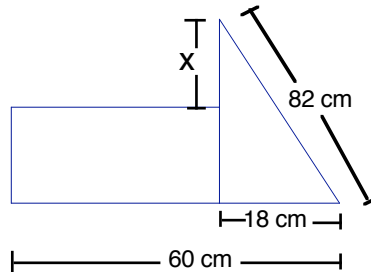1. A painter uses 5 gallons of paint to cover a wall 50 feet tall and 75 feet wide. How much paint will be needed to cover a wall 150 feet tall and 225 feet wide?

    a. 9 gallons
    b. 30 gallons
    c. 15 gallons
    d. 50 gallons
    e. 45 gallons

2. If the rectangle has area 2268 cm^2, find the value of x.

    a. 42.2 cm
    b. 80 cm
    c. 26 cm
    d. 28 cm
    e. 54 cm

3. A support wire is attached at a point one third of the way down from the top of a vertical pole. If the wire is 15 feet long and is attached to the level ground at a point that is 12 feet from the base of the pole, how tall is the pole (to the nearest tenth of a foot)?

    a. 9.0 feet
    b. 12.0 feet
    c. 13.5 feet
    d. 19.2 feet
    e. 27.0 feet

4. When the base ten number 99 is converted to base five, what is the digit in the units place?

    a. 9
    b. 4
    c. 3
    d. 2
    e. 1

5. Evaluate $\dfrac{4.8 + 6}{2.4 + 0.6}$.

    a. 2.1
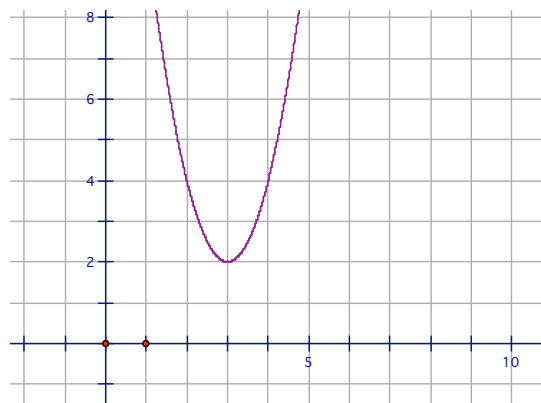   b. 12
    c. 7.9
    d. 5.1
    e. 3.6

6. Two people are to be selected from a group of 4 men and 2 women. What is the probability that the two women will be selected?

    a. $\dfrac{1}{16}$

    b. $\dfrac{1}{15}$

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

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

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

7. What is the coefficient of correlation for the data set below?

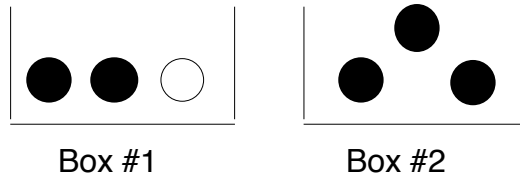| x	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5
y	3.83	3.67	3.51	3.35	3.19	3.03	2.87	2.71	2.55	2.39	2.23	2.07	1.91

    a. -1
    b. -.52
    c. 0
    d. +.52
    e. +1

8. The graph shown below represents which equation?

    a. $y = (x + 2)^2 + 3$
    b. $y = (x - 2)^2 - 3$
    c. $y = 2(x - 2)^2 + 3$
    d. $y = 2(x - 3)^2 + 2$
    e. $y = 2(x + 2)^2 + 3$

9. There are two boxes as shown. A ball is drawn at random from Box #1 and placed into Box #2. Then a ball is drawn at random from Box #2. Find the probability that the ball drawn from Box #2 is black.

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

  b. $\dfrac{2}{9}$

  c. $\dfrac{7}{12}$

  d. $\dfrac{2}{3}$

  e. $\dfrac{11}{12}$

Box #1   Box #2

10. Four friends always eat dinner together at the same restaurant on Friday evenings. The average (mean) price of their four dinners is $5.25. One Friday, a fifth person joined the group. The four regulars ordered their usual meals. That night the average (mean) meal price of the five dinners was $5.50. What was the cost of the new person's meal?

  a. $5.50
  b. $5.75
  c. $6.00
  d. $6.25
  e. $6.50

11. If the operation ø is defined by $c \oslash d = dc^2$ where d and c are natural numbers, which of the following is true?

  a. ø is commutative and associative.
  b. ø is commutative but not associative.
  c. ø is not commutative but is associative.
  d. ø is not commutative and not associative.
  e. ø the multiplicative identity for the operation ø is 1.

12. Which of the following terms is equal to $\sqrt{\sqrt{\sqrt{2}}}$?

  a. $2^{\frac{3}{2}}$

  b. $2^{\frac{1}{8}}$

  c. $2^{\frac{1}{3}}$

  d. $2^{\frac{2}{3}}$

  e. $2^{\frac{3}{8}}$

13. The figure shown here represents $\dfrac{3}{2}$. Which of the choices would represent 2? (This means two 1's, not two $\dfrac{3}{2}$'s.)

a.

b.

c.

d.

e.

14. A recipe for brownies requires $2\dfrac{2}{3}$ cups of flour. There are 45 cups of flour in the bag. After as many whole recipes of brownies as possible have been made for the Spring Fling, how many cups of flour will be left over?
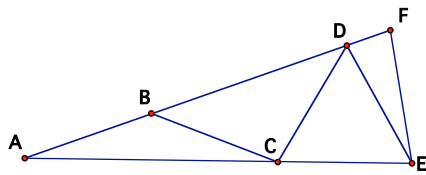
   a. $\dfrac{2}{3}$ cup

   b. $\dfrac{7}{8}$ cup

   c.   1 cup

   d.   2 cups

   e. $2\dfrac{1}{3}$ cups

15. In the following number written in scientific notation, what is the actual value of the "9"?
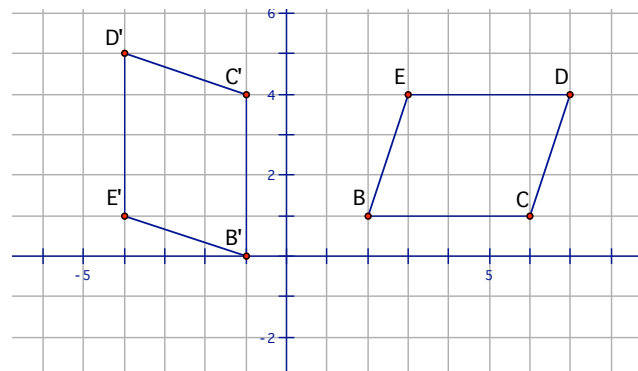
$$2.71972164 \times 10^{-11}$$

   a. 9×10^{-14}

   b. 9×10^{-8}

   c. 9×10^{-3}

   d. 9×10^{3}

   e. 9×10^{-11}

16. Triangle ABC is similar to triangle DEF. AB = 8 cm, BC = 12 cm, CA = 16 cm, DE = 12 cm, EF = 18 cm, FD = 24 cm. If the measure of angle B is 104˚, what is the measure of angle E?

   a.   52˚

   b.   156˚

   c.   90˚

   d.   104˚

   e.   124˚

17. In the triangle shown here, AB=BC=CD=DE=EF and AE=AF. If the measure of ∠BAC is 20°, what is the measure of ∠DEF?

    a. 30°
    b. 20°
    c. 60°
    d. 45°
    e. 70°

18. On the graph shown, parallelogram BCDE has been rotated 90° counterclockwise to produce its image, parallelogram B'C'D'E'. What point is the center of the rotation?
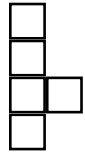
    a. (0, 0)
    b. (1, 0)
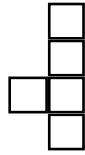   c. (-1, 0)
    d. (0, -1)
    e. (1, -1)

19. Tom borrowed $1,350 from the bank at a rate of 9% per year simple interest. Tom repaid the loan entire loan 8 months after he borrowed it. How much interest did Tom have to pay? (Round to the nearest penny.)

    a. $81.00
    b. $972.00
    c. $810.00
    d. $121.50
    e. $15.19

20. If $x + y = 27$ and $x^2 + y^2 = 365$, what is the value of $x \cdot y$?

    a. 126
    b. 182
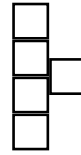   c. 338
    d. 364
    e. 252

21. A pentomino is formed by joining 5 squares so that any two that touch share a whole side.

 is a pentomino.   is the same pentomino.   is NOT a pentomino.

How many different pentominoes are there?

   a. 5
   b. 6
   c. 8
   d. 10
   e. 12

22. Our number system has a base of ten. For what base would $24 + 24 = 52$ be true?

   a. base six
   b. base seven
   c. base eight
   d. base nine
   e. base eleven

23. Which of the following figures is IMPOSSIBLE?

   a. A parallelogram in which any two adjacent angles have a sum of 180°
   b. A rhombus that is a rectangle
   c. A scalene right triangle
   d. A trapezoid with two congruent sides
   e. An obtuse right triangle

24. Which of the following letters of the alphabet has exactly two lines of symmetry?

   a. I
   b. C
   c. N
   d. A
   e. D

25. The length of this sheet of paper from top to bottom is approximately how may decimeters?

   a. 300 dm
   b. 30 dm
   c. 3 dm
   d. 0.3 dm
   e. 0.03 dm

26. In Tennessee, the combined state and federal tax rate on gasoline is 39.8%. If you pay
    $23.35 for a tank of gasoline, how much of that amount is tax? (Round to the nearest penny.)

    a. $6.65
    b. $14.06
    c. $16.70
    d. $0.93
    e. $9.29

27. A large cube is made up of identical unit cubes. For example, 27 unit cubes could be
    assembled into a 3x3x3 cube. After the unit cubes are glued together to form the large cube,
    it is dipped in paint. The table below shows the number of unit cubes that would have 1
    painted face for several different size large cubes.

Size of the large cube	3x3x3	4x4x4	5x5x5	6x6x6
Number of unit cubes with 1 painted face	6	24	54	96

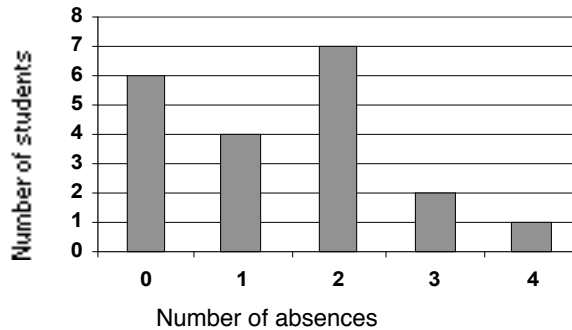   How many of the unit cubes that make up a 12 x 12 x 12 large cube would have 1 painted
    face after the large cube was dipped in paint?

    a. 576
    b. 600
    c. 144
    d. 192
    e. 216

28. There are 150 rectangular tiles that are 2 inches by 3 inches. They are all used to cover a
    square region with no gaps or overlaps between the tiles. No tiles are cut or broken in the
    process. What is the perimeter of the square that is covered?

    a. It is impossible to cover a square with these tiles.
    b. The perimeter is 600 inches.
    c. The perimeter is 200 inches.
    d. The perimeter is 300 inches.
    e. The perimeter is 120 inches.

29. Use the information in the chart below to determine the average (mean) number of absences per student. (Round to the nearest tenth.)

Number of absences

  a. 1.4 absences per student
  b. 1 absence per student
  c. 2.1 absences per student
  d. 4.8 absences per student
  e. 6 absences per student

30. A troll went to work in the mine. Because, the troll is very greedy, he demanded that he be paid $100 for his first day on the job and that he get a $50 raise every day starting his second day. (On day 2, he would get $150; $200 on day 3, and so on.) What is the TOTAL amount of all his paychecks at the end of his 20th day of work?

  a. $11,500
  b. $21,000
  c. $2,950
  d. $3,000
  e. $2,500