Geometry - Trigonometry Area of Triangle

Q1

The diagram shows a sector of a circle with centre O.
The radius of the circle is 8 cm.

PRS is an arc of the circle.
PS is a chord of the circle.
Angle $POS = 40°$

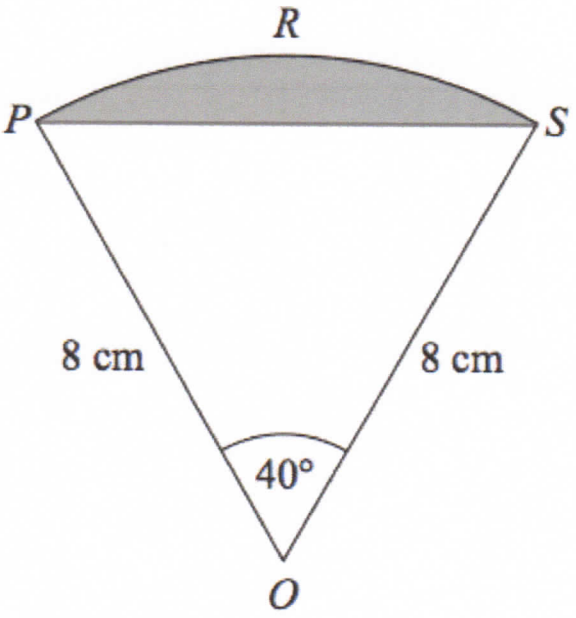


Diagram **NOT** accurately drawn

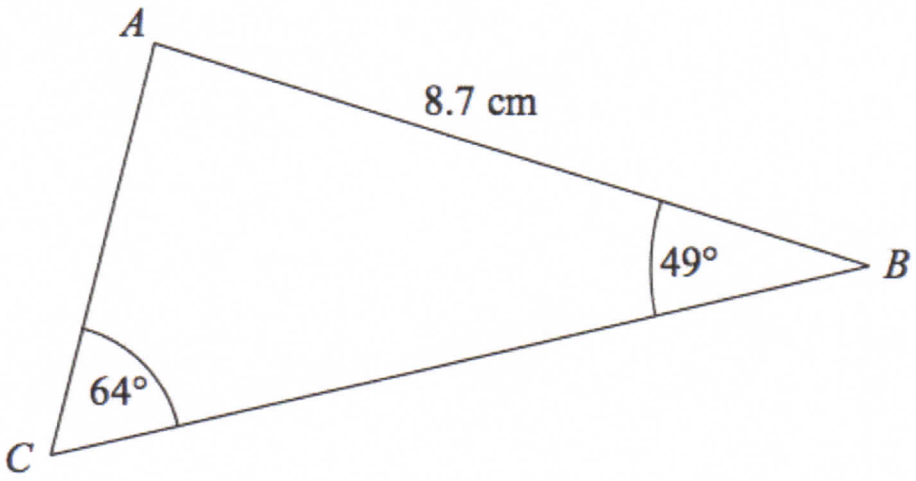
Calculate the area of the shaded segment.
Give your answer correct to 3 significant figures.

..... cm^2

(Total 5 marks)

Geometry - Trigonometry Area of Triangle

Q2



ABC is a triangle.

AB = 8.7 cm.
Angle *ABC* = 49°.
Angle *ACB* = 64°.

Calculate the area of triangle *ABC*.
Give your answer correct to 3 significant figures.

..... cm^2

(Total 5 marks)

Geometry - Trigonometry Area of Triangle

Q1

The diagram shows a sector of a circle with centre O.
The radius of the circle is 8 cm.

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Angle $POS = 40°$

Area of shaded segment
= Area of sector − Area of triangle
$= \frac{40}{360} \times \pi r^2 - \frac{1}{2} ab \sin C$

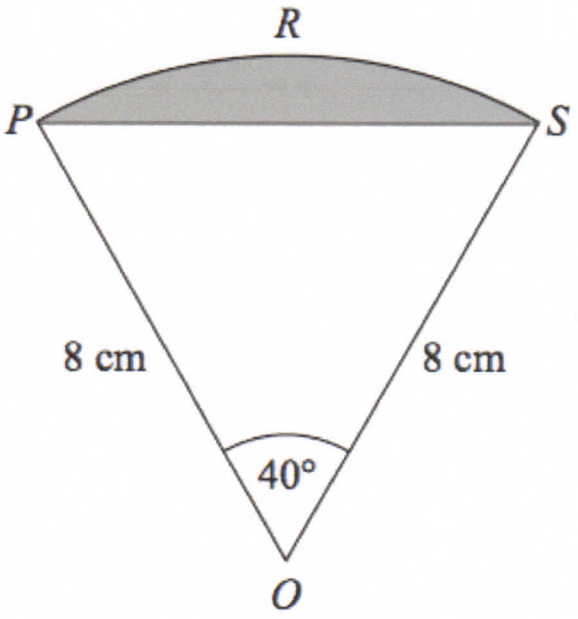


Diagram **NOT** accurately drawn

Area of sector
$= \frac{40}{360} \times \pi \times 8^2$
$= 22.340 \text{ cm}^2$

Calculate the area of the shaded segment.
Give your answer correct to 3 significant figures.

Area of triangle
$= \frac{1}{2} \times 8 \times 8 \times \sin 40°$
$= 20.569 \text{ cm}^2$

Area of shaded segment
$= 22.340 - 20.569$
$= 1.771 \text{ cm}^2$
$= 1.77 \text{ cm}^2$ to 3 s.f.

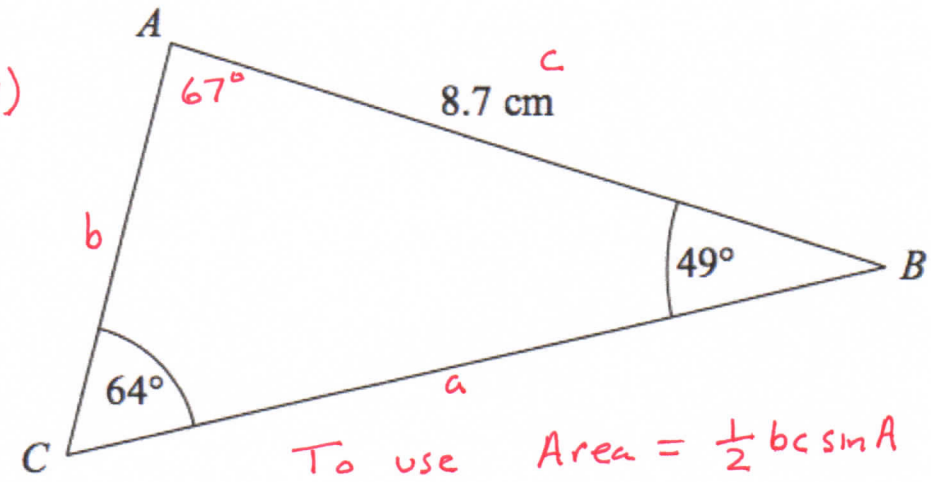
1.77 ..... cm²

(Total 5 marks)

Geometry - Trigonometry Area of Triangle

Q2

Angle A
$= 180 - (64 + 49)$
$= 67°$



To use Area $= \frac{1}{2} bc \sin A$ we need know two sides and the angle between them

ABC is a triangle.

AB = 8.7 cm.
Angle *ABC* = 49°.
Angle *ACB* = 64°.

Calculate the area of triangle *ABC*.
Give your answer correct to 3 significant figures.

First find AC using sine rule

$$\frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{b}{\sin 49°} = \frac{8.7}{\sin 64°}$$

$$b = \frac{8.7}{\sin 64°} \times \sin 49°$$

$$b = 7.3 \text{ cm}$$

Now area of triangle
$= \frac{1}{2} bc \sin A$
$= \frac{1}{2} \times 7.3 \times 8.7 \times \sin 67°$
$= 29.2 \text{ cm}^2$

29.2 ..... cm²

(Total 5 marks)