(x - 8)^2 + (y + 4)^2 = 100$

Answer: A



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53. For some x and y that satisfy the equation

$xy = -x^2$, which of the following is FALSE ?

A. $x \left(\frac{1}{y} \right) = -1$

B. $x^2 \left(\frac{1}{Y^2} \right) = 1$

C. $x^2 + y^2 = -2xy$

D. $x^3 - y^3 = 0$

Answer: D



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54. Rectangle ABCD lies in the standard (x,y) coordinate plane with corners at $A(4, 2)$, $B(6, -1)$, $C(1, 4)$, and $D(-1,-1)$, and

is represented by the 2×4 matrix

$\begin{bmatrix} 4 & 6 & 1 & -1 \\ 2 & -1 & -4 & -1 \end{bmatrix}$ ABCD is then translated,

with the corners of the translated rectangle

represented by the matrix

$\begin{bmatrix} 1 & 3 & -2 & -4 \\ n & -3 & -6 & -3 \end{bmatrix}$ what is the value of n ?

A. 0

B. -1

C. -2

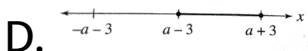
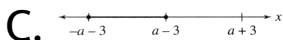
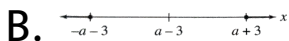
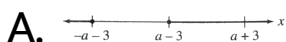
D. -3

Answer: A





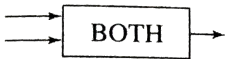
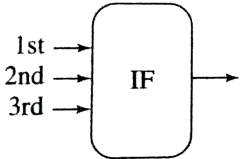

55. Whenever $a > 0$, which of the following number line graphs represents the solutions for x to the inequality $|x - a| \leq 3$?



Answer: D

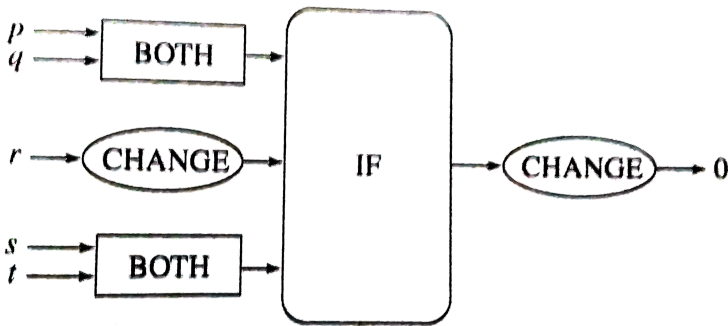


56. Three different functions are defined in the table below .

Symbol	Function	Description
	BOTH	If both inputs are 1, the output will be 1. If both inputs are 0, the output will be 0. If both inputs are different, the output will be 0.
	IF	If the first input is a 1, the output will be the second input. If the first input is a 0, the output will be the third input.
	CHANGE	If the input is 1, the output is 0. If the input is 0, the output is 1.

The diagram below uses functions . The only

values for p, q, r, s and t are 1 and 0 . Which of the following inputs (p, q, r, s, t) will produce the output 0 ?



- A. $(0, 1, 1, 0, 1)$
- B. $(0, 1, 1, 1, 1)$
- C. $(0, 0, 1, 0, 1)$
- D. $(1, 0, 1, 0, 0)$

Answer: B



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57. Whenever x and y are both integers, what is $(6.0 \times 10^x)(5.0 \times 10^y)$ expressed in scientific notation ?

A. 30.0×100^{xy}

B. 30.0×10^{xy}

C. 30.0×10^{xy}

D. $3.0 \times 10^{x+y+1}$

Answer: D



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58. The points P,Q,R and S lie in that order on a straight line . The midpoint of \overline{QS} is R and the midpoint of \overline{PS} is Q . The length of \overline{QR} is x feet and the length of \overline{PQ} is $4x - 16$ feet .
What is the length , in feet , of \overline{PS} ?

A. 32

B. 20

C. 16

D. 8

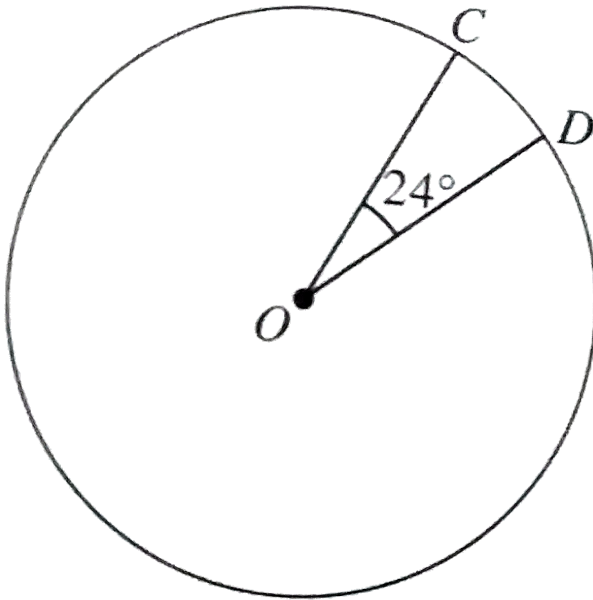
Answer: A



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59. The circle below has an area of $64\pi cm^2$. A central angle with measure 24° intercepts minor arc \widehat{CD} what is the length of minor arc

\widehat{CD} , in centimeters ?



- A. $\frac{1}{8}\pi$
- B. $\frac{1}{4}\pi$
- C. $\frac{16}{15}\pi$
- D. $\frac{8}{3}\pi$

Answer: C



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