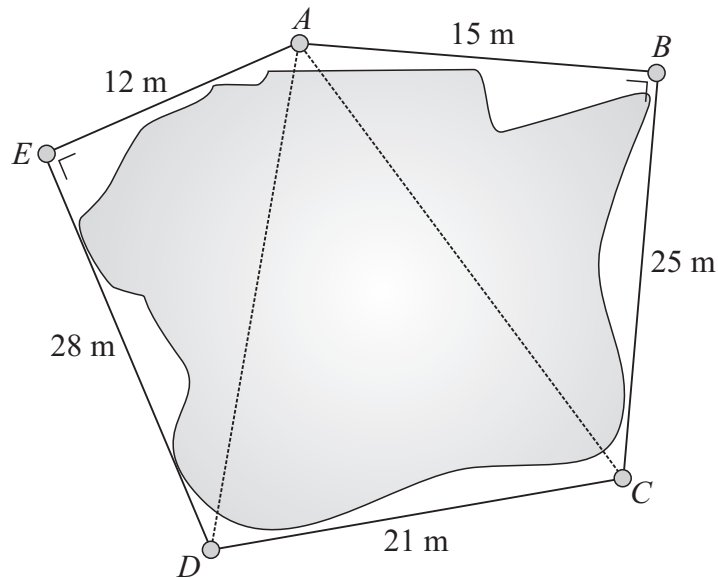


SAMPLE PAPER 2: PAPER 2

QUESTION 9 (75 MARKS)



Question 9 (a) (i)

No, a regular pentagon has five **equal** sides, whereas a pentagon is a 5-sided figure.

Question 9 (a) (ii)

Perimeter = $15 + 25 + 21 + 28 + 12 = 101$ m

Question 9 (b) (i)

The pedometer needs to know the length of Joan's stride.

Distance walked = Number of clicks \times length of stride

Question 9 (b) (ii)

She will find the sum of the areas of triangles AED , ADC and ABC .

Question 9 (c) (i)

Name: Hypotenuse

Question 9 (c) (ii)

$$\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2} (15)(25) = 187.5 \text{ m}^2$$

Question 9 (c) (iii)

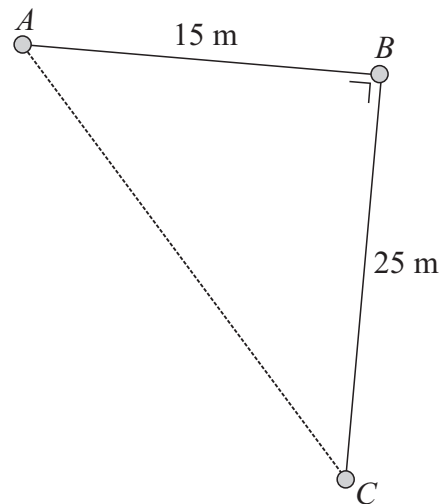
$$|AC|^2 = 15^2 + 25^2$$

$$\therefore |AC| = \sqrt{15^2 + 25^2} = 29.2 \text{ m}$$

Question 9 (c) (iv)

$$\tan(|\angle BAC|) = \frac{25}{15} \Rightarrow |\angle BAC| = \tan^{-1}\left(\frac{5}{3}\right) = 59^\circ$$

$$|\angle BCA| = 180^\circ - 90^\circ - 59^\circ = 31^\circ$$



Question 9 (d) (i)

$$\text{Area} = \frac{1}{2} \times \text{Base} \times \text{Height} = \frac{1}{2}(12)(28) = 168 \text{ m}^2$$

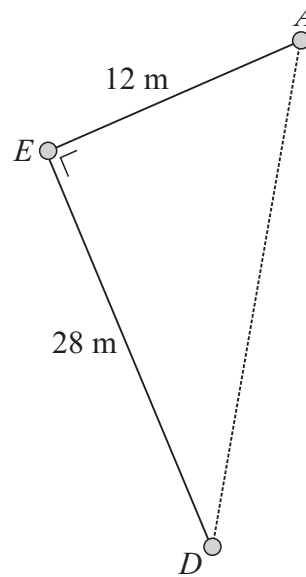
Question 9 (d) (ii)

$$|AD|^2 = 12^2 + 28^2$$

$$\therefore |AC| = \sqrt{12^2 + 28^2} = 30.5 \text{ m}$$

Question 9 (d) (iii)

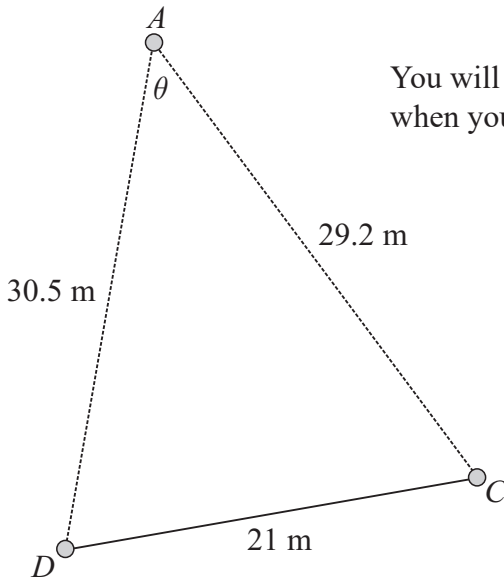
No, for a triangle, base times height does not depend on the choice of base. ($A = \frac{1}{2}bh = \frac{1}{2}hb$)



Question 9 (e) (i)

Type of triangle: Scalene

Question 9 (e) (ii)



You will use the Cosine rule. This rule is used when you are given 3 sides and no angle.

Question 9 (e) (iii)

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

$$21^2 = 30.5^2 + 29.2^2 - 2(30.5)(29.2) \cos \theta$$

$$2(30.5)(29.2) \cos \theta = 30.5^2 + 29.2^2 - 21^2$$

$$1781.2 \cos \theta = 1341.89$$

$$\theta = \cos^{-1} \left(\frac{1341.89}{1781.2} \right) = 41.1^\circ$$

Question 9 (f) (i)

$$\begin{aligned} \text{Area } |\Delta ABC| + \text{Area } |\Delta DEA| + \text{Area } |\Delta ADC| \\ = 187.5 + 168 + 292.7 = 648.2 \text{ m}^2 \approx 648 \text{ m}^2 \end{aligned}$$

Question 9 (e) (iv)

$$\text{Area} = \frac{1}{2} ab \sin C$$

$$\text{Area} = \frac{1}{2} (30.5)(29.2) \sin 41.1^\circ = 292.7 \text{ m}^2$$

Question 9 (f) (ii)

$$\% \text{ Error} = \frac{648 - 610}{610} = 6\%$$