

SAMPLE PAPER 6: PAPER 2

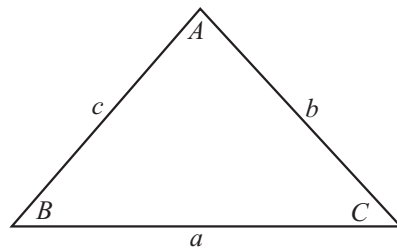
QUESTION 3 (25 MARKS)

Question 3 (a)

$$a^2 = b^2 + c^2 - 2bc \cos A,$$

$$b^2 = a^2 + c^2 - 2ac \cos B,$$

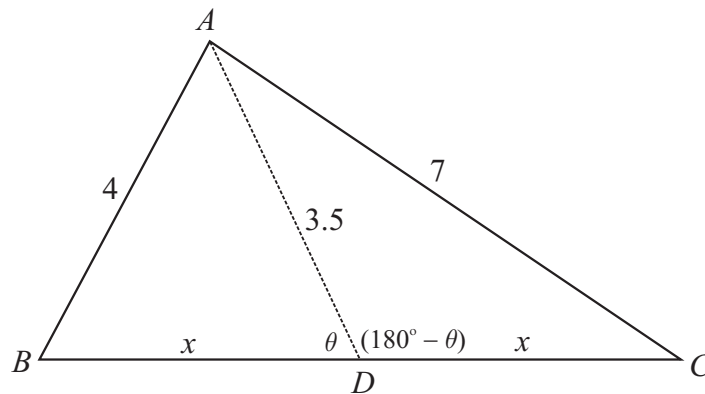
$$c^2 = a^2 + b^2 - 2ab \cos C$$



Question 3 (b)

$$|BD| = |DC|$$

Question 3 (c)



Apply the Cosine rule to triangle ABD : $4^2 = 3.5^2 + x^2 - 2(3.5)(x) \cos \theta$

Apply the Cosine rule to triangle ADC : $7^2 = 3.5^2 + x^2 - 2(3.5)(x) \cos(180^\circ - \theta)$

$$16 = 3.5^2 + x^2 - 7x \cos \theta$$

$$49 = 3.5^2 + x^2 + 7x \cos \theta$$

$$65 = 2(3.5^2) + 2x^2$$

$$x^2 = \frac{81}{4} \Rightarrow x = \frac{9}{2}$$

$$\therefore |BC| = 9$$
