Mathlete Training Centre
WMI 2022 GRADE 5B

1. $(2.6 \times 4.8 \times 5.5 \times 6.3) \div (1 \times 3 \times 5 \times 7 \times 0.9 \times 1.1 \times 1.3) = ?$

   (A) 3.2 **(B)** 3.6 **(C)** 4.2 **(D)** 4.6

2. Among the fractions below, how many of them are improper fractions?

$$\frac{0}{20}, \frac{2}{25}, \frac{5}{30}, \frac{9}{35}, \frac{14}{40}, \cdots, \frac{n}{100}$$

   (A) 8 **(B)** 6 **(C)** 5 **(D)** 4

3. Pick 1-5 number(s) from 1, 3, 5, 7 and 9 to from distinct numbers. How many of them are the multiples of 9?

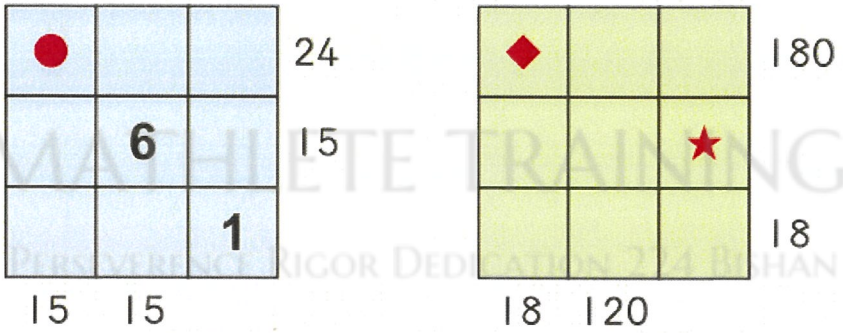
   (A) 24 **(B)** 25 **(C)** 30 **(D)** 31

4. Find the sum of the digits of the product.

   $\underbrace{111\ldots1}_{2022\text{'s}} \times \underbrace{999\ldots9}_{2022\text{'s}}$

   (A) 18199 **(B)** 18198 **(C)** 18206 **(D)** 18207

5. Write numbers 1-9 in each □ without repetition. Some numbers are written. The numbers which are marked outside the left picture are the sums of the numbers in a row or a column. The numbers which are marked outside the right picture are the products of the numbers in a row or a column. Find ●+◆+★.



(A) 24 **(B)** 23 **(C)** 21 **(D)** 20

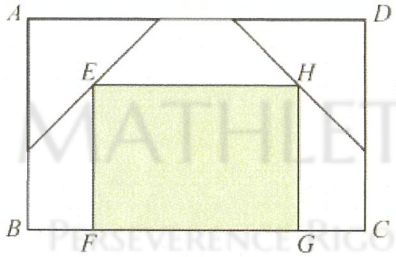
6. How many 3-digit numbers have exactly two digits that are the same?

(A) 270 **(B)** 252 **(C)** 243 **(D)** 234

7. In an arithmetic sequence, the difference between two adjacent numbers is equal. For example, 1, 4, 7 and 10. If these four integers A, B, C and D make an arithmetic sequence in ascending order, and the sums of their digits make an arithmetic sequence in descending order, find the minimum value of A + B + C + D.

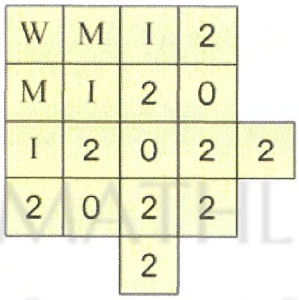
   (A) 68 **(B)** 72 **(C)** 84 **(D)** 108

8. As shown below. A rectangle $ABCD$ of area 2022 is divided into a rectangle $EFGH$, two isoceles right triangles, and three trapezoids. Given that besides the shaded rectangle $EFGH$, the other five shapes have the same area, and E and H are the midpoints on the hypotenuses of the two isoceles right triangles. Find the approximate area of the rectangle $EFGH$.



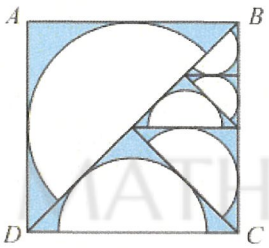
   (A) 886 **(B)** 872 **(C)** 867 **(D)** 856

9. Start from the 'W' in the upper left corner, a mouse follows the route of "WMI 2022" from one square to the next square with a common side. How many different routes are there to walk these 7 squares?



(A) 36 **(B)** 40 **(C)** 46 **(D)** 48

10. In the picture, 6 semicircles are cut from the square $ABCD$ whose side legth is 4. If the area of the shaded region is in the form of $a - b\pi$ (both a and b are integers), find $a + b$.



(A) 28 **(B)** 24 **(C)** 22 **(D)** 20