1. If half of x is three fourths of y, what is the ratio of x to y?

   (A) 2:3 (B) 3:4 (C) 4:3 (D) 3:2 (E) 2:1

2. In a piggy bank containing only nickels and quarters, there are thirty coins. The value of all the nickels in the piggy bank is equal to the value of the quarters in the piggy bank. What is the value of all 30 coins?

   (A) \$1.25 (B) \$2.00 (C) \$2.50 (D) \$3.00 (E) \$3.50

3. The remainder when x is divided by 7 is 3. The remainder when y is divided by 7 is 4. What is the remainder when xy is divided by 7?

   (A) 1 (B) 2 (C) 3 (D) 4 (E) 5

4. Patrick selects a single digit at random and uses it to fill in *both* blanks in the six-digit integer below. What is the probability that the number formed is divisible by 3?

   1_7,2_5

   (A) 1/10 (B) 1/5 (C) 3/10 (D) 2/5 (E) 1/2

5. The San Diego Zoo has seven elephants: six female elephants whose average weight is 6,250 pounds, and one male elephant who weighs 11,500 pounds. What is the average weight of all seven elephants?

   (A) 7,000 lbs (B) 7,250 lbs (C) 7,500 lbs (D) 8,000 lbs (E) 8,875 lbs

6. Leon runs one mile to school, stops to rest for 3 minutes, then runs along the same path back home. If his average speed for the round trip including the rest break was 8 miles per hour, what was his average running speed (excluding the break)?

   (A) 9 mph (B) $9\frac{1}{3}$ mph (C) $9\frac{1}{2}$ mph (D) 10 mph (E) $10\frac{2}{3}$ mph

7. In triangle ABC, AB=BC=6 cm. What is the greatest possible area of triangle ABC?

   (A) 9 cm^2 (B) $9\sqrt{3}$ cm^2 (C) 18 cm^2 (D) $18\sqrt{3}$ cm^2 (E) 36 cm^2

8. In an arithmetic sequence, the sum of the first three terms is 7, and the sum of the next three terms is 25. What is the first term in the sequence?

   (A) 0 (B) $\frac{1}{3}$ (C) $\frac{2}{3}$ (D) 2 (E) $2\frac{1}{3}$

9. You are filling a barrel with a garden hose that flows at a constant rate. After 10 minutes, you notice that the barrel is half full. Three minutes later, the barrel contains 52 gallons of water. How many more gallons of water need to be added to completely fill the barrel?

(A) 28 (B) 32 (C) 38 (D) 42 (E) 48

10. How many sums can be created using *two or more* numbers from the set of five integers below? For example: 3+6+12=21 and 24+48=72 are two such sums.

{3, 6, 12, 24, 48}

(A) 10 (B) 26 (C) 27 (D) 31 (E) 32

11. How many digits are in the decimal representation of $18^3 \cdot 55^3$?

(A) 8 (B) 9 (C) 10 (D) 11 (E) 12

12. In rectangle $ABCD$, $AB = 30$ cm and $AD = 40$ cm. Including the endpoints, for how many points on diagonal BD is the distance to vertex A a whole number of centimeters?

(A) 3 (B) 10 (C) 11 (D) 23 (E) 24

13. DeAnna is playing on the moving sidewalk at the airport. When she runs as fast as she can on the sidewalk in the same direction that the sidewalk is moving, it takes her just 10 seconds to run the full length of the sidewalk. When she runs the same speed in the opposite direction (against the direction of the moving sidewalk), it takes her 90 seconds to run the full length of the sidewalk. What is the ratio of DeAnna's running speed to the speed of the moving sidewalk?

(A) 10:9 (B) 9:8 (C) 7:6 (D) 5:4 (E) 4:3

14. Rectangular prisms have face diagonals and space diagonals. A face diagonal connects a pair of vertices on the prism that are on the same face, but not the same edge. A space diagonal connects a pair of vertices that do not share a face. The three distinct face diagonals for a particular rectangular prism measure $\sqrt{5}$, $\sqrt{6}$, and $\sqrt{7}$. What is the length of the space diagonal for this prism?

(A) $2\sqrt{2}$ (B) 3 (C) $2\sqrt{3}$ (D) $3\sqrt{2}$ (E) 4

15. The year 2011 has the property that the first digit is equal to the sum of the three remaining digits. How many four-digit calendar years after 2011 also have this property?

(A) 214 (B) 215 (C) 216 (D) 219 (E) 220

1. D
2. C
3. E
4. D
5. A
6. D
7. C
8. B
9. A
10. B
11. B
12. D
13. D
14. B
15. A