Bubble in the single best choice for each question you choose to answer.

1. $4^3 \times 4^3 =$
   (A) 16^9
   (B) 16^6
   (C) 4^9
   (D) 4^6
   (E) 8^6

2. $0.1\% = 1\% -$ _____
   (A) 0.009%
   (B) 0.09%
   (C) 0.9%
   (D) 10%
   (E) 99%

3. Of 2009 integers whose product is even, at most _____ can be odd.
   (A) 2009
   (B) 2008
   (C) 2007
   (D) 1
   (E) 0

4. If x is a natural number, what is the largest possible perimeter of a triangle with side lengths 3, 4, and x?
   (A) 11
   (B) 12
   (C) 13
   (D) 14
   (E) 15

5. I phoned my mom to help me answer this, the final question on a quiz show: *"How many integers equal their own squares?"* Mom said, "_____." She was right!
   (A) zero
   (B) one
   (C) two
   (D) three
   (E) four

6. What is the reciprocal of $(\frac{1}{2} \times 4)$?
   (A) $2 \times \frac{1}{4}$
   (B) $\frac{1}{2} \times 4$
   (C) $\frac{1}{2} \times \frac{1}{4}$
   (D) 2×4
   (E) $2 \times \frac{1}{2}$

7. If the probability of making a three-point shot in basketball is 0.2, what is the probability of missing a three-point shot?
   (A) 0.2
   (B) 0.3
   (C) 0.4
   (D) 0.6
   (E) 0.8

8. Which statement about quadrilaterals is NOT correct?
   (A) All rhombuses are parallelograms.
   (B) All trapezoids are parallelograms.
   (C) All squares are rhombuses.
   (D) All squares are rectangles.
   (E) All rectangles are parallelograms.

9. A *perfect number* is a positive integer which is the sum of its proper positive divisors (that is, excluding the number itself). For example, 28 is a perfect number because $1 + 2 + 4 + 7 + 14 = 28$.
   What is the smallest perfect number?

   (A) 2

   (B) 4

   (C) 6

   (D) 12

   (E) 14

10. In a scalene triangle, how many angles have the same measure?

    (A) 0 (none)

    (B) 2

    (C) at least 2

    (D) 3 (all)

    (E) any number

11. The price of an item in a store is marked up 60% and then marked down 25%. Which of the following best represents the change from original to final price?

    (A) increase by 35%

    (B) increase by 45%

    (C) increase by 15%

    (D) increase by 20%

   (E) Depends on the original price

12. Of the properties commutative, associative, and identity, which hold for the operator $\otimes$ given in the table?

$\otimes$	a	b	c
a	a	b	c
b	b	a	b
c	c	b	a

    (A) commutative and identity only

    (B) commutative and associative only

    (C) identity and associative only

    (D) commutative only

    (E) all three

13. Determine the length of arc AC if $AB = 6$ and O is the center of the circle.

    (A) π

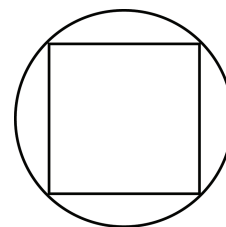   (B) 2π

    (C) 3π

    (D) 4π

    (E) 6π
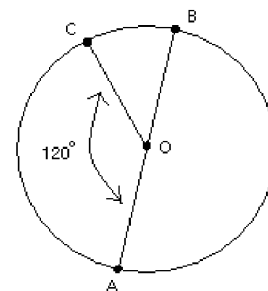
14. Find the median for the set of values.
    $$3, 13, 4, 1, 4, 6, 7, 1, 5, 1$$

    (A) 1

    (B) 3

    (C) 4

    (D) 4.5

    (E) 5

15. A square is inscribed inside a circle. The area of the square is what percent of the area of the circle (to the nearest percent)?

    (A) 31%

    (B) 50%

    (C) 64%

    (D) 76%

    (E) 89%

16. If a steel ball one inch in diameter weighs one pound, how much will a steel ball two inches in diameter weigh?

   (A) 2 lbs
   (B) 3 lbs
   (C) 4 lbs
   (D) 5 lbs
   (E) 8 lbs

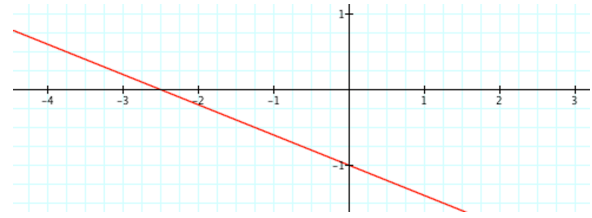17. Pascal's triangle has 1s at each end of each row and the other numbers being the sum of the two immediately diagonally above it.

```
              1                  row 0
           1     1               row 1
        1     2     1            row 2
     1     3     3     1         row 3
  1     4     6     4     1      row 4
                 ⋮
```

   What is the sum of the numbers in row 7?

   (A) 64
   (B) 65
   (C) 66
   (D) 67
   (E) 128

18. Which equation best represents the graph?

   (A) $y = -\frac{2}{5}x - 1$
   (B) $y = \frac{2}{5}x - 1$
   (C) $y = \frac{5}{2}x - 1$
   (D) $y = -\frac{5}{2}x - 1$
   (E) $y = \frac{5}{2}x + 1$

19. Solve the inequality.

$$1 < \frac{1}{3 - 2x} < 3$$

   (A) $-\frac{3}{4} < x < -\frac{3}{16}$
   (B) $\frac{3}{4} < x < 3$
   (C) $-\frac{16}{3} < x < -\frac{4}{3}$
   (D) $1 < x < \frac{4}{3}$
   (E) $-\frac{4}{3} < x < 1$

20. A distance runner can run 6 mph downhill, but his speed is cut to 2 mph when he runs uphill. If he runs 6 miles downhill and 6 miles uphill, what is his average speed?

   (A) 2 mph
   (B) 3 mph
   (C) 4 mph
   (D) 5 mph
   (E) 6 mph