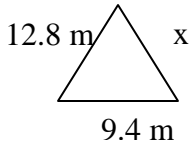


Multiple Choice. Select the letter of the best possible choice.

- What is the first step in evaluating the expression $15 - 12 \div 3$?
A. Subtract 12 from 15
B. Divide 12 by 3
C. Subtract 3 from 15
D. Divide 15 by 3
- Which variable expression represents the following phrase?
"A number raised to the ninth power."
A. $9n$
B. 9^n
C. n^9
D. $\frac{9}{n}$
- Which list of integers is in order from least to greatest?
A. $-7, -2, 0, 1, 4$
B. $0, 1, -2, 4, -7$
C. $4, 1, 0, -2, -7$
D. $-2, -7, 0, 1, 4$
- Solve the equation $13 = 18 - h$.
A. -31
B. -5
C. 5
D. 31
- What is the solution of $\frac{k}{-4} = 124$?
A. -496
B. -31
C. 31
D. 496
- What is the value of x for the triangle shown with a perimeter of 35.9 meters?

A. 32.5 m
B. 22.2 m
C. 13.7 m
D. 3.4 m
- What is the solution of the equation $18 = -2(w + 9)$?
A. -36
B. -18
C. -4.5
D. 0
- What is the solution of the equation $6(y + 13) = 4y - 28$?
A. -53
B. -20.5
C. -10.6
D. 25
- Which equation has every number as a solution?
A. $3(4x + 2) = 6$
B. $3(4x + 2) = 0$
C. $3(4x + 2) = 12x + 3$
D. $3(4x + 2) = 6(2x + 1)$

18. You are going on a class trip. The total cost of the trip is \$126, and there are 28 students in the class. What is the cost per student?
- A. \$3.50 per student
B. \$4.00 per student
C. \$4.50 per student
D. \$5.00 per student
19. What is the solution of the proportion $\frac{16}{28} = \frac{24}{t}$?
- A. 7
B. 42
C. 48
D. 56
20. What is $\frac{1}{5}$ as a percent?
- A. 2%
B. 5%
C. 20%
D. 50%
21. What number is 30% of 60?
- A. 2
B. 18
C. 20
D. 200
22. 18 is 90% of what number?
- A. 2
B. 5
C. 16.2
D. 20
23. What is 104% as a decimal?
- A. 0.0104
B. 0.104
C. 1.04
D. 10.4
24. A company made \$3640 last month. About 12.5% of this amount was made through catalog sales. How much did the company make in catalog sales?
- A. \$291.20
B. \$303.33
C. \$436.80
D. \$455
25. What percent of 328 is 246?
- A. $1\frac{1}{3}\%$
B. 25%
C. $33\frac{1}{3}\%$
D. 75%
26. Which situation represents the smallest percent of decrease?
- A. Original: 18
New: 14
B. Original: 90
New: 72
C. Original: 187
New: 153
D. Original: 260
New: 195
27. A bicycle costs \$145. The sales tax is 6%. What is the total cost of the bicycle?
- A. \$145.87
B. \$153.70
C. \$171
D. \$232

28. A sports store marks up the wholesale price of a fishing rod by 52%. The retail price is \$76. What is the wholesale price of the fishing rod?

- A. \$39.52
- B. \$50
- C. \$53.46
- D. \$55

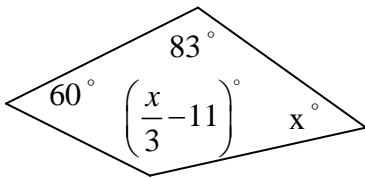
29. You deposit \$500 into an account that earns 4.5% simple annual interest. What is the balance of the account after 14 years?

- A. \$315
- B. \$531.50
- C. \$815
- D. \$3650

30. The ratio of the angle measures of a triangle is 6:11:19. What type of triangle is it?

- A. Acute
- B. Right
- C. Obtuse
- D. Isosceles

31. Find the value of x.

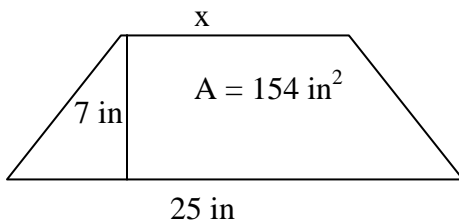


- A. 46
- B. 36
- C. 304
- D. 171

32. What is the area of a parallelogram with a base of 8 meters and a height of 12 meters?

- A. 48 m^2
- B. 40 m^2
- C. 96 m^2
- D. 10 m^2

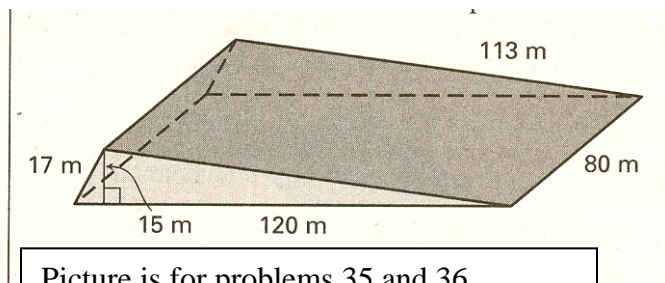
33. Find the value of x.



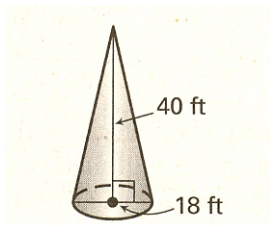
- A. 19 in
- B. 3 in
- C. 20 in
- D. 1.76 in

34. A circle has a radius of 21 inches. What is its approximate circumference? Use $\pi \approx \frac{22}{7}$.

- A. 66 in
- B. 132 in
- C. 1385 in^2
- D. 42 in



35. What is the surface area of the prism?
- A. 21,800 m² B. 72,000 m²
 C. 20,000 m² D. 23,600 m²
36. What is the volume of the prism?
- A. 900 m³ B. 72,000 m³
 C. 144,000 m³ D. 21,800 m³



37. What is the approximate surface area of the cone? Use $\pi \approx 3.14$. Round to the nearest whole number.
- A. 3280 ft² B. 3336 ft²
 C. 1413 ft² D. 1385 ft²
38. What is the approximate volume of the cone? Use $\pi \approx 3.14$. Round to the nearest whole number.
- A. 10,179 ft³ B. 3391 ft³
 C. 40,715 ft³ D. 13,572 ft³
39. Find the difference $(13k^3 + 7k^2 - 5k + 3) - (8k^3 - 2k^2 + 6k + 15)$.
- A. $5k^3 + 5k^2 + k + 18$ B. $5k^3 - 5k^2 - 11k + 18$
 C. $5k^3 + 9k^2 + k + 18$ D. $5k^3 + 9k^2 - 11k - 12$
40. Find the quotient $\frac{12x^9 - 4x^6 + 8x^3}{-4x^3}$.
- A. $-3x^6 + x^3 - 2$ B. $-3x^6 - x^3 - 2$
 C. $-3x^3 - x^2 - 2$ D. $-3x^3 + x^2 - 2$
41. Find the product $(5t - 7)(3t - 2)$.
- A. $15t^2 + 14$ B. $15t^2 - 31t - 14$
 C. $15t^2 - 31t + 14$ D. $8t^2 - t - 9$

42. Which expression is equivalent to $\left(\frac{-2m^2}{3m^3n^4}\right)^3$?

A. $-\frac{6}{9m^3n^{12}}$

B. $-\frac{8}{27m^3n^{12}}$

C. $-\frac{8m^3}{3n^4}$

D. $-\frac{8}{27mn^4}$

43. What are the next three terms of the sequence?

15,625; -3125; 625; -125; ...

A. 25; 5; 1

B. -875; -1625; -2375

C. -25; 5; -1

D. 25; -5; 1

44. If $\angle 3$ and $\angle 4$ are complementary angles, then what could their measures be?

A. $m\angle 3 = 150^\circ$ and $m\angle 4 = 30^\circ$

B. $m\angle 3 = 30^\circ$ and $m\angle 4 = 60^\circ$

C. $m\angle 3 = 25^\circ$ and $m\angle 4 = 25^\circ$

D. $m\angle 3 = 90^\circ$ and $m\angle 4 = 90^\circ$

45. What is the measure of an interior angle of a regular hexagon?

A. 120°

B. 60°

C. 30°

D. 140°

46. Select the nearest given estimate for: $0.493 + 0.78 + 0.6$

A. 1.5

B. 2.0

C. 2.5

47. Select the nearest given estimate for: $8.2 - 0.82$

A. 0

B. 18

C. 7

48. Select the nearest given estimate for: $0.29 \times \$51$

A. \$5

B. \$10

C. \$15

49. Select the nearest given estimate for: $78.12 \div 4$

A. 1.3

B. 20

C. 38.12

50. A bag contains 11 red, 6 yellow, and 4 green marbles. What is the probability of not drawing a yellow marble?

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

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

C. $\frac{5}{7}$

D. $\frac{2}{7}$

51. What is the distance between the points $(-5, 4)$ and $(1, 0)$?

A. 4

B. $\sqrt{34}$

C. $2\sqrt{13}$

D. $\sqrt{82}$

52. What is the midpoint of the segment with endpoints $(-8, 8)$ and $(4, 6)$?

A. $(-2, 7)$

B. $(-1, 6)$

C. $(0, 5)$

D. $(6, -1)$

53. Each side of an octagon is tripled. The area of the new octagon is _____ the original octagon's area.

A. the same as

B. tripled

C. nine times

D. not enough information

54. The side lengths of a cube are doubled. How many times larger is the volume of the new cube?
 A. 2 times B. 4 times C. 8 times D. 16 times
55. Evaluate the expression $(x - y)^3$ when $x = 3$ and $y = -2$.
 A. 1 B. 125 C. 25 D. -125
56. What is the value of $\frac{3 \square 4 + 6^2}{16 - 3^2 \square 2}$?
 A. 24 B. $\frac{13}{4}$ C. $\frac{48}{5}$ D. -24
57. Find the difference: $\begin{bmatrix} 2 & 3 \\ -1 & 6 \\ 5 & -4 \end{bmatrix} - \begin{bmatrix} 7 & -8 \\ 6 & 3 \\ 2 & -1 \end{bmatrix}$
 A. $\begin{bmatrix} 9 & -5 \\ 5 & 9 \\ 7 & -5 \end{bmatrix}$ B. $\begin{bmatrix} -5 & 11 \\ -7 & 3 \\ 3 & -3 \end{bmatrix}$
 C. $\begin{bmatrix} 5 & 11 \\ 5 & 3 \\ 3 & -3 \end{bmatrix}$ D. $\begin{bmatrix} -5 & -5 \\ -7 & 3 \\ 3 & -5 \end{bmatrix}$
58. Simplify $-75x^5 \div \frac{3x^2}{5}$.
 A. $-30x^2$ B. $-45x^3$
 C. $-45x^7$ D. $-125x^3$
59. There are 13 red balls, 20 blue balls, 15 green balls, and 5 yellow balls in a ball pit. What are the odds of randomly choosing a green ball?
 A. $\frac{13}{53}$ B. $\frac{15}{53}$
 C. $\frac{15}{38}$ D. $\frac{13}{38}$
60. How much money would you have to invest to earn \$208 in interest in 5 years at a rate of 8%?
 (Hint: $I = Prt$)
 A. \$408 B. \$550
 C. \$570 D. \$520

61. Rewrite the equation $5x + 3y = 12$ so that y is a function of x .

A. $y = -\frac{5}{3}x + 4$

B. $y = \frac{5}{3}x + 4$

C. $y = \frac{3}{5}x + 4$

D. $y = -2x + 9$

62. Which quadrant of the coordinate plane would point $(-3, 6)$ be in?

A. I

B. II

C. III

D. IV

63. Find the slope of the line passing through the points $(7, 2)$ and $(8, 6)$.

A. -4

B. $\frac{1}{4}$

C. 4

D. $-\frac{1}{4}$

64. Choose the set of lines which are parallel.

A. $y = \frac{2}{3}x + 1$; $y = \frac{3}{2}x + 6$

B. $y = -2x + 3$; $y = 2x + 3$

C. $y = \frac{1}{2}x - 1$; $y = \frac{1}{2}(x - 2)$

D. $y = \frac{2}{7}x$; $y = \frac{2}{7}x + 2$

65. What is the equation of the line that passes through the point $(2, -4)$ and has a slope of $\frac{1}{2}$?

A. $y = \frac{1}{2}x - 5$

B. $y = \frac{1}{2}x + 5$

C. $y = \frac{1}{2}x - 6$

D. $y = \frac{1}{2}x - 3$

66. What is the slope of the line perpendicular to the line $y = \frac{2}{5}x + 10$?

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

B. $-\frac{2}{5}$

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

D. 10

67. Choose the solution of the inequality $6 < 2x - 3 \leq 11$.

A. $\frac{3}{2} > x \geq 7$

B. $\frac{9}{2} < x \leq 7$

C. $\frac{9}{2} > x \geq 7$

D. $\frac{3}{2} < x \leq 7$

68. There are 5 yellow golf balls, 3 red golf balls, and 10 white golf balls in a bag. What are the odds of randomly choosing a yellow golf ball?

- A. $\frac{5}{13}$
- B. $\frac{5}{18}$
- C. $\frac{3}{18}$
- D. $\frac{18}{5}$

69. Solve the system of linear equations.

$$5x - 3y = 26$$

$$3x + 2y = 8$$

- A. $(-2, 4)$
- B. $(7, 3)$
- C. $(4, -2)$
- D. $(0, 4)$

70. The variables x and y vary inversely. When x is 10, y is 7. If x is 5, then y is _____.

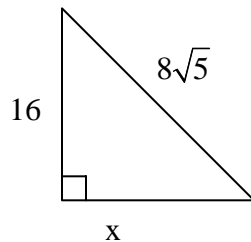
- A. 21
- B. 3.5
- C. 350
- D. 14

71. The geometric mean of x and 4 is 12. What is the value of x ?

- A. 36
- B. $8\sqrt{2}$
- C. 7
- D. 9

72. What is the length of the missing side of the triangle?

- A. 4
- B. 8
- C. 16
- D. 5

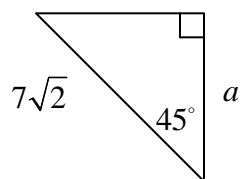


73. What is the distance between $(7, -3)$ and $(-1, 4)$?

- A. 6.1
- B. 9.2
- C. 9.5
- D. 10.6

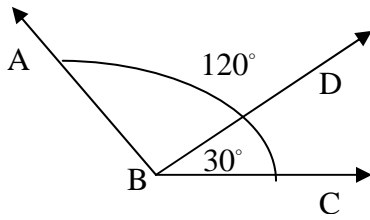
74. What is the length of side a in the triangle?

- A. 45
- B. 6
- C. 7
- D. 8



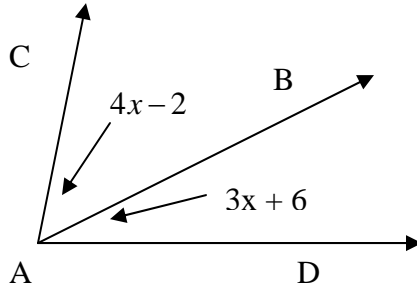
75. Find the measure of $\angle ABD$.

- A. 30°
- B. 60°
- C. 90°
- D. 150°



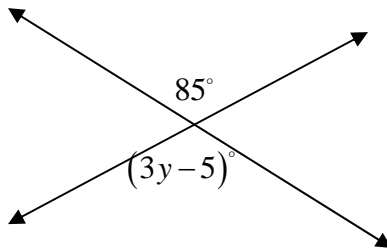
76. \overline{AB} bisects $\angle CAD$. Find the value of x .

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



77. Find the value of y .

- A. 30
- B. 35
- C. 85
- D. 22



78. In HJK , $\overline{HK} \cong \overline{IJ}$. What is the value of x ?

- A. 1
- B. 2
- C. 2.5
- D. 3

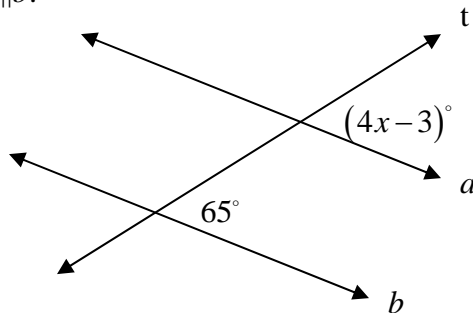


79. Two angles are supplementary. If $m\angle 1$ is 67° , what is $m\angle 2$?

- A. 23°
- B. 67°
- C. 113°
- D. 133°

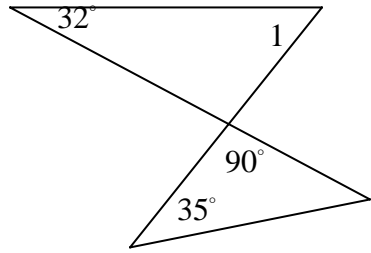
80. Find the value of x when $a \parallel b$.

- A. 15
- B. 16
- C. 17
- D. 18



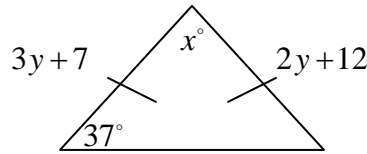
81. Find the measure of $\angle 1$.

- A. 32°
- B. 35°
- C. 90°
- D. 58°



82. What are the values of x and y ?

- A. $x = 37, y = 5$
- B. $x = 106, y = 5$
- C. $x = 106, y = 19$
- D. $x = 37, y = 19$

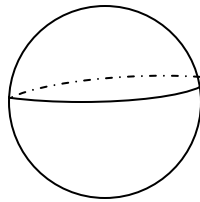


83. A right triangle has legs of 24 units and 18 units. The length of the hypotenuse is _____.

- A. 15 units
- B. 30 units
- C. 45 units
- D. 15.9 units

84. Find the surface area of the sphere. Use $\pi \approx 3.14$. Round to the nearest tenth.

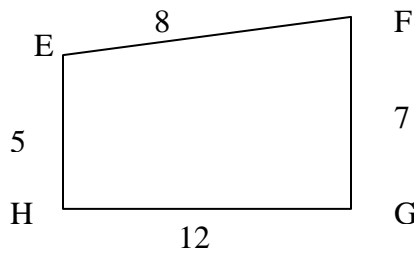
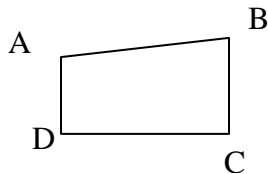
- A. 301.6 in^2
- B. 7238.2 in^2
- C. 603.2 in^2
- D. 1808.6 in^2
- E. 3619.1 in^2



Radius of Sphere = 12 inches

85. $ABCD \sim EFGH$. The perimeter of $ABCD$ is 16. What is the length of \overline{BC} ?

- A. 3.5
- B. 2.5
- C. 6
- D. 4
- E. 5



Complete each of the following problems.

86. Evaluate the expression $180 \div 12 + (40 - 5) \div 7$.

87. Evaluate the expression $5 + 81 \div 9 \times 11 + 23$.

88. Evaluate the expression $18 \times (3 + 27) - 132 \div 6$.

89. Make an ordered stem-and-leaf plot and a box-and-whisker plot of the data:

56, 59, 65, 45, 68, 41, 66, 49, 51, 52

90. Find the mean, median, mode, and range for the data:
50, 93, 81, 75, 70, 66, 68, 59, 60, 58, 71, 62, 84, 88, 65, 85, 65, 73, 84, 92, 87, 83, 80, 84
Round to the nearest tenth if necessary.
91. On a coordinate grid, reflect the points $A(3,5)$, $B(4,1)$, and $C(1,0)$ over the x-axis.

Short Response.

92. You are putting a border along one wall of your kitchen. The border is in pieces that are each 3 feet long. Write an equation to determine the number of pieces of border n that you will need for a wall that is 24 feet long.
93. Your cellular phone plan costs \$11 per month plus \$0.12 per minute of phone usage. You want to pay no more than \$20 per month. What are the most number of minutes m that you can allow for phone calls each month?
94. You have 120 feet of fencing to make a pen for your dog. You want the pen to be 5 times longer than it is wide, and you want to use all 120 feet of fencing. Write an equation that determines the area of the pen?
95. Your uncle makes wooden stools. He can make one stool out of a certain piece of lumber that is $3\frac{1}{4}$ feet long. How many feet of this lumber does he need to make 18 stools?
96. One quart of orange juice costs \$0.89. One gallon of orange juice costs \$3.20. Which has the lower price per unit of orange juice, how much do you save if you buy the orange juice with the lower price?
97. In a survey of 800 people, 32% preferred cats and 27% preferred dogs. How many more people preferred cats than preferred dogs? Explain your reasoning.
98. A circle has a circumference of 500 feet. Find the approximate area of the circle. Use $\pi \approx 3.14$. Round to the nearest square foot.
99. What is the measure of an exterior angle of a regular octagon? Explain your reasoning.
100. Carmen works after school. Last week, she worked $3\frac{3}{4}$ hours on Monday, $2\frac{1}{2}$ hours on Wednesday, and 4 hours on Friday. How many hours did she work altogether?