

SAMPLE PAPER 7: PAPER 2

QUESTION 2 (25 MARKS)

Question 2 (a) (i)

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

Slope of AC: $A(3, 3), C(-1, 5)$

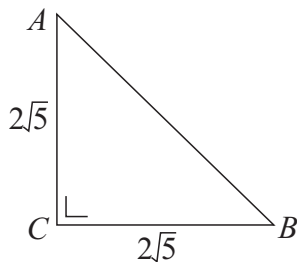
$$m_1 = \frac{5-3}{-1-3} = \frac{2}{-4} = -\frac{1}{2}$$

Slope of BC: $B(-3, 1), C(-1, 5)$

$$m_2 = \frac{5-1}{-1-(-3)} = \frac{4}{2} = 2$$

$$m_1 \times m_2 = -\frac{1}{2} \times 2 = -1 \Rightarrow AC \perp BC$$

Question 2 (b)



$$\text{Area} = \frac{1}{2}bh = \frac{1}{2}(2\sqrt{5})(2\sqrt{5}) = 10$$

Question 2 (c) (ii)

Equation of BC: $(x_1, y_1) = B(-3, 1), m = 2$ $y - y_1 = m(x - x_1)$

$$y - 1 = 2(x - (-3))$$

$$y - 1 = 2(x + 3)$$

$$y - 1 = 2x + 6$$

$$0 = 2x - y + 7$$

$$H(1, 9) \in BC : 2x - y + 7 = 0?$$

$$2(1) - 9 + 7$$

$$= 2 - 9 + 7$$

$$= 0 \text{ (Yes, } H(1, 9) \in BC)$$

Question 2 (a) (ii)

$$|PQ| = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$A(3, 3), C(-1, 5)$

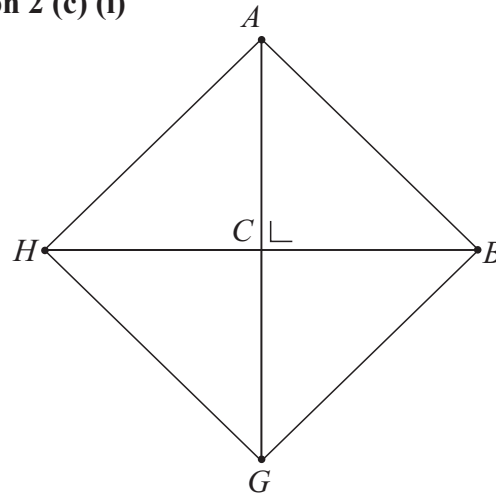
$$\begin{aligned} |AC| &= \sqrt{(-1-3)^2 + (3-5)^2} \\ &= \sqrt{16+4} = \sqrt{20} = 2\sqrt{5} \end{aligned}$$

Slope of BC: $B(-3, 1), C(-1, 5)$

$$\begin{aligned} |BC| &= \sqrt{(-1-(-3))^2 + (5-1)^2} \\ &= \sqrt{4+16} = \sqrt{20} = 2\sqrt{5} \end{aligned}$$

$$\therefore |AC| = |BC|$$

Question 2 (c) (i)



$$B(-3, 1) \rightarrow C(-1, 5) \rightarrow H(1, 9) \text{ [Add 2, Add 4]}$$

$$A(3, 3) \rightarrow C(-1, 5) \rightarrow G(-5, 7) \text{ [Subtract 4, Add 2]}$$