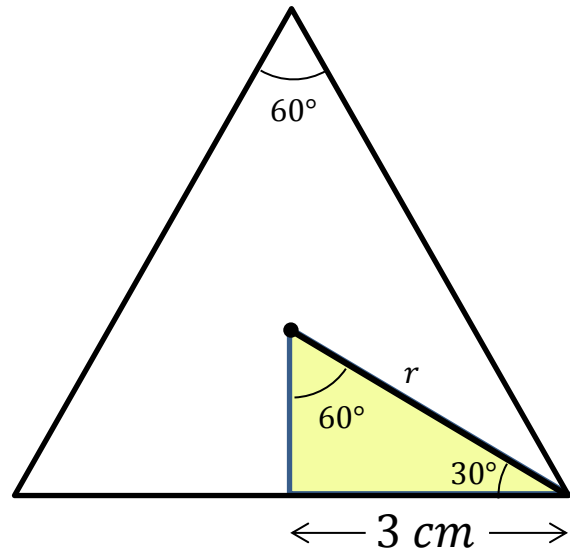
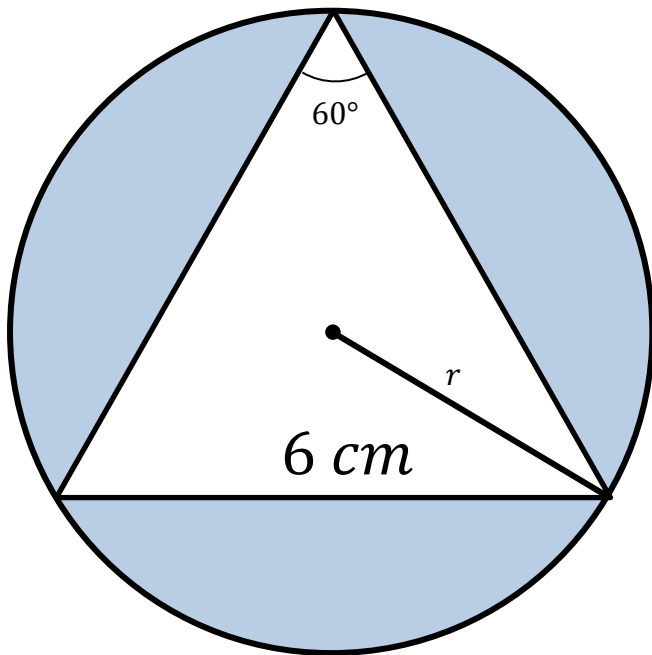


Circle area 1 Solution

The triangle has internal angles of 60°

The radius of the circle is required so marking the centre of the circle and one radius (to one of the corners of the triangle) gives



There are a number of ways of proving that the angles in the marked triangle are 30° and 60° .

From this $r = \frac{3}{\cos 30}$ so $r = 2\sqrt{3}$ cm

The other side of the triangle is $\sqrt{3}$ cm.

The area of the equilateral triangle can be found by using six of the shaded right angle triangles (there are plenty of other ways).

$$\text{Area of equilateral triangle} = 6 \times \frac{1}{2} \times 3 \times \sqrt{3} = 9\sqrt{3} \text{ cm}^2$$

$$\text{Area of circle} = \pi \times (2\sqrt{3})^2 = 12\pi \text{ cm}^2$$

So the shaded area = $12\pi - 9\sqrt{3} \text{ cm}^2$. This is 22.1 cm^2 to 1 d.p.