

Mathlete Training Centre  
WMI 2022 GRADE 7A

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1.  $\frac{2^{2020} + 2^{2021} + 2^{2022}}{7} = ?$

- (A)  $2^{2019}$    (B)  $2^{2020}$    (C)  $2^{2021}$    (D)  $2^{2022}$

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2.  $93 + (-46) + (-31) + |(-11) + (-29)| = ?$

- (A) 210   (B) 130   (C) 66   (D) 56

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3. 2022 has three distinct prime factors. Find the sum of these three prime factors.  
(A) 267    (B) 342    (C) 403    (D) 417

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4. Given that the equation regarding  $x$  is a linear equation  $x^{n+3} - (2n - 3) = -6n$ . Find the solution of this equation.  
(A)  $-5$     (B)  $5$     (C)  $11$     (D)  $13$

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5. Arrange 11 positive numbers in ascending order. If the median is 6, the mode is 10, and the arithmetic mean is  $b$ , find  $b$ .

1 1 3 4  $a$   $a$   $b$   $c$   $c$   $c$  19

- (A) 9 (B) 8 (C) 7 (D) 6.5

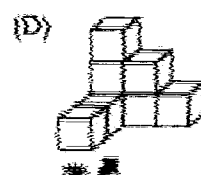
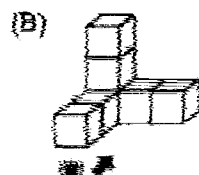
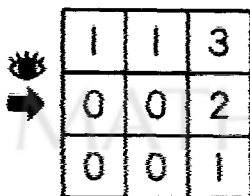
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6. The picture shows the solid which is seen from above. The number in each square represents the height of the cubes. What does this solid look like?



7. Given that both  $x$  and  $y$  are positive integers, and  $x > y$ . If  $x \times y = 90$ , and  $5 < x - y < 15$ , how many possible values are there for  $x + y$ ?
- (A) 1    (B) 2    (C) 3    (D) 4

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8. In a trapezoid, the upper base is  $(x + 3)cm$ , the lower base is  $(3x - 5)cm$ , the height is  $8cm$ , and the area is not larger than  $56cm^2$ . If the minimum value and the maximum value of integer  $x$  are  $a$  and  $b$  respectively, find  $a + b$ .
- (A) 5    (B) 6    (C) 7    (D) 8

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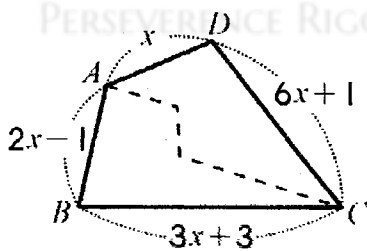
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9. Given three points  $A(1, 5)$ ,  $B(-2, -2)$ , and  $C(4, -1)$  on the coordinate plane. Find the area of  $\triangle ABC$
- (A) 20.5    (B) 20    (C) 19.5    (D) 18.5

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10. As shown in the picture, a quadrilateral  $ABCD$  is cut along the dotted line into two parts. Find the difference between the perimeters of these two parts.



- (A)  $2x + 3$     (B)  $2x - 3$     (C)  $2x + 1$     (D)  $2x - 1$

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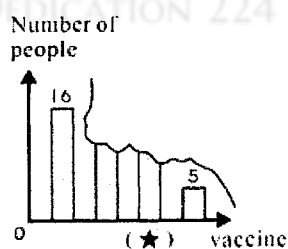
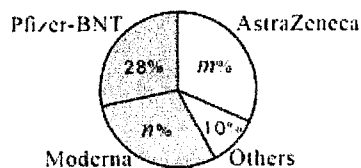
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11. Given that  $3x - 2y + 7 = 5x + 2y + 1 = x + 4y - 7$  Find  $x^y$ .  
 (A) 1    (B) 2    (C) 4    (D) 8

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12. Jason checks the Covid-19 employee vaccination status in the office and draws a pie chart ( $m > n$ ) and a column chart (the columns are arranged in descending order). If a part of the column chart is torn off accidentally, what is (★)?



- (A) *Astrazeneca*    (B) *Pfizer – BNT*    (C) *Moderna*    (D) *Others*

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13.  $\frac{x - \frac{x-4}{3}}{5} = \frac{x}{4}, x = ?$

- (A)  $-\frac{5}{6}$     (B)  $-\frac{7}{6}$     (C)  $-\frac{6}{7}$     (D)  $-\frac{8}{7}$

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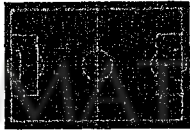
14. As shown below, *Hally* the magician draws a magic square from the origin  $O$ . He draws eastward for 1 unit, northward for 2 units, westward for 3 units, southward for 4 units, eastward for 5 units, and continues to draw according to this pattern. As he finishes the 11th times, it will stop at  $(a, b)$ . Find  $|a + b|$ .



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- (A) 0    (B) 1    (C) 3    (D) 4

15. The football league consists of 60 games. Team Paris has three players Messi, Neymar and Mbappe. Messi rests for 1 game after every 3 games, Neymar rests for game after every 4 games, Mbappe rests for 1 game after every 5 games. Suppose on average, Messi scores 3 goals in every 5 games, Neymar scores 2 goals in every 3 games, and Mbappe scores 1 goal in every 2 games. After 60 games are over, what is the difference between the most and the fewest number of goals among these 3 players?



(A) 2 (B) 5 (C) 7 (D) 9

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