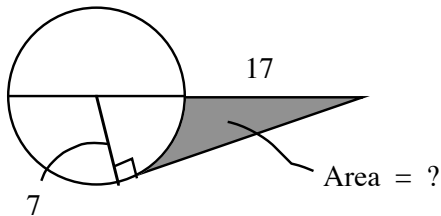


MINI UIL MATHEMATICS : PPP

1. In distributing milk at a summer camp it is found that a quart of milk will fill either 3 large glass tumblers or 5 small glass tumblers. How many small glass tumblers can be filled with one large glass tumbler ?

(A) $\frac{3}{5}$ (B) $1\frac{2}{5}$ (C) $1\frac{2}{3}$ (D) 2 (E) $2\frac{1}{3}$

2. Round off your answer to the nearest tenth.



(A) 26.1
(B) 25.8
(C) 27.0
(D) 26.7
(E) None of these

3. One number is five greater than another. If the sum of the lesser number and twice the greater is 61, what is the greater number ?

(A) 28 (B) 33 (C) 17 (D) 22 (E) None of these

4. Cindy and Sandra can complete a job in $6\frac{2}{3}$ minutes when they work together. Cindy can do the job by herself in 10 minutes. How much time would Sandra need to complete the job by herself ?

(A) 20 min. (B) 30 min. (C) 15 min. (D) 24 min. (E) None of these

5. 18 dozen boxes containing six 32-ounce bottles of milk were delivered by Mr. Goodheart to victims of Hurricane Andrew. How many gallons of milk were delivered to Florida by Mr. Goodheart ?

(A) 234 (B) 423 (C) 324 (D) 243 (E) None of these

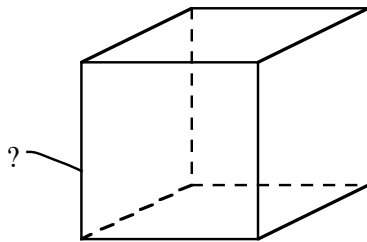
6. Jeremiah Bullfrog jumped a distance of 4.6 feet on his first jump at a national competition for frogs. Assuming that he jumps 5 % further each time, how far did he jump on the seventh jump ? (Round off answer to the nearest hundredth.)

(A) 5.28 feet (B) 6.21 feet (C) 6.16 feet (D) 6.47 feet (E) 5.87 feet

7. A ball is dropped to the ground from a height of 24 feet. If it bounces half as high on each successive bounce, find how high it will bounce the fourth time that it hits the ground.
- (A) 6.0 feet (B) 1.5 feet (C) 3.0 feet (D) 0.75 feet (E) None of these

8. The ruins of an ancient monument are 35 meters tall. When the angle of elevation of the sun is 62° , how long is the shadow of the ruins? (Round off your answer to the nearest tenth.)
- (A) 65.8 meters (B) 18.6 meters (C) 17.9 meters
- (D) 34.7 meters (E) None of these

9. Round off your answer to the nearest tenth.



$$\text{Volume} = 1.2 \times \text{total surface area}$$

- (A) 6.9
- (B) 7.5
- (C) 6.3
- (D) 7.2
- (E) 7.9

10. If $f(x) = 2x + 1$ and $g(x) = 3x - 2$, for what real number k does $f(k) = g(k)$?
- (A) -3 (B) -1 (C) 0 (D) 3 (E) 5

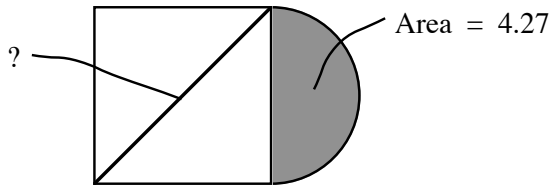
11. How many integers are in the solution set of $|1 - 3x| < 5$?
- (A) None (B) One (C) Two (D) Three (E) Infinitely many

12. A vendor sold one-half of his hotdogs in the first three innings of a baseball game. At the end of the fourth inning, after selling five more hot dogs, one-fourth of the original number of hot dogs remained. How many hot dogs did he start with?
- (A) 20 (B) 30 (C) 40 (D) 50 (E) None of these

13. A farmer raises chickens and pigs. These animals have a total of 120 heads and 300 feet. How many chickens does the farmer have?
- (A) 30 (B) 60 (C) 70 (D) 80 (E) 90

14. Two roads intersect at right angles. A pole is 30 meters from one road and also 40 meters from the other road. How far (in meters) is the pole from the point where the roads intersect ?
- (A) 30 (B) 40 (C) 50 (D) 60 (E) 70

15. SQUARE AND SEMI-CIRCLE



- (A) 4.66
 (B) 4.59
 (C) 4.92
 (D) 4.71
 (E) 4.53

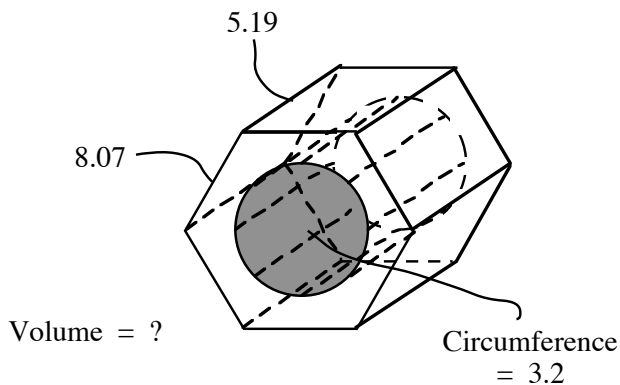
16. Two trains leave from the East Williston station at the same time and travel in opposite directions. The train headed north is traveling at an average speed of 60 m.p.h. After 3 hours the trains are 255 miles apart. What is the average speed in miles per hour of the train headed south ?

- (A) 25 (B) 20 (C) 15 (D) 10 (E) 5

17. $\frac{n(n-3)!}{n!} = \underline{\quad? \quad}$.

- (A) $\frac{1}{n^2 - 3n + 2}$ (B) $\frac{1}{n^2 - n}$ (C) $\frac{(n-3)!}{n(n-1)!}$
 (D) $\frac{1}{n^2 - 7n + 12}$ (E) None of these

18. HEXAGONAL BOLT (Round off your answer to the nearest whole number).

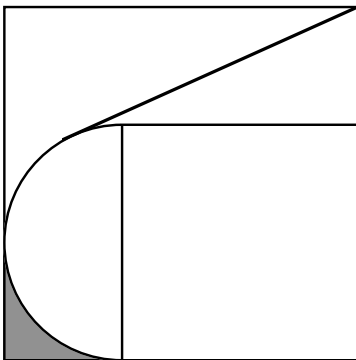


- (A) 874
 (B) 878
 (C) 912
 (D) 784
 (E) None of these

19. The lengths of the sides of quadrilateral Q are all integers. If three of the sides have lengths of 3, 4, and 5, then the maximum length of the fourth side is approximately ___?__.
- (A) 13 (B) 12 (C) 11 (D) 7 (E) 2

20. If $f(x) = (x - 1)^2 + 2$, what is the minimum value of function f ?
- (A) -3 (B) -2 (C) 0 (D) 1 (E) 2

21. SEMI-CIRCLE AND SQUARES (Shaded Area = 20). Find the length of the side of the largest square to the nearest tenth.



- A. 27.6
B. 26.8
C. 29.0
D. 28.5
E. 29,3

22. If the line $x = k$ is tangent to the circle $(x - 2)^2 + (y + 1)^2 = 4$, then the point of tangency is ___?__.
- (A) (-6, -1) or (2, -1) (B) (-2, -1) or (6, -1) (C) (0, -1) or (4, -1)
(D) (0, 1) or (4, 1) (E) (2, 1) or (6, 1)

23. What are the coordinates (x, y) at which $2x + y = 4$ intersect $x - 2y = 2$?
- (A) (0, 0) (B) (0, 2) (C) (2, -1) (D) (-2, 1) (E) (2, 0)

24. If the ratio of the corresponding diagonals of two similar figures is 4 : 9, then what is the ratio of their perimeters ?
- (A) 2 : 3 (B) 4 : 9 (C) 6 : 12 (D) 8 : 27 (E) 16 : 81

25. The distance from the center of a circle to a chord is 5. If the length of the chord is 24, what is the length of the radius of the circle ?
- (A) 13 (B) 7 (C) 5 (D) 10 (E) 17

26. The half-life of uranium-232 is 74 years. In how many years will one third of the present quantity decay ? (Round off your answer to the nearest whole number.)
- (A) 108 (B) 43 (C) 49 (D) 95 (E) 117
27. The slope of the curve $y^2 - xy - 3x = 1$ at the point $(0, -1)$ is ___?__.
- (A) -1 (B) -2 (C) 1 (D) 2 (E) -3
28. Which of the following functions is not odd ?
- (A) $f(x) = \sin x$ (B) $f(x) = \sin 2x$ (C) $f(x) = x^3 + 1$
- (D) $f(x) = \frac{x}{x^2 + 1}$ (E) $f(x) = \sqrt[3]{2x}$
29. $\lim_{x \rightarrow 0} \frac{\sin x}{x^2 + 3x}$ is ___?__.
- (A) 1 (B) $\frac{1}{3}$ (C) 3 (D) ∞ (E) $\frac{1}{4}$
30. The function $f(x) = x^4 - 4x^2$ has ___?__.
- (A) two absolute minimums and one relative maximum
 (B) one relative minimum and one relative maximum
 (C) two relative maxima and no relative minimum
 (D) two relative minima and no relative maximum
 (E) two relative minima and one relative maximum