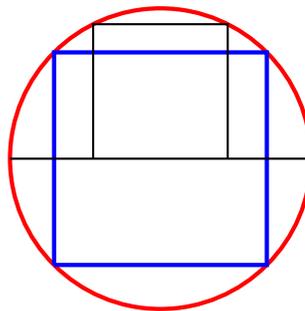


- The lengths of all three sides of a triangle have integer values and are all different. The area of this triangle is positive. The largest of the lengths equals 4. Find the smallest length of the sides of this triangle.
 (A) 1 (B) 2 (C) 3 (D) 4 (E) None of the above
- Let x and y be two positive integers such that $1 \leq x < y \leq 9$. Let a be the number with the decimal expansion xy and let b be the number with the decimal expansion yx . Assume that $a + b = 110$. For how many different x does such a y exist?
 (A) 1 (B) 2 (C) 3 (D) 4 (E) 0
- A child has 100 plastic figurines, some of which are 4-legged dinosaurs and some of which are 2-legged dinosaurs. If there is a total of 260 legs, how many 4-legged dinosaurs are in the collection?
 (A) 30 (B) 50 (C) 65 (D) 70 (E) 85
- Suppose that x satisfies the equation $\sin(x) = 1/\tan(x)$. Compute $\cos(x)$.
 (A) $\frac{-1 - \sqrt{5}}{2}$ (B) $\frac{\sqrt{3}}{2}$ (C) $\frac{\sqrt{5} - 1}{2}$ (D) $\frac{\sqrt{5}}{4}$ (E) 1
- Tom Sawyer and Huck Finn want to paint a fence. Tom can paint the fence by himself in 3 hours, and Huck can paint the fence by himself in 4 hours. At 12 : 00 noon they start painting the fence together. However, at some point they get into a fight. They fight for 10 minutes, during which time no painting gets done. After the fight, Huck leaves and Tom finishes painting alone. If Tom finishes painting at 2 : 25 pm, at what time did the fight begin?
 (A) 12 : 30 (B) 1 : 00 (C) 1 : 10 (D) 1 : 15 (E) 1 : 30
- The price of a diamond is proportional to the square of its mass, which is measured in carats. A six carat diamond was broken into two parts and the total price of the two pieces is $5/8$ of the price of the original diamond. What are the masses of the two pieces?
 (A) 3.5 and 2.5 (B) 5 and 1 (C) 4.5 and 1.5 (D) 4 and 2 (E) 3.6 and 2.4
- What is the ratio of the area of a square inscribed in a semicircle to the area of a square inscribed in the entire circle?



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

8. A box contains a collection of stamps worth 23 cents and stamps worth 25 cents. The total value of the 23-cent stamps equals the total value of the 25-cent stamps, and the total value of all the stamps in the collection is less than 35 dollars. What is the maximum possible number of stamps in the box?
- (A) 96 (B) 119 (C) 121 (D) 144 (E) 192
9. In the game of dominoes, each piece is marked with two numbers. The pieces are symmetrical so that the number pair is not ordered (so, for example, (2, 6) is the same as (6, 2)). How many different pieces can be formed using the numbers 1, 2, ..., 10?
- (A) 45 (B) 50 (C) 55 (D) 60 (E) 65
10. A three-digit number is drawn at random. What is the probability that the sum of its digits is less than or equal to 3?
- (A) $\frac{1}{100}$ (B) $\frac{1}{300}$ (C) $\frac{1}{90}$ (D) $\frac{2}{225}$ (E) $\frac{11}{900}$
11. The lengths of the sides of a triangle are 9, 12 and 15 centimeters. What is the radius of the circumscribed circle in centimeters?
- (A) 6 (B) 7 (C) 7.5 (D) 8.5 (E) 9
12. Consider the parabola whose equation is $y = x^2/4$. On this curve, there are two nearest points to the point (0, 5). What is the sum of the y-coordinates of these two points?
- (A) 5 (B) 6 (C) 7 (D) 8 (E) 9
13. An arithmetic sequence (a_n) satisfies $a_5 + a_6 + a_7 = 72$ and $a_{10} + a_{11} + a_{12} = 87$. Find the value of a_1 .
- (A) 15 (B) 16 (C) 17 (D) 18 (E) 19
14. Which of the triangles whose side lengths are listed below has the largest area?
- (A) 6, 8, 9 (B) 6, 8, 10 (C) 6, 8, 11 (D) 6, 8, 12 (E) 6, 8, 13
15. Find the value of $\frac{\cos 1^\circ + \cos 2^\circ + \dots + \cos 89^\circ}{\cos 91^\circ + \cos 92^\circ + \dots + \cos 179^\circ}$.
- (A) -1 (B) 0 (C) 1 (D) $\frac{\sqrt{2}}{2}$ (E) $-\frac{\sqrt{2}}{2}$
16. Real estate ads suggest that 53% of homes for sale have garages, 25% have swimming pools, and 4% have both features. Let a denote the percentage that have a garage or swimming pool or both, b denotes the percentage that have a garage but not a pool, and c denotes the percentage that have a pool but not a garage. Find $b + c - a$.
- (A) -4% (B) 0% (C) 4% (D) 8% (E) None is correct

17. An integer has property Z if its digits are strictly increasing. Let N be the number of 3-digit integers from 100 to 999 that have property Z. What is the remainder of the division of N by 5?

- (A) 0 (B) 1 (C) 2 (D) 3 (E) 4

18. A two-digit integer n has property X if this integer plus the integer obtained by reversing the order of its digits is a complete square. Let K be the number of two-digit integers with property X. What is the remainder of the division of K by 5?

- (A) 0 (B) 1 (C) 2 (D) 3 (E) 4

19. Every evening Mr. A has a dinner with five people: Ms. B and Ms. C are young ladies, Mrs. D and Mrs. E are their mothers, and Mrs. F is Ms. B's aunt. The 6 people are seated at random at a round table. What is the probability that on a given evening at least one of Mr. A's neighbors is a young lady?

- (A) 0.5 (B) 0.55 (C) 0.6 (D) 0.65 (E) 0.7

20. Three red and five blue balls are arranged in a row at random. What is the probability that the last two balls are blue?

- (A) $\frac{5}{8}$ (B) $\frac{5}{14}$ (C) $\frac{1}{4}$ (D) $\frac{2}{5}$ (E) $\frac{1}{3}$