Mathlete Training Centre WMI 2022 GRADE 10B

- 1. If x, y and z are positive integers, and (x-1)(y+2)(z-3)=2022, how many groups of results (x, y, z) satisfy the conditions above?
 - (A) 17 (B) 16

- (C) 15 (D) 14

LETE TRAINING CEN

- 2. Delete one number from n consecutive positive integers, and the sum of cubes of the remaining n-1 numbers is 7769. Which number is deleted?
 - (A) 4
- **(B)** 6
- (C) 8
- (D) 9

MATHLETE TRAINING CEN

- 3. $(log_34 + log_29)^2 (log_34 log_29)^2 = ?$
 - (A) 16
- **(B)** 9
- (C) 18
- **(D)** 8

MATHLETE TRAINING CENTRE

- 4. Given that $mx^2 2(m-3)x + m 2 = 0$ is an equation of x, and it has at least one integer root. Find the sum of all the negative integers m's.

- (A) -8 (B) -10 (C) -14 (D) -16

MATHLETE TRAINING CEN

Page: 2 of 5

5.
$$i = \sqrt{-1}, \sum_{k=1}^{2022} (k \bullet i^k) = a + bi, a + b = ?$$

(A) -2 (B) -1 (C) 1

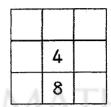
(B)
$$-1$$

MATHLETE TRAINING CENTRE

- 6. Company W is hiring, and Alvin, Bryan, Chris, Daisy and Emma attend the interview with their resume. When it comes to educational background, 2 of them have a master degree while 3 of them have a doctor's degree. When it comes to age, 2 of them are above age 30 while 3 of them are below age 30. Given that Alvin and Chris are in the same age interval while Bryan and Emma are in different age intervals; Daisy and Emma are at the same degree level while Bryan and Chris are at different degree levels. If a 36-year-old applicant with a master degree is hired in the end, who will he/she be?
 - (A) Bryan
- (B) Chris
- (C) Daisy
- (D) Emma

MATHLETE TRAINING CEN

7. As shown below, write nine numbers 1-9 in the nine squares (numbers 4 and 8 are written). If the numbers on each row are written in ascending order from left to right, and the numbers on each column are written in ascending order from top to bottom, how many ways are there to write the numbers?



(D) 6 (A) 16 (C) 12 **(B)** 15

8. Suppose each term in the arithmetic sequence $\{a_n\}$ is not 0, and it satisfies $a_4 - 3a_7^2 + 3a_8 =$ 0. If $\{b_n\}$ is a geometric sequence, and $b_7=a_7$, find b_3b_{11} .

(A) $\frac{16}{9}$ (B) $\frac{9}{4}$ (C) $\frac{4}{3}$ (D) $\frac{3}{2}$

Page: 4 of 5

- 9. Set infinite sequences $\{a_n\}$, $\{b_n\}$ and $\{c_n\}$ satisfy $n \in N$, and $a_{n+1} = |b_n| |c_n|$, $b_{n+1} = |c_n| |a_n|$, $c_{n+1} = |a_n| |b_n|$, $d_n = \max\{a_n, b_n, c_n\}$. If $a_1 = 1, b_2 = 2, c_3 = 3$, find $d_2 + d_3 + d_4$.
 - (A) 7
- **(B)** 8
- **(C)** 9
- (D) 11

MATHLETE TRAINING CENTRE

Perseverence Rigor Dedication 224 Bishan Street 23 B1-131

10. As in the picture, fill 0-9 in the number sentences below. Each \Box contains only a 1-digit number.

As 2-digit number should be filled in a linked or Find A + B + C + D + E + F.

- (A) 24
- (B) 26
- (C) 28
- **(D)** 30

Perseverence Rigor Dedication 224 Bishan Street 23 BI-131

MATHLETE TRAINING CENTRE

Perseverence Rigor Dedication 224 Bishan Street 23 B1-131

MATHLETE TRAINING CENTRE

Perseverence Rigor Dedication 224 Bishan Street 23 BI-131

MATHLETE TRAINING CENTRE

Perseverence Rigor Dedication 224 Bishan Street 23 BI-I31