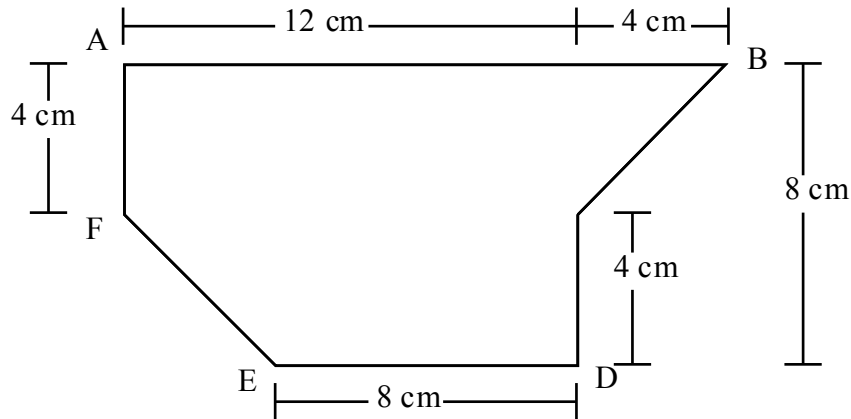
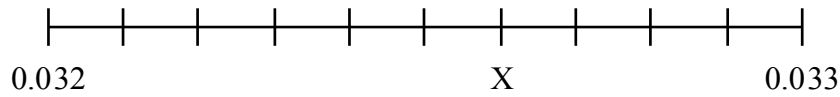


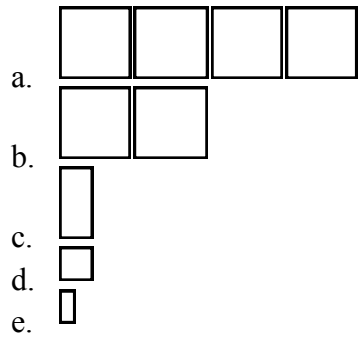
1. In the figure below angle $m\angle B = 45^\circ$; $\angle A$ and $\angle D$ are right angles; $m\angle E = m\angle F = 135^\circ$. What is the area of the figure?



- a. 50 square centimeters
 - b. 128 square centimeters
 - c. 100 square centimeters
 - d. 96 square centimeters
 - e. 90 square centimeters
2. On the number line shown below, what is the best value for X?




- a. 0.036
 - b. 0.0306
 - c. 0.0366
 - d. 0.0326
 - e. 0.0336
3. If represents 0.5%, which picture is the best representation for 2%?

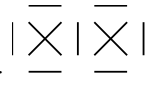



4. The prime factorization of 819 is which of the following?
- $3 \times 13 \times 21$
 - $3 \times 7 \times 39$
 - $7 \times 13 \times 63$
 - $3 \times 3 \times 7 \times 13$
 - All of the above
5. Which of the following numbers is prime?
- 101
 - 105
 - 603
 - 703
 - 909
6. Twenty percent of the seats in a theater are in the balcony. The rest are on the main floor. Twenty five percent of the balcony seats are filled. Fifty percent of the main floor seats are filled. There are 132 empty seats in the theater. How many seats does the theater have?
- 440 seats in the theater
 - 264 seats in the theater
 - 227 seats in the theater
 - 240 seats in the theater
 - 198 seats in the theater
7. Which statement must be true about $\frac{437}{385} + \frac{674}{843}$?
- The sum is less than 1.
 - The sum is greater than 3 but less than 1000.
 - The sum is between 1 and 3.
 - The sum is between 4 and 6.
 - The sum is greater than 100,000.
8. These are the first ten numbers in a famous sequence of numbers called the Fibonacci Sequence: 1, 1, 2, 3, 5, 8, 13, 21, 34, 55. Which statement must be true about this sequence?
- The 3000th number in the sequence is odd.
 - The 3005th number in the sequence is even.
 - The 3003rd number in the sequence is even.
 - The 4000th number in the sequence is even.
 - The 4001st number in the sequence is even.

9. If k represents a whole number, then which statement is always true?

- a. $2k + 1$ is divisible by 3.
- b. $2k + 1$ is odd.
- c. $2k + 1$ is even.
- d. $2k - 1$ is even.
- e. $2k + 3$ is divisible by 5.

10. This figure is a 1-square train made with 6 toothpicks. 

This figure is a 2-square train made with 11 toothpicks. 

This figure is a 3-square train made with 16 toothpicks. 

Which number goes in the blank cell of the table?

Number of squares in the train	1	2	3	4	5	10
Number of toothpicks in the train	6	11	16	21	26	

- a. 31
- b. 50
- c. 51
- d. 52
- e. 55

11. Refer to the previous toothpick train problem. It takes 341 toothpicks to build a train. How many squares are in the train?

- a. 34 squares
- b. 68.2 squares
- c. 69 squares
- d. 68 squares
- e. 67 squares

12. Which unit is appropriate for measuring perimeter?

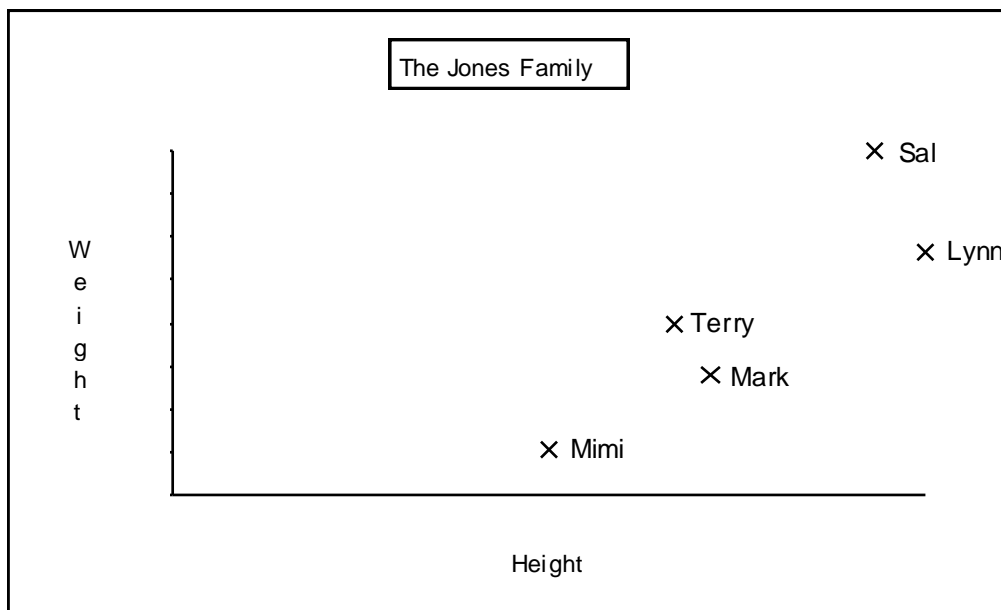
- a. pounds
- b. centimeters
- c. cubic centimeters
- d. liters
- e. grams

13. What number should go in the empty box to make the equation true?

$$\frac{44 \times 7}{35 - \square} = 28$$

- a. 11
- b. 8.8
- c. -19.2
- d. 19.2
- e. 24

14. The chart below shows the weight and height of each member of the Jones family. According to the table, which statement is true?

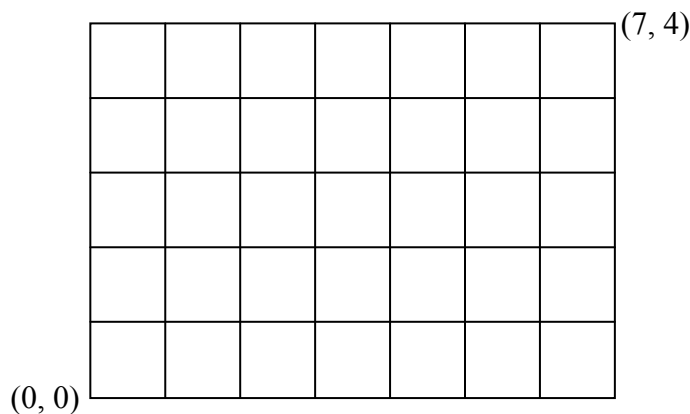


- a. Mark is shorter than Terry.
 - b. Terry weighs less than Mark.
 - c. Sal is the tallest member of the family.
 - d. Lynn is the heaviest member of the family.
 - e. Lynn is taller than Sal.
15. Triangle ABC is an obtuse isosceles triangle. The measure of angle A is 35° . Angle B is an obtuse angle. What is the measure of angle C?
- a. The measure of angle C is 110° .
 - b. The measure of angle C is 35° .
 - c. The measure of angle C is 145° .
 - d. The measure of angle C is 55° .
 - e. There is not enough information given to determine the measure of angle C.

16. Quadrilateral ABCD is a rectangle. Which statement COULD be true about quadrilateral ABCD?

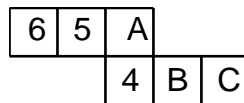
- a. Quadrilateral ABCD is a square.
- b. Quadrilateral ABCD is not a closed figure.
- c. Quadrilateral ABCD is not a parallelogram.
- d. Quadrilateral ABCD is not equiangular.
- e. Quadrilateral ABCD has no lines of symmetry.

17. On the grid shown below the lower left corner has coordinates (0, 0). The upper right corner has coordinates (7, 4). A parallelogram is drawn on the grid with vertices at (1, 1), (3, 4), (5, 4), and (3, 1). If the distance from (0, 0) to (1, 0) is 1 centimeter and the distance from (0, 0) to (0, 1) is 1 centimeter, what is the area of the parallelogram?



- a. 9 square centimeters
- b. 8 square centimeters
- c. 7 square centimeters
- d. 6 square centimeters
- e. 5 square centimeters



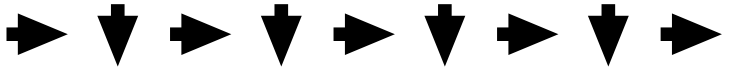


18. Below is the net of a cube. When the net is folded to make a cube, the sum of the top and bottom faces is seven in every possible position. The positions of the 6, the 5, and the 4 are shown. Which statement is true?



- a. The A face has a 3.
- b. The B face has a 2.
- c. The C face has a 1.
- d. The A face has a 2.
- e. The C face has a 2.

19. A Frieze Pattern is a repeating sequence of figures. The figures are in a line. The line of figures can be considered infinite. All friezes have slide symmetry. Some friezes also have other types of symmetry, such as horizontal line symmetry, vertical line symmetry, or rotational symmetry. This sequence of letters makes a Frieze Pattern with only slide and horizontal line symmetry: K K K K K

Which of the following Frieze Patterns also has only slide and horizontal line symmetry?

- a. 
- b. 
- c. 
- d. 
- e. 

20. A sixth-grade student who is the tallest member of the basketball team is most likely to be which height?

- a. 1 meter
- b. 3 meters
- c. 1 kilometer
- d. 1.75 meters
- e. 175 millimeters

21. A teacher decides to make play money for his students to use. He wants every bill to be 1 inch wide and 3 inches long. What is the greatest number of bills he can get from a sheet of paper that is $8\frac{1}{2}$ inches wide and 11 inches long. (He will not make any bills by taping pieces together.)

- a. 31 bills
- b. 30 bills
- c. 29 bills
- d. 28 bills
- e. 27 bills

22. The area of the base of a box that is a right rectangular prism is 384 square centimeters. The volume of the box is 5760 cubic centimeters. What is the height of the box?

- a. 22.11840 centimeters
- b. 15 centimeters
- c. There is not enough information given to determine the height of the box.
- d. 61.44 centimeters
- e. 53.76 centimeters

23. Five cities are marked on a map. The five cities lie along a straight highway in this order from west to east: Ayeville, Beetown, Cee City, Dee Station, and Eel Dorado. The map shows it is 320 miles from Ayeville to Eel Dorado. Dee Station is halfway between Eel Dorado and Cee City. The distance from Ayeville to Beetown is half the distance from Ayeville to Eel Dorado. The distance from Beetown to Cee City is half the distance from Cee City to Dee Station. How far is it from Beetown to Dee Station?

- a. 96 miles
- b. 128 miles
- c. 64 miles
- d. 80 miles
- e. 160 miles

24. Sal has a recipe for trail mix that calls for 2 cups of oats, $1\frac{1}{2}$ cups of coconut, $\frac{3}{4}$ cup of raisins, and $\frac{1}{4}$ cup of chopped nuts. Sal wants to use all of the $2\frac{1}{2}$ cups of coconut in the package. But Sal wants the mix to be in the same proportions as in the recipe. How many cups of raisins will Sal need?

- a. $1\frac{3}{4}$ cups of raisins
- b. $1\frac{2}{3}$ cups of raisins
- c. $1\frac{1}{2}$ cups of raisins
- d. $1\frac{1}{4}$ cups of raisins
- e. $1\frac{1}{3}$ cups of raisins

25. In which data set is the median different from the mean?

- a. 3, 4, 5, 6, 7, 8
- b. 3, 3, 4, 4, 5, 5
- c. It is impossible for the mean and the median to be different.
- d. 2, 3, 4, 4, 5, 6
- e. 3, 4, 4, 4, 5, 6

26. The base of a pyramid has 8 sides. Which statement is true?

- a. The pyramid has 9 vertices, 16 edges, and 9 faces.
- b. The pyramid has 9 vertices, 9 edges, and 9 faces.
- c. The pyramid has 9 vertices, 9 edges, and 16 faces.
- d. The pyramid has 16 vertices, 16 edges, and 16 faces.
- e. The pyramid has 8 vertices, 8 edges, and 8 faces.

27. A six-sided cube has one number written on each side. Some of the sides have the same number written on them. The tally shows the number of times each number was on top when the cube was tossed 125 times. Based on these results, what is the most likely way the die was labeled?

Number on Top Side	Count
4	
7	
9	

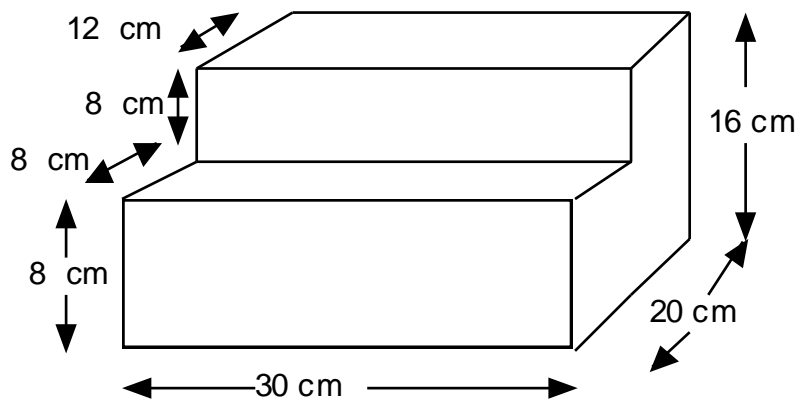
- a. One side had a 4, two sides had a 7, and 3 sides had a 9.
 b. Two sides had a 4, two sides had a 7, and 2 sides had a 9.
 c. One side had a 9, two sides had a 4, and 3 sides had a 7.
 d. One side had a 7, two sides had a 9, and 3 sides had a 4.
 e. One side had a 7, two sides had a 4, and 3 sides had a 9.
28. Three buttons that are the same size and shape are placed in a bag, two are red and one is green. Two people, a Picker and a Recorder, play a game. The Picker, without looking, draws two buttons out of the bag at the same time. If they are the same color, the Picker wins. If they are not the same color, the Recorder wins. What is the probability that the Picker will win?

- a. The probability the Picker will win is $\frac{1}{2}$.
 b. The probability the Picker will win is $\frac{2}{3}$.
 c. The probability the Picker will win is $\frac{1}{3}$.
 d. The probability the Picker will win is $\frac{1}{6}$.
 e. The probability the Picker will win is 0.

29. Larry bought 2 Biggie Burgers, 1 Lemon Squirt, and 1 Sweet Pie. Before tax, Larry's total was \$7.56. Liz got 1 Biggie Burger and 1 Lemon Squirt. Liz's total, before tax, was \$3.98. Lynn bought 2 Sweet Pies and paid \$1.98 before taxes. How much does a Biggie Burger cost?

- a. A Biggie Burger costs \$1.60.
- b. A Biggie Burger costs \$1.89.
- c. A Biggie Burger costs \$1.99
- d. A Biggie Burger costs \$2.49
- e. A Biggie Burger costs \$2.59

30. The solid figure shown here is built from cubes that are 1 centimeter on each side. If there are no "holes" that cannot be seen from the picture, how many cubes would it take to build the figure?



- a. 102 cubic centimeters
- b. 132 cubic centimeters
- c. 9,600 cubic centimeters
- d. 7,680 cubic centimeters
- e. 76,800 cubic centimeters