FORM TP 2023021

TEST CODE **01234032**

JANUARY 2023

CARIBBEAN EXAMINATIONS COUNCIL

CARIBBEAN SECONDARY EDUCATION CERTIFICATE® EXAMINATION

MATHEMATICS

Paper 032 – General Proficiency

1 hour

READ THE FOLLOWING INSTRUCTIONS CAREFULLY.

1. This paper consists of TWO questions. Answer BOTH questions.
2. Write your answers in the spaces provided in this booklet.
3. Do NOT write in the margins.
4. All working MUST be clearly shown.
5. **A list of formulae is provided on page 4 of this booklet.**
6. If you need to rewrite any answer and there is not enough space to do so on the original page, you must use the extra page(s) provided at the back of this booklet. **Remember to draw a line through your original answer.**
7. **If you use the extra page(s), you MUST write the question number clearly in the box provided at the top of the extra page(s) and, where relevant, include the question part beside the answer.**
8. **ALL diagrams in this booklet are NOT drawn to scale, unless otherwise stated.**

__Required Examination Materials__

Electronic calculator
Geometry set

DO NOT TURN THIS PAGE UNTIL YOU ARE TOLD TO DO SO.

LIST OF FORMULAE

Volume of a prism — $V = Ah$ where A is the area of the cross-section and h is the perpendicular length.

Volume of a cylinder — $V = \pi r^2 h$ where r is the radius of the base and h is the perpendicular height.

Volume of a right pyramid — $V = \frac{1}{3}Ah$ where A is the area of the base and h is the perpendicular height.

Circumference — $C = 2\pi r$ where r is the radius of the circle.

Arc length — $S = \frac{\theta}{360} \times 2\pi r$ where θ is the angle subtended by the arc, measured in degrees.

Area of a circle — $A = \pi r^2$ where r is the radius of the circle.

Area of a sector — $A = \frac{\theta}{360} \times \pi r^2$ where θ is the angle of the sector, measured in degrees.

Area of a trapezium — $A = \frac{1}{2}(a + b)\,h$ where a and b are the lengths of the parallel sides and h is the perpendicular distance between the parallel sides.

Roots of quadratic equations — If $ax^2 + bx + c = 0$,

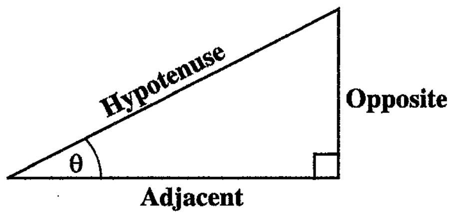
then $x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Trigonometric ratios

$\sin\theta = \dfrac{\text{length of opposite side}}{\text{length of hypotenuse}}$

$\cos\theta = \dfrac{\text{length of adjacent side}}{\text{length of hypotenuse}}$

$\tan\theta = \dfrac{\text{length of opposite side}}{\text{length of adjacent side}}$

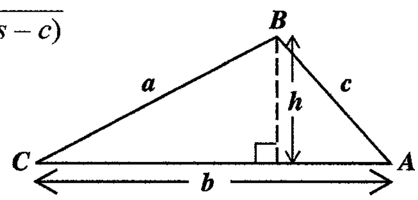


Area of a triangle — Area of $\Delta = \frac{1}{2}bh$ where b is the length of the base and h is the perpendicular height.

Area of $\Delta ABC = \frac{1}{2}ab \sin C$

Area of $\Delta ABC = \sqrt{s(s-a)(s-b)(s-c)}$

where $s = \dfrac{a+b+c}{2}$

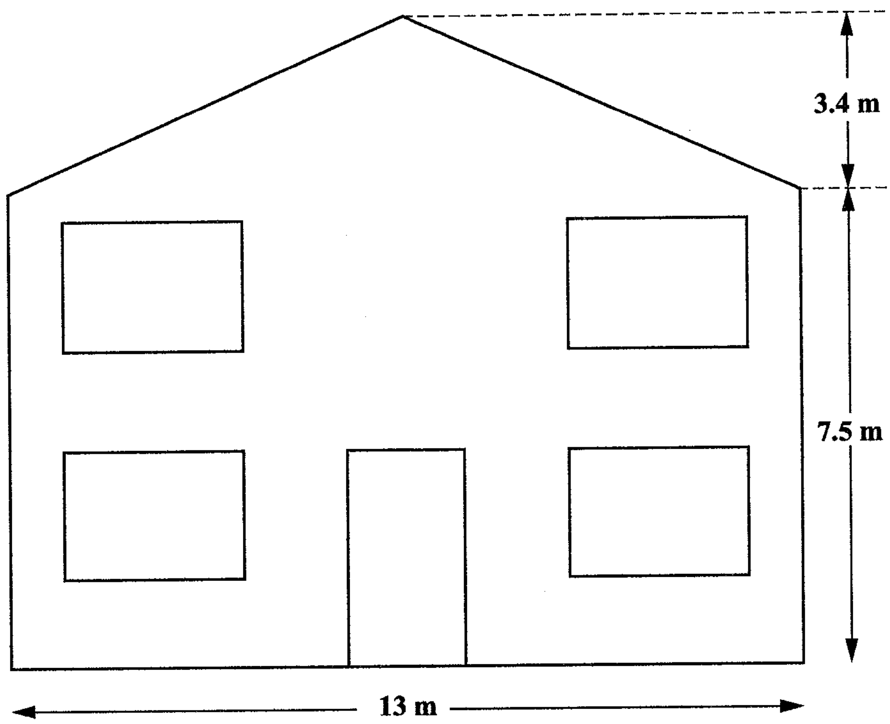


Sine rule — $\dfrac{a}{\sin A} = \dfrac{b}{\sin B} = \dfrac{c}{\sin C}$

Cosine rule — $a^2 = b^2 + c^2 - 2bc\cos A$

NOTHING HAS BEEN OMITTED.

1. The diagram below shows the front view of Pinky's house, which includes four windows and a door.



(a) (i) Calculate the TOTAL surface area of the front view of Pinky's house, inclusive of the windows and door.

....

(3 marks)

GO ON TO THE NEXT PAGE

(ii) The windows and the door are made of shatterproof glass. The door is 1.2 m wide and 2.8 m high. Each of the four windows is 1.8 m wide and 1.4 m high.

Determine the MINIMUM amount of glass needed for the door and the four windows.

....

(3 marks)

(iii) Pinky covers the front of her house, excluding the door and the four windows, with decorative wall tiles.

Calculate the area she covers with tiles.

....

(1 mark)

(b) Pinky paints one of the walls of the house which has an area of 53 m^2. One litre of paint covers an area of 4.5 m^2. Paint is sold in 2.5 litre tins, each costing \$24.75. Pinky buys the LEAST number of tins of paint needed to paint this wall.

Calculate the cost of the paint required to paint the wall.

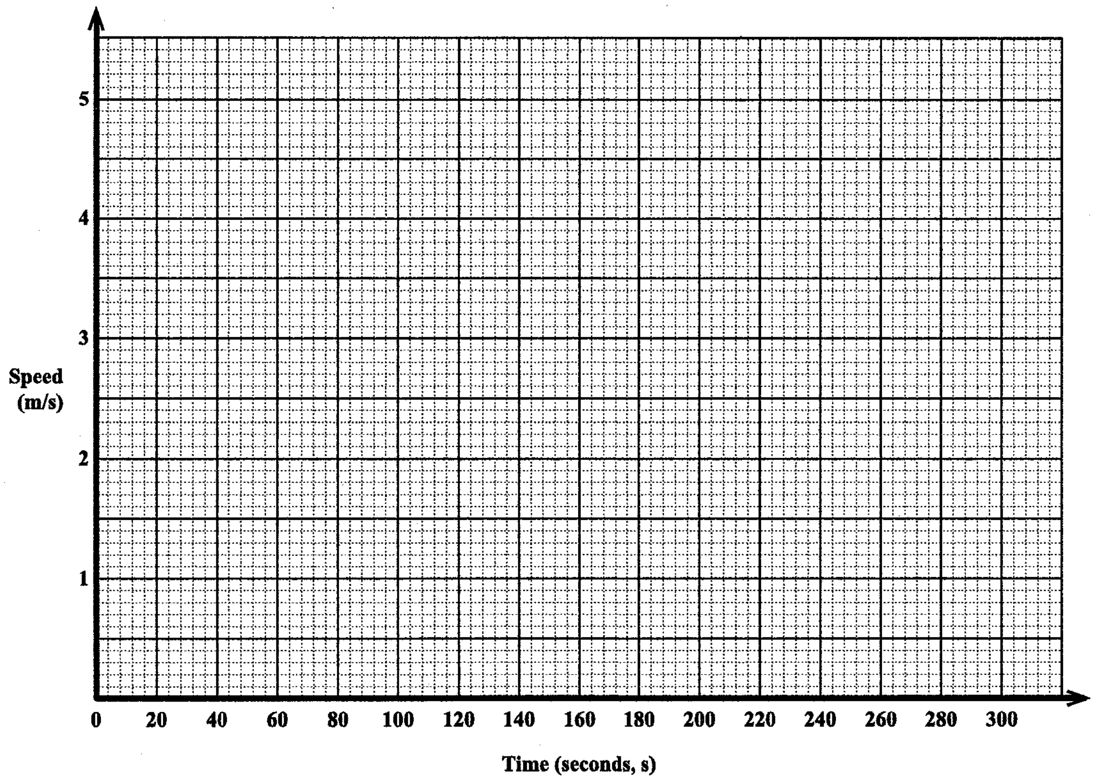
....

(3 marks)

Total 10 marks

2. (a) Lela cycles along a path for 5 minutes. She starts from rest, and accelerates at a constant rate until she reaches a speed of 5 m/s after 100 seconds. She continues cycling at 5 m/s for 2 minutes and 40 seconds. She then decelerates at a constant rate until she stops.

(i) On the grid below, draw a speed-time graph to show Lela's journey.



(3 marks)

(ii) Determine Lela's acceleration.

....

(1 mark)

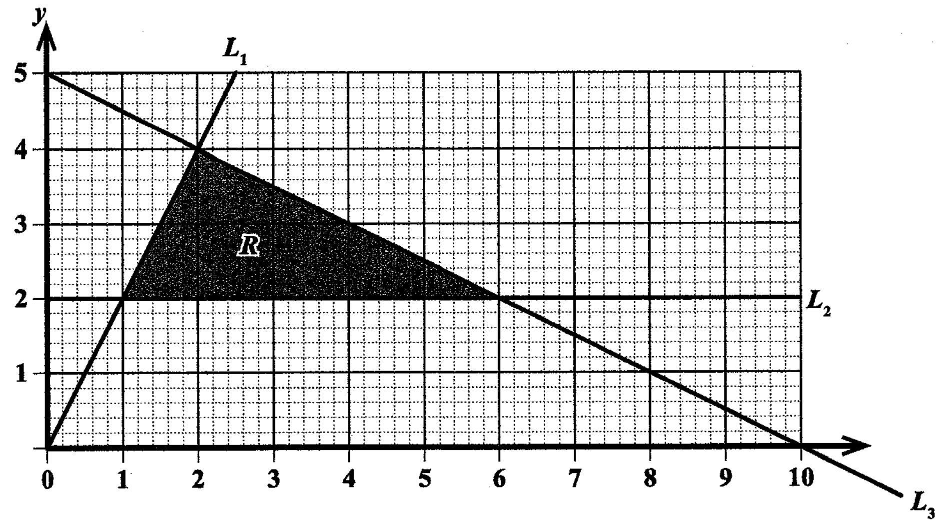
GO ON TO THE NEXT PAGE

(iii) Calculate Lela's average speed for the entire journey.

....

(3 marks)

(b) The diagram below shows the graph of 3 lines, L_1, L_2 and L_3 and the shaded region, R, which represents the common region for the 3 inequalities associated with the lines L_1, L_2 and L_3, that define R.



The table below shows some of the equations of the lines L_1, L_2 and L_3 and the respective inequalities that define the shaded region R.

Line	**Equation of Line** (in the form $y = mx + c$)	**Inequality Associated with Line**
L_1	$y = 2x$	______________________
L_2	$y = 2$	______________________
L_3	______________________	$2y \leq 10 - x$

Complete the table above by inserting the missing information. **(3 marks)**

Total 10 marks

END OF TEST

IF YOU FINISH BEFORE TIME IS CALLED, CHECK YOUR WORK ON THIS TEST.