

The University of the West Indies, Mona
presents
2025/2026 Senior Mathematical Olympiad

Qualifying Round Examination (Grades 9, 10 and 11)

NAME_____

GRADE_____

SCHOOL_____

YEAR OF BIRTH_____

STUDENT CONTACT NUMBER_____

- EACH entry MUST be accompanied by a nominal entry fee of **J\$1000**
- Be sure to staple ALL pages (including this one) together
- All entries must reach the Mathematics Department, U.W.I by
Friday December 19, 2025
- You may deliver by (a) Hand (b) Courier (c) Local Mail
- The Courier address is
**Mathematics Department, UWI
Mona
Kingston 7**
- The Mailing address is
**Senior Mathematical Olympiad
P.O. Box 94
Mona Post Office
Kingston 7**

For each question, determine the letter corresponding to the correct or best response; along with the question number, indicate this letter by circling or shading it.

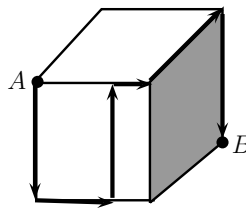
1. The table below shows eight birds (B_1 to B_8) in eight of sixteen cells.

| | | | |
|-------|-------|-------|-------|
| B_1 | B_2 | | |
| B_3 | | B_4 | B_5 |
| | | B_6 | B_7 |
| | | B_8 | |

Any of the birds can fly into any of the free cells. What is the least number of the birds that must fly into another cell so that exactly two birds are in any row and in any column of the table.

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

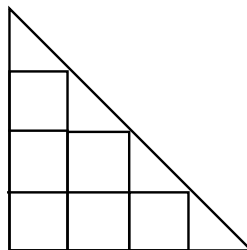
2. Along the edges of a cube, each of length 12 cm, an ant crawls from point A to point B along the trajectory shown:



What is the length of the ant's path?

- (A) 48 cm (B) 54 cm (C) 60 cm (D) 64 cm (E) 72 cm

3. In the picture below, x is the number of triangles present and y is the number of squares present.



What is the value of $x + y$?

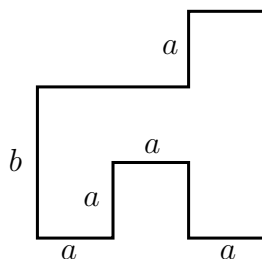
- (A) 17 (B) 16 (C) 15 (D) 14 (E) 13

4. What is the value of

$$2^{\left(0^{(2^5)}\right)} + \left(\left(2^0\right)^2\right)^5$$

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

5. The diagram below shows the ground plan of a room. The adjacent walls are perpendicular to each other.



The letters a and b represent the dimensions (lengths) of sections of the room. In terms of a and b , what is the area of the room?

- (A) $2ab + a(b - a)$ (B) $3a(a + b) + a^2$ (C) $3a(b - a) + a^2$ (D) $3a(a + b) - a^2$
(E) $3ab$

6. In front of Sue-Ann's house there are a number of poles and a number of birds. There is one bird on each pole but there is one bird that is without a pole. Later in the day, the same birds are sitting in pairs on the poles but now there is one pole without a bird. How many poles are there in front of Sue-Ann's house?

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

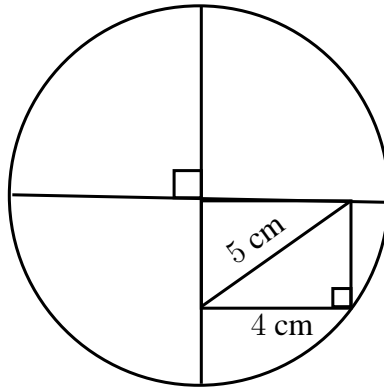
7. A big cube with sides 5 units is made of small unit cubes that are either black or white. The small cubes are such that two adjacent unit cubes have different colours. Furthermore, in all 8 corners of the big cube, the small cubes are black. How many white unit cubes are used?

- (A) 61 (B) 62 (C) 63 (D) 64 (E) 65

8. Eddie has 2025 marbles. Two-fifths of them are blue, one-fifth are red, and one-fifteenth are green. How many of the marbles are of some other colour?

- (A) 675 (B) 750 (C) 810 (D) 945 (E) 1080

9. The diagram below shows a circle with an inscribed triangle.



What is the diameter of the circle?

- (A) 18 cm (B) 12 cm (C) 10 cm (D) 12.5 cm (E) 14 cm
10. A group of friends is planning a trip. If each of them make a contribution of \$1400 for the travel expenses, they would be \$400 short. But if each of them make a contribution of \$1600, they would have \$600 more than they need. How much should each of the friends contribute so that they collect exactly the amount needed for the trip?
- (A) \$1420 (B) \$1440 (C) \$1460 (D) \$1480 (E) \$1520
11. Juan inflates 8 balloons every three minutes. Unfortunately every tenth balloon pops immediately after having been inflated. How many inflated balloons will Juan have after 2 hours?
- (A) 320 (B) 288 (C) 216 (D) 240 (E) 160
12. Blocker Brothers Blocks received an order for constructing blocks, which are cuboid in shape. The ordered dimensions are 10 cm \times 12 cm \times 14 cm but Young Blocker who took the order, erroneously constructed them with dimensions 12 cm \times 14 cm \times 16 cm. What is the percentage increase in the volume of the constructed blocks with respect to the ordered blocks?
- (A) 20% (B) 30% (C) 40% (D) 50% (E) 60%

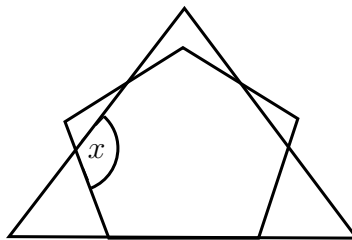
13. The following is a product table. For example, the table shows that $6 \times 7 = 42$.

| | | | | |
|----------|-----|-----|-----|-----|
| \times | | | | 7 |
| | J | K | L | 56 |
| | M | 36 | 8 | N |
| | O | 27 | 6 | P |
| 6 | 18 | R | S | 42 |

What two letters represent the same number?

- (A) L and M (B) M and S (C) R and P (D) O and N (E) L and S

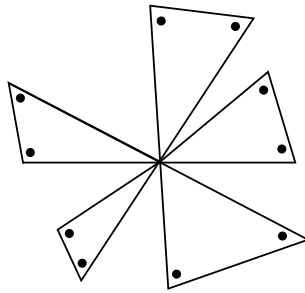
14. The diagram below shows an equilateral triangle as well as a regular pentagon.



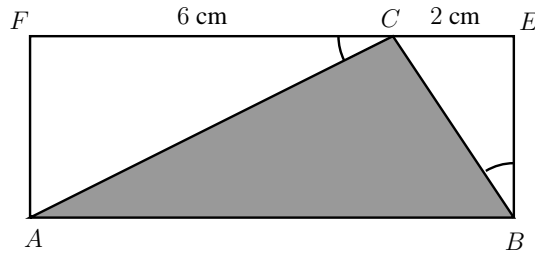
In degrees, what is the size of the angle marked x ?

- (A) 108° (B) 120° (C) 132° (D) 136° (E) 140°
15. A caterpillar starts from her home at 9:00 a.m. and move directly on a ground, turning after each hour at 90° to the left or to the right. In the first hour she moved 1 m, in the second hour 2 m, and so on. At what minimum distance from her home the caterpillar would be at 4:00 p.m. in the afternoon?
- (A) 0 m (B) 1 m (C) 1.5 m (D) 2.5 m (E) 3.5 m
16. Avril and Buella were born on the same date but in different years, m years apart. Last year, Avril was 5 times as old as Buella and this year Avril's age is the square of Buella's age. What is the value of m ?
- (A) 3 (B) 5 (C) 9 (D) 12 (E) 15

17. How many degrees are the sum of the 10 angles, represented by dots, in the diagram below?

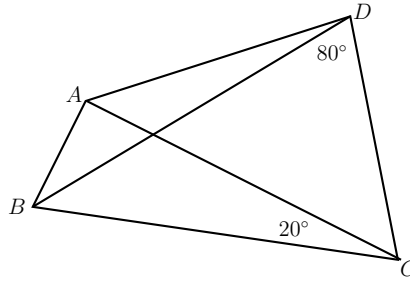


- (A) 300° (B) 360° (C) 480° (D) 600° (E) 720°
18. A box contains 60 marbles. Some red, some blue and some white. If all red marbles were replaced with blue marbles, then there would be twice as many blue marbles as white marbles but if all the white marbles were replaced with blue marbles, then there would be three times as many blue marbles as red marbles. What is the number of blue marbles in the box?
- (A) 10 (B) 15 (C) 20 (D) 25 (E) 30
19. The diagram below shows a rectangle $ABEF$ and a triangle ABC with $FC = 6$ cm and $CE = 2$ cm.



- Given that $\angle ACF = \angle CBE$, what is the area of triangle ABC ?
- (A) 12 cm^2 (B) $8\sqrt{3} \text{ cm}^2$ (C) $8\sqrt{2} \text{ cm}^2$ (D) 16 cm^2 (E) 24 cm^2
20. Two bottles of equal volume contain both water and juice. The ratios of the volume of water to juice are, respectively, $2 : 1$ and $4 : 1$. When all the contents of the two bottles are poured into one big bottle, what is the ratio of water to juice in this big bottle?
- (A) $3 : 1$ (B) $6 : 1$ (C) $11 : 4$ (D) $5 : 1$ (E) $8 : 1$

21. In the quadrilateral $ABCD$, the diagonal BD is the bisector of $\angle ABC$ and $AC = BC$.



Given $\angle BDC = 80^\circ$ and $\angle ACB = 20^\circ$, what is the size of $\angle BAD$?

- (A) 90° (B) 100° (C) 110° (D) 120° (E) 135°
22. Marsha is driving her car at a constant speed of 90 km/h. When the car clock showed 21:00, the distance travelled recorder showed 116, meaning that up to that moment, 116 km had been driven. Later that evening, the distance travelled recorder showed a number consisting of the first three digits on the clock. At what time did this occur?
- (A) 21:30 (B) 21:50 (C) 22:00 (D) 22:10 (E) 22:30
23. Which of the following is the sum of 5 consecutive numbers?
- (A) 2025 (B) 2024 (C) 2023 (D) 2022 (E) 2021
24. Helen must travel from home to the beach. She plans to go at a certain speed. She would like to arrive earlier than planned and notes that traveling at a speed 5 km/h faster than planned she will arrive 5 hours earlier and traveling at a speed 10 km/h faster than planned she will arrive 8 hours earlier. What is her planned speed?
- (A) 10 km/h (B) 15 km/h (C) 20 km/h (D) 25 km/h (E) 30 km/h
25. For positive integer n , $n!$ is called n factorial and $n! = n(n - 1) \dots 2(1)$. For example, $6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$. What is the hundreds digit of $(20! - 15!)$?
- (A) 0 (B) 1 (C) 2 (D) 4 (E) 5

Please write your name using **BOLD LETTERS** below

Name