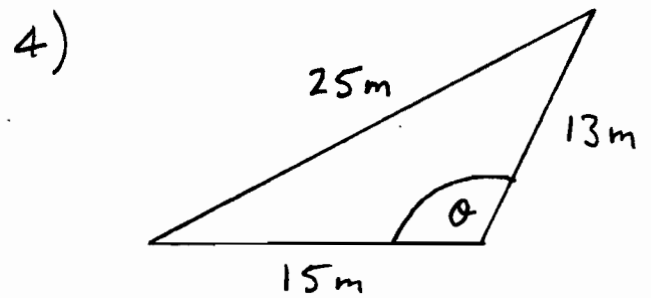
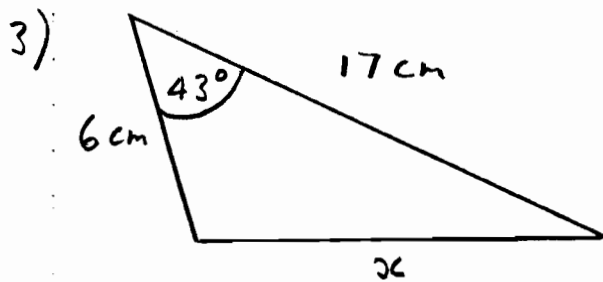
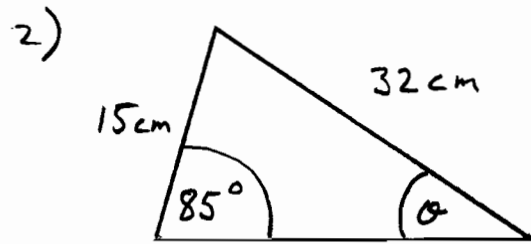
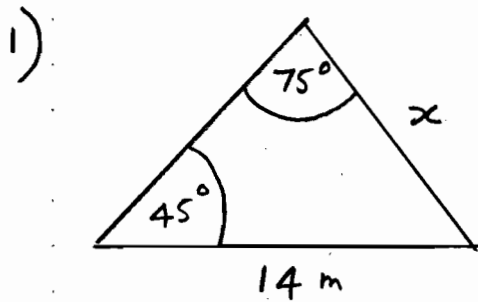


SINE AND COSINE RULES

EXERCISE

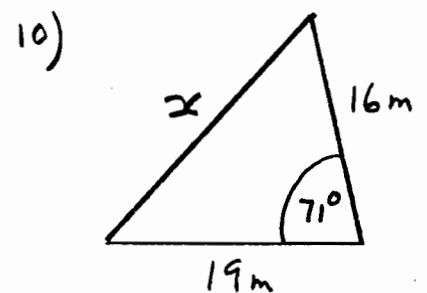
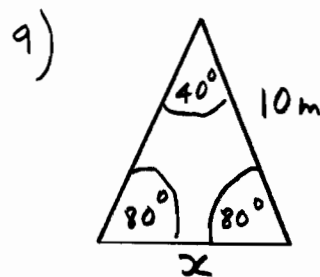
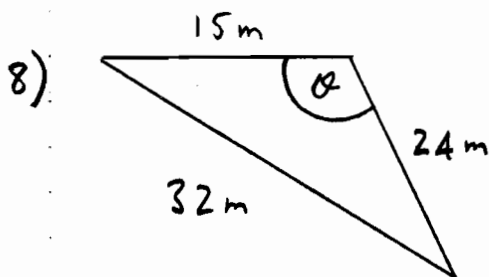
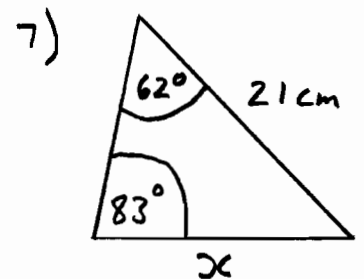
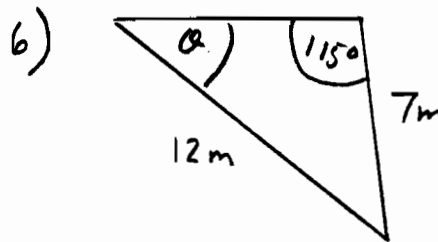
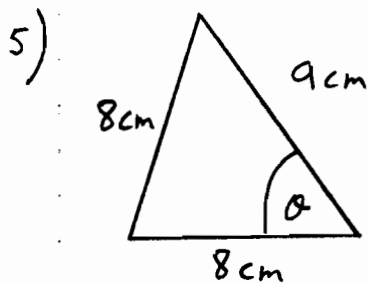
Exercise A Find side x or angle θ

You should use Sine Rule for questions 1 and 2, and Cosine Rule for questions 3 and 4.



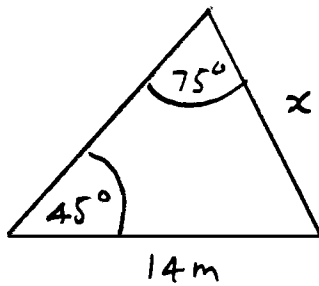
Exercise B Find side x or angle θ

You must decide whether to use Sine Rule or Cosine Rule.



SINE AND COSINE RULESEXERCISEExercise A

1.



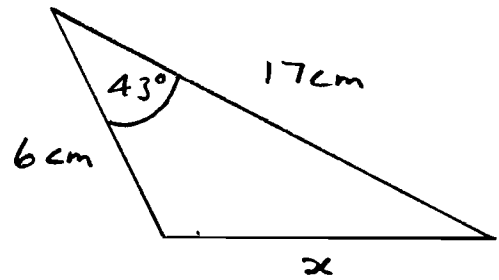
Sine Rule

$$\frac{x}{\sin 45^\circ} = \frac{14}{\sin 75^\circ}$$

$$\Rightarrow x = \frac{14}{\sin 75^\circ} \times \sin 45^\circ$$

$$\Rightarrow x = 10.25 \text{ m}$$

3.



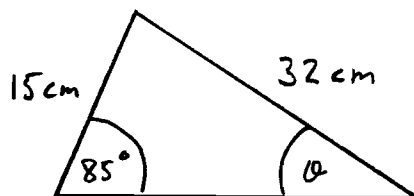
Cosine Rule

$$x^2 = 6^2 + 17^2 - 2 \times 6 \times 17 \times \cos 43^\circ$$

$$x^2 = 175.80$$

$$x = 13.26 \text{ cm}$$

2.



Sine Rule

$$\frac{32}{\sin 85^\circ} = \frac{15}{\sin \theta}$$

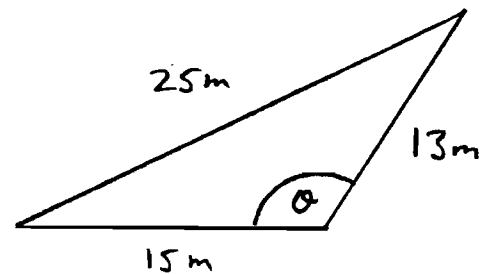
$$\Rightarrow 32 \sin \theta = 15 \sin 85^\circ$$

$$\Rightarrow \sin \theta = \frac{15 \sin 85^\circ}{32}$$

$$\Rightarrow \theta = \sin^{-1} \left(\frac{15 \sin 85^\circ}{32} \right)$$

$$\Rightarrow \theta = 27.8^\circ$$

4.



Cosine Rule

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

$$\cos \theta = \frac{15^2 + 13^2 - 25^2}{2 \times 15 \times 13}$$

$$\cos \theta = -0.5923$$

$$\theta = \cos^{-1}(-0.5923)$$

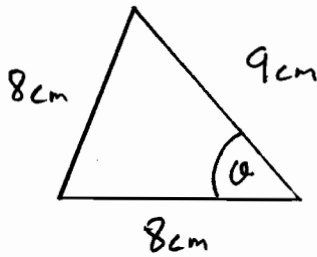
$$\theta = 126.3^\circ$$

SINE AND COSINE RULES

EXERCISE

Exercise B

5.



Cosine Rule

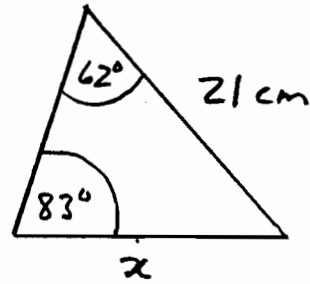
$$\cos \theta = \frac{8^2 + 9^2 - 8^2}{2 \times 8 \times 9}$$

$$\cos \theta = 0.5625$$

$$\theta = \cos^{-1} 0.5625$$

$$\theta = 55.8^\circ$$

7.



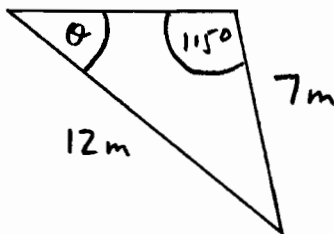
Sine Rule

$$\frac{x}{\sin 62^\circ} = \frac{21}{\sin 83^\circ}$$

$$\Rightarrow x = \frac{21}{\sin 83^\circ} \times \sin 62^\circ$$

$$\Rightarrow x = 18.68 \text{ cm}$$

6.



Sine Rule

$$\frac{12}{\sin 115^\circ} = \frac{7}{\sin \theta}$$

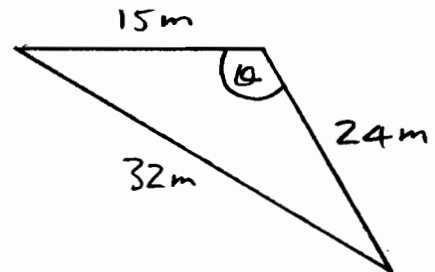
$$\Rightarrow 12 \sin \theta = 7 \sin 115^\circ$$

$$\Rightarrow \sin \theta = \frac{7 \sin 115^\circ}{12}$$

$$\theta = \sin^{-1} \left(\frac{7 \sin 115^\circ}{12} \right)$$

$$\theta = 31.9^\circ$$

8.



Cosine Rule

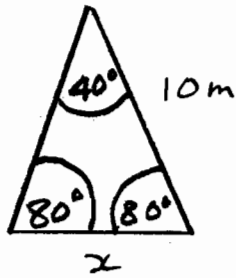
$$\cos \theta = \frac{15^2 + 24^2 - 32^2}{2 \times 15 \times 24}$$

$$\cos \theta = -0.3097$$

$$\theta = 108.0^\circ$$

SINE AND COSINE RULESEXERCISE

9.



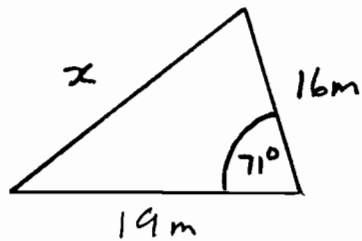
Sine Rule

$$\frac{x}{\sin 40^\circ} = \frac{10}{\sin 80^\circ}$$

$$\Rightarrow x = \frac{10}{\sin 80^\circ} \times \sin 40^\circ$$

$$\Rightarrow x = 6.53 \text{ m}$$

10.



Cosine Rule

$$x^2 = 19^2 + 16^2 - 2 \times 19 \times 16 \cos 71^\circ$$

$$x^2 = 419.05$$

$$x = 20.47 \text{ m}$$

||