10TH edition

THE ULTIMATE MATHEMATICS AMBASSADOR 2022 TUMA

(Annual Mathematics Competition)

STAGE 3 - ROUND 1

TIME ALLOWED: 45 minutes

INSTRUCTIONS

1. This Round consists of 4 theory questions.

2. You are to answer all questions in this round.

3. This Round is worth 40 marks.

4. The marks for each question are indicated below the question.

5. Please ensure that you show all necessary workings before arriving at your final answer.

6. Orderliness, neatness and clarity is encouraged.

INSTRUCTION: *There are **four (4)** questions in this section. Answer all questions, showing all your workings clearly, neatly and orderly.*
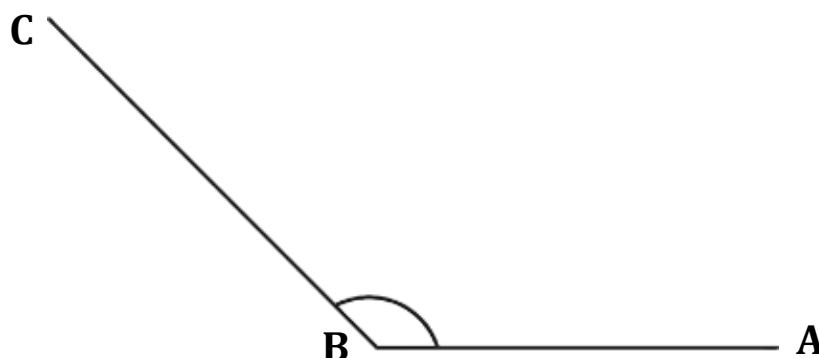
1. The table shows the time it takes, in seconds, for some pupils to complete a 100-metre race.

Time (seconds)	Frequency
13	1
14	5
15	4
16	2

   (a)   Calculate the mean. Round your answer to 1 significant figure.

   (b)   Find the mode

   (c)   Find the median

   (d)   Calculate the speed (in metres/second) of the fastest runner.

(10 marks)

2. (a)   The figure below is drawn to scale

   (i)   Measure the size (in degrees) of the angle B shown?

   (ii)   If the scale of the diagram is 1:5000, what is the actual length (in metres) of the line BC?

(b) A square piece of paper has a perimeter of 24 cm. The piece of paper is cut into two rectangles. If the perimeter of one rectangle is 20 cm, what is the perimeter of the other rectangle?

(12 marks)

3. A cylindrical can of height 21cm with a capacity 594 cm^3 is completely filled with water. Water flows out of a tap connected to it at the rate of $0.7cm^3$ per second. After 3 minutes:

(a) How much water is left in the tank?

(b) What is the new height of the water in the tank?

(7 marks)

4. (a) Twice of $\frac{4}{5}$ of twelve times a third of sixty is subtracted from the sum of one-fifth of 45 and thrice of $333\frac{1}{3}\%$ of 60. What is the square root of your answer?

(b) Malcolm wants to visit Isabella after school today and knows the street where she lives but doesn't know her house number. She tells him, "My house number has two digits, and exactly three of the following four statements about it are true."

- It is prime.
- It is even
- It is divisible by 7.
- One of its digits is 9.

Determine Isabella's house number?

(11 marks)