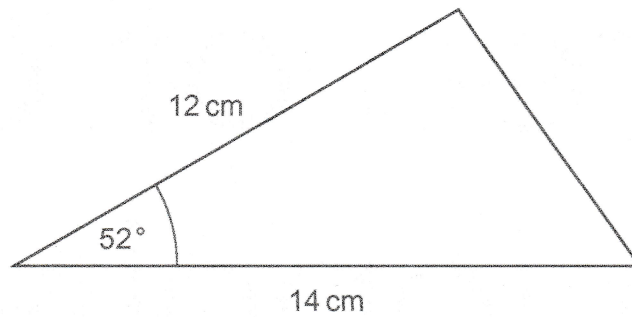


Area of a Triangle (Trigonometric Formula)

1 Work out the area of the triangle.

Not drawn accurately



State the units of your answer.

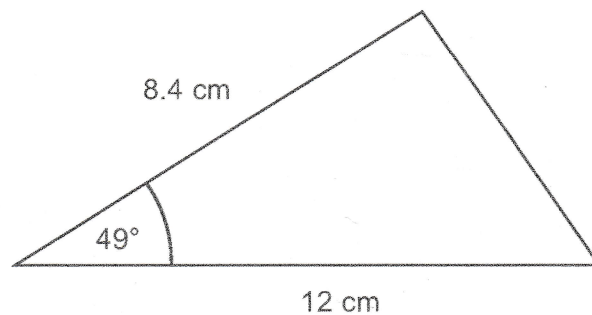
$$\frac{1}{2} ab \sin C$$

$$\frac{1}{2} \times 14 \times 12 \times \sin 52$$

Answer 66.19 cm² (3 marks)

2 Work out the area of the triangle.

Not drawn accurately

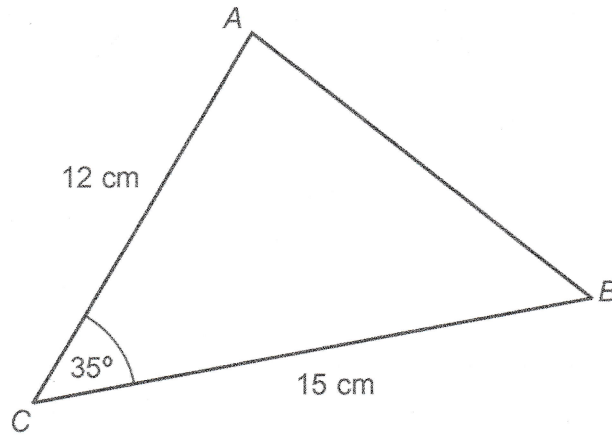


[2 marks]

$$\frac{1}{2} \times 12 \times 8.4 \times \sin 49$$

Answer 38.04 cm²

3



Not drawn accurately

Work out the area of triangle ABC.

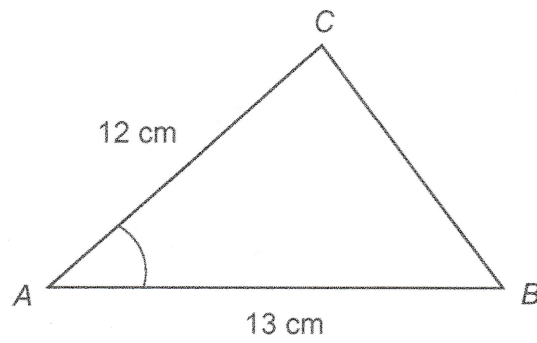
[2 marks]

$$\frac{1}{2} \times 15 \times 12 \times \sin 35$$

Answer 51.6 cm²

4

The area of triangle ABC is 48 cm^2



Not drawn accurately

Work out the size of angle CAB .

[3 marks]

$$\frac{1}{2} \times 13 \times 12 \times \sin A = 48$$

$$78 \sin A = 48$$

$$\sin A = \frac{48}{78}$$

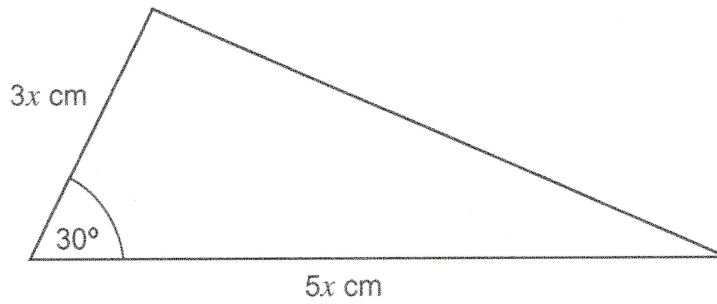
$$A = 37.97987$$

Answer 38 degrees

5

The area of the triangle is 45 cm^2

Not drawn
accurately



Work out the value of x .

[4 marks]

$$\frac{1}{2} \times 3x \times 5x \times \sin 30 = 45$$

$$3.75x^2 = 45$$

$$x^2 = 12$$

$$x = \sqrt{12}$$

Answer

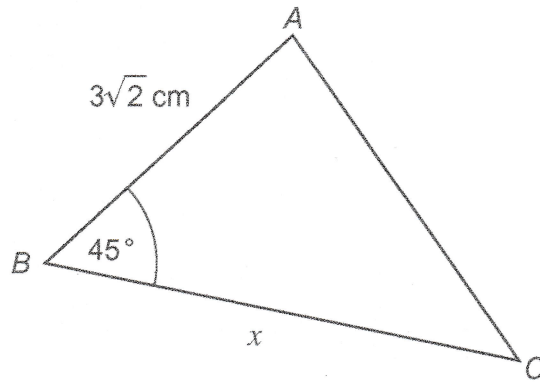
$$\sqrt{12} \text{ or } 2\sqrt{3}$$

6

 ABC is a triangle.

$AB = 3\sqrt{2}$ cm

Angle $ABC = 45^\circ$



Not drawn accurately

The area of ABC is 12 cm^2

You are given that $\sin 45^\circ = \frac{1}{\sqrt{2}}$

Work out the length x .

[2 marks]

$$\frac{1}{2} \times 3\sqrt{2} \times x \times \sin 45 = 12$$

$$\frac{3\sqrt{2}}{2} \times \frac{1}{\sqrt{2}} \times x = 12$$

$$\frac{3\sqrt{2}}{2} \times \frac{\sqrt{2}}{2} x = 12$$

$$\frac{6}{4} x = 12$$

$$x = 8$$

Answer 8 cm

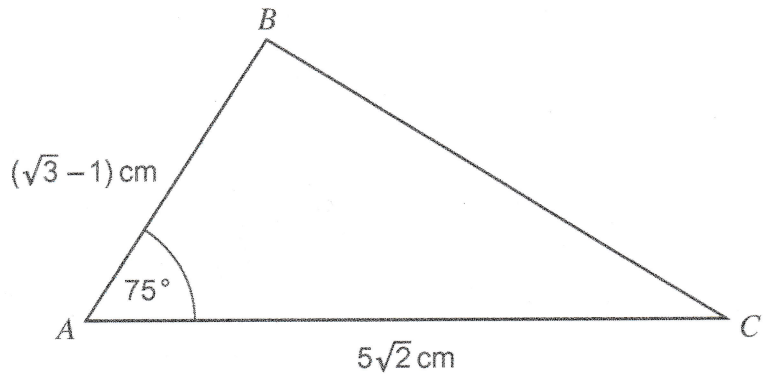
7 (a) Show clearly that $(x - y)(x + y) \equiv x^2 - y^2$

[1 mark]

$$x^2 + \cancel{xy} - \cancel{xy} - y^2 = x^2 - y^2$$

Cancel

*7 (b)



Not drawn accurately

You are given that $\sin 75^\circ = \frac{\sqrt{3} + 1}{2\sqrt{2}}$

Show that the area of triangle ABC is $2\frac{1}{2}$ cm²

[3 marks]

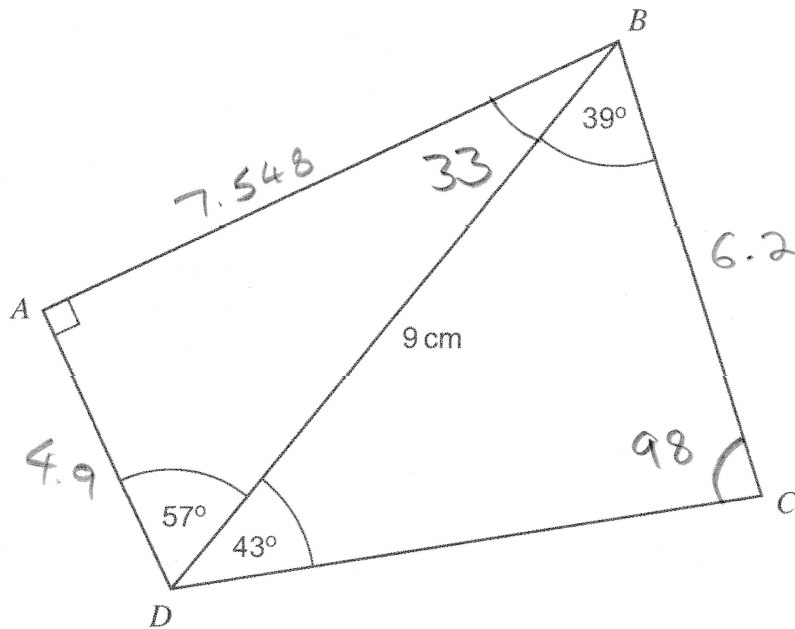
$$\frac{1}{2} \times (\sqrt{3} - 1) \times 5\sqrt{2} \times \sin 75$$

$$\frac{1}{2} \times \frac{\sqrt{3} + 1}{2\sqrt{2}} \times (\sqrt{3} - 1) \times \frac{5\sqrt{2}}{1}$$

$$\frac{1}{2} \times \frac{3 - 1}{2\sqrt{2}} \times 5\sqrt{2}$$

$$\frac{1}{2} \times \frac{2}{2\sqrt{2}} \times 5\sqrt{2} = \frac{5\sqrt{2}}{2\sqrt{2}} = \frac{5}{2} = 2\frac{1}{2}$$

8

Work out the area of $ABCD$.

Not drawn accurately

$$\frac{AD}{9} = \sin 33 \quad AD = 4.9017$$

$$\frac{AB}{9} = \sin 57 \quad AB = 7.548$$

$$\text{Area of } ABD = \frac{1}{2} \times 7.548 \times 4.9017 = 18.5 \text{ cm}^2$$

$$\text{Side } BC = \frac{9}{\sin 98} \times \sin 43 \quad BC = 6.1983$$

$$\text{Area} = \frac{1}{2} \times 6.2 \times 9 \times \sin 39 = 17.55$$

$$\text{Area of } BCD = 17.55$$

$$17.55 \times 18.5$$

Answer 36.05 cm^2 (7 marks)