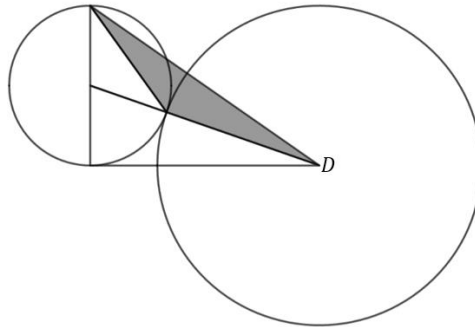
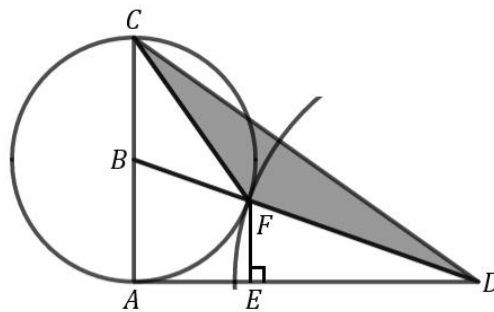


A GCSE Maths Question

The radius of the smaller circle is 3 cm. The radius of the larger circle is 6 cm. The circles touch at a point. The tangent to the smaller circle, shown in the diagram, passes through the centre, D , of the larger circle.



Find the area shaded.



$$AB = 3 \text{ and } BD = 3 + 6 \text{ so by Pythagoras' theorem } AD^2 + 3^2 = 9^2$$

$$AD = 6\sqrt{2}$$

$$AE = \frac{1}{3}AD = 2\sqrt{2}$$

The required area is difference between the areas of triangle BCD and triangle BCF .

$$\text{Shaded area} = \frac{BC \times AD}{2} - \frac{BC \times AE}{2} = \frac{3 \times 6\sqrt{2}}{2} - \frac{3 \times 2\sqrt{2}}{2} = 6\sqrt{2} \text{ cm}^2$$