1. These are the heights of the five starting players of the girls' basketball team:
    5' 11", 4' 11", 5' 6", 5' 7", and 5' 7". What is the mean (average) height of those five players?
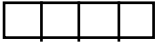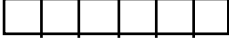
     a. 5.244 feet
     b. 5 feet 5 inches
     c. 5 feet 5.5 inches
     d. 5 feet 6 inches
     e. 67 inches

2. On a triangle, Side B is twice as long as Side A. Side C is 1 centimeter shorter than Side B.
    The perimeter of the triangle is 11.5 centimeters. How long is Side B?

     a. 2 cm
     b. 2.5 cm
     c. 4.2 cm
     d. 5 cm
     e. 6 cm

3. Which of the letters listed below is symmetric with respect to a vertical line, but is not
    symmetric with respect to a horizontal line?

 $$C \quad B \quad S \quad H \quad M$$

     a. C
     b. B
     c. S
     d. H
     e. M

4. Calculate $\dfrac{96}{16} - \dfrac{308}{28}$.

     a. $-13\dfrac{1}{4}$
     b. $\dfrac{7616}{448}$
     c. $-\dfrac{212}{112}$
     d. -66
     e. -5

5. The figure shown below represents $1\frac{1}{4}$. Which figure represents $\frac{1}{3}$ of 1 (not $\frac{1}{3}$ of $1\frac{1}{4}$)?
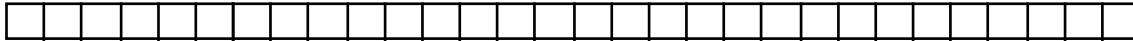
    a.

    b.

    c.

    d.

    e.

6. What is the closest estimate of weight of a mathematics textbook that has about 300 pages?

    a. 100 milligrams
    b. 10 grams
    c. 100 grams
    d. 1 kilogram
    e. 10 kilograms

7. Which of the following is impossible?

    a. A rectangle with area 25 square meters and perimeter 29 meters
    b. A rectangle with area 25 square meters and perimeter 20 meters
    c. A rectangle with area 16 square meters and perimeter 16 meters
    d. A rectangle with area 16 square meters and perimeter 20 meters
    e. A rectangle with area 9 square meters and perimeter 9 meters

8. Which statement is ALWAYS true?

    a. The diagonals of a parallelogram are perpendicular.
    b. The diagonals of a parallelogram bisect each other.
    c. The diagonals of a parallelogram are congruent.
    d.   Adjacent sides of a parallelogram are congruent.
    e. Adjacent angles of a parallelogram are congruent.

9. What point on the y-axis of a coordinate plane is the same distance from (-2, 0) and (4, 6)?
    (Assume that the distance from the origin to (1, 0) is the same as the distance from the origin
    to (0, 1).)

    a. (2, 0)
    b. (4, 0)
    c. (0, 4)
    d. (0, 5)
    e. (0, 2)

10. A salesman gets $5.00 for every coat he sells, $2.00 for every pair of pants he sells, and $0.50 for every shirt he sells. At the end of Friday, the salesman noticed that he had earned an odd number of dollars and no cents for what he sold that day. If he sold at least one of each type of item, what is the least amount he could have earned?

    a. $5.00
    b. $7.00
    c. $9.00
    d. $11.00
    e. $13.00

11. What is the greatest number of candies costing $0.64 each that can be bought with $20 and how much money will be left over? (Assume there is no sales tax.)

    a. 31 candies with 0.16¢ change.
    b. 31 candies with $0.16 change.
    c. 31 candies with .25¢ change.
    d. 31 candies with 25¢ change.
    e. 30 candies with 8¢ change.

12. When the triangle ABC is rotated 90 degrees counterclockwise about point A, what are the coordinates of the point that is the new location of point C?
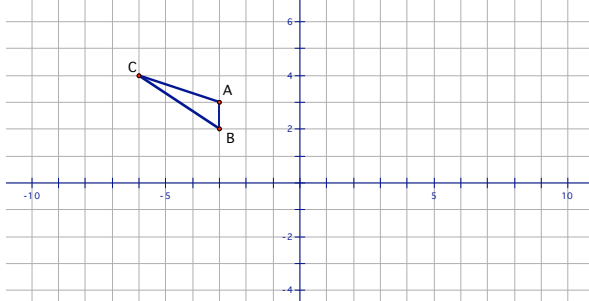
    a. (-5, -1)
    b. (2, 5)
    c. (-5, -2)
    d. (-4, 0)
    e. (-2, 6)

13. You need to make paper squares that are one centimeter on each side for a game. Without putting parts of centimeter squares together to form an entire centimeter square, what is the maximum number of COMPLETE centimeter squares that can be cut from a 8.5 inch by 11 inch piece of paper? (Note that 1 inch = 2.54 centimeter.)

    a. 237
    b. 567
    c. 584
    d. 596
    e. 616

14. The surface area of a right rectangular prism (a box) is 202 square decimeters. The area of the base is 56 square decimeters. The perimeter of the base is 30 decimeters. How tall is the box?

    a. 3 decimeters
    b. 21 decimeters
    c. 30 decimeters
    d. 8 decimeters
    e. 7 decimeters

15. Which of the following nets can be folded to make a cube?

    a.

    b.

    c.

    d.

    e.
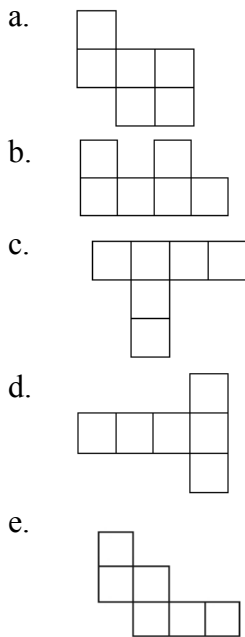
16. In these equations, each letter stands for a **digit** (0, 1, 2, 3, 4, 5, 6, 7, 8, or 9). For example if A stands for 3 and B stands for 2, AB would represent thirty two, NOT 3 x 2. Different letters stand for different digits. (A and B cannot both stand for the same digit.) Each letter stands for the same digit in both equations (If E stands for 6 in the first equation, it stands for 6 in the second equation.) The × in each equation is a multiplication sign, not a letter.

    $$C \times E = C \qquad E \times (D + D) = DC$$

    Which statement must be true if both equations are true?

    a. $C = 1$
    b. C must be even.
    c. $E = 0$
    d. D must be even.
    e. $E > 5$

17. Three positive integers whose sum is seven are written in order from least to greatest. What is the probability that the three numbers could be the lengths of three sides of a triangle? (Assume the same unit of length is used and that all possibilities are equally likely.)

    a. $\dfrac{1}{7}$

    b. $\dfrac{1}{4}$

    c. $\dfrac{1}{3}$

    d. $\dfrac{1}{2}$

    e. 1

18. What is the sum of the first 100 odd numbers?

    a. 5050
    b. 5500
    c. 5501
    d. 10,000
    e. 10,001

19. A crystal is shaped like a cube. Its volume is 2.197×10^{-27} cubic centimeters. What is the length of one side of the crystal?

    a. 1.3×10^{-9} cm
    b. 1.3×10^{-24} cm
    c. 7.32×10^{-10} cm
    d. 7.32×10^{-25} cm
    e. 10.604×10^{-9} cm

20. A circular spinner is split into 4 sectors. The arc angle of the blue sector is $x°$. The arc angle of the red sector is $2x°$. The arc angle of the green sector is $3x°$. The arc angle of the yellow sector is $90°$. What is the probability that the spinner will land on blue?

    a. $\dfrac{1}{4}$

    b. $\dfrac{1}{6}$

    c. $\dfrac{1}{7}$

    d. $\dfrac{1}{8}$

    e. $\dfrac{1}{9}$

21. Fifteen athletes are standing in order by height, from shortest to tallest. The mean of their heights is 78 inches. The mode and median are 80 inches. Which statement cannot be true?

    a. The tallest player is 83 inches tall.
    b. The eighth player in line is 80 inches tall.
    c. The shortest player is 80 inches tall.
    d. There are five players that are 80 inches tall.
    e. There is a player that is less than 78 inches tall.

22. The area of Circle A is 44% greater than the area of Circle B. The radius of Circle B is what percent of the radius of Circle A? (Round to the nearest tenth of a percent.)

    a. 120%
    b. 80%
    c. 54%
    d. 69.4%
    e. 83.3%

23. Lynn had 20 miniature cars and trucks in a collection. None of the cars was red. The cars made up 40% of the collection. After Lynn got several red cars, the collection was 75% cars. How many red cars did Lynn get?

    a. 7
    b. 15
    c. 20
    d. 28
    e. 36

24. The table below shows the prices for different sizes of pizzas.

Diameter	8 in.	10 in.	12 in.	16 in.
Cheese only	$3.75	$5.75	$6.75	$12.00
Additional price per topping	50¢	75¢	75¢	$1.25

A graph is made for each pizza size that has the number of additional toppings on the x-axis and the total cost on the y-axis. Which statement is true about the graphs?

    a. The graphs for the 8-inch pizza and the 10-inch pizza would have the same y-intercept.
    b. The graphs for the 10-inch pizza and the 12-inch pizza would have the same y-intercept.
    c. No two graphs would have the same slope.
    d. The graphs for the 10-inch pizza and the 12-inch pizza would have the same slope.
    e. The graph for the 8-inch pizza would be parallel to the graph of the 16-inch pizza.

25. Five buckets of golf balls contain a total of 100 balls. Bucket #2 has two more golf balls than #1. Bucket #3 has two more than #2. Bucket #4 has two more than #3. Bucket #5 has two more than #4. How many balls are in Bucket #4?

    a. 22
    b. 20
    c. 18
    d. 16
    e. 14

26. A cube that is 7 centimeters on each side is painted on all its faces. Then the cube is cut into 343 cubes that are 1 centimeter on each side. All the cubes are put into a bag and one is drawn at random. What is the probability that the small cube drawn has 3 painted faces? (Round to the nearest tenth of a percent.)

    a. 42.9%
    b. 14.3%
    c. 6.1%
    d. 0.9%
    e. 2.3%

27. If the net below were folded into a cube, which faces would share an edge with A?
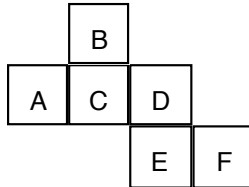
    a. B, C, D, F
    b. B, C, D, E
    c. B, C, E, F
    d. B, D, E, F
    e. C, D, E, F

28. Jan and Jen live 56 kilometers apart. They are both going to leave at 10:00 am riding bikes toward each other. Jan's average speed is 6 km per hour. Jen's average speed is 8 km per hour. If they take no breaks, what time will they meet?

    a. 2:00 pm
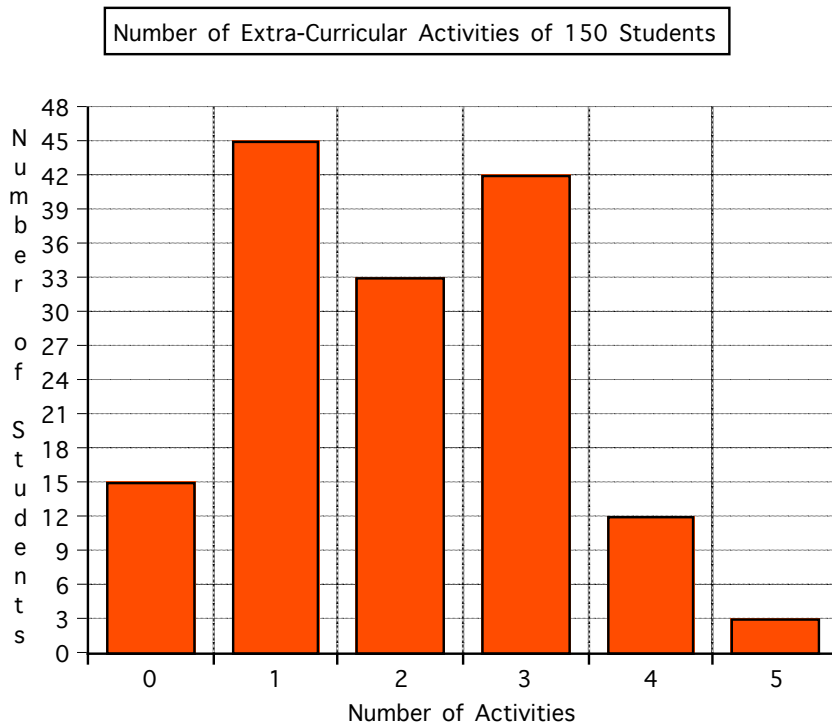   b. 3:30 pm
    c. 4:20 pm
    d. 5:05 pm
    e. 6:10 pm

29. The set of whole numbers is {0, 1, 2, 3, 4, 5, ...}. Let f be the function that assigns to each whole number its remainder when the whole number is divided by 4. For example, $f(15) = 3$ because 15 divided by 4 has a remainder of 3. Consider whether these three statements are true for all whole numbers x and y:

Statement A: $f(x) + f(y) = f(x + y)$
Statement B: $f(x) \cdot f(y) = f(xy)$
Statement C: $f(x + 4) = f(x)$

   a. Only Statement A is true for all whole numbers.
   b. Only Statement B is true for all whole numbers.
   c. Only Statement C is true for all whole numbers.
   d. None of the statements is true for all whole numbers.
   e. All of the statements are true for all whole numbers.

30. One hundred fifty middle school students were asked how many extra-curricular activities they participated in. (These are activities like piano lessons or playing Little League baseball.) The most that any student did was five. Some did none. Use the information in the chart to tell the average (mean) number of extra-curricular activities per student in this group.

Number of Extra-Curricular Activities of 150 Students

   a. 1
   b. 2
   c. 2.5
   d. 3
   e. 4