

WALT Calculate area of a circle

Success Criteria I can apply the formula

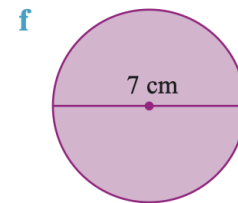
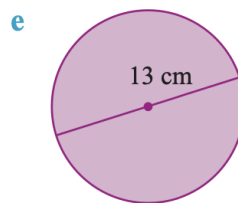
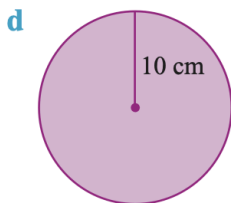
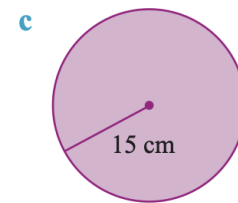
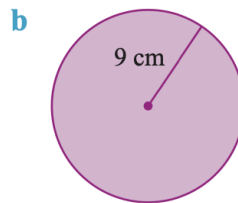
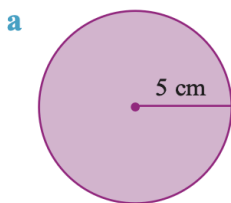
**a**  $A = \pi r^2$   
 $= \pi \times 7^2$   
 $= 49\pi$   
 $\approx 153.9 \text{ cm}^2$

**b**  $A = \pi r^2$   
 $= \pi \times 5.5^2$  (as  $r = \frac{11}{2} = 5.5$ )  
 $\approx 95.0 \text{ cm}^2$

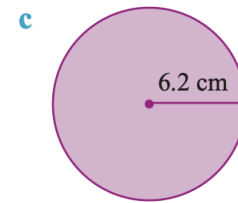
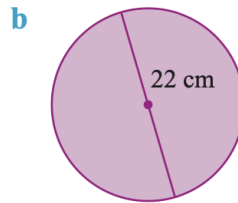
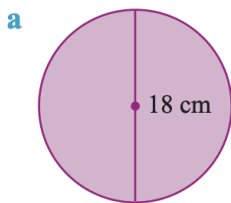
Calculator:



**1** Calculate the exact area of each circle in terms of  $\pi$ .



**2** Calculate the area of each circle correct to 1 decimal place.



**4** Complete to calculate the area of a quarter of a circle of radius 3.7 cm.

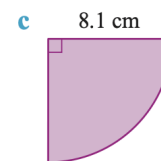
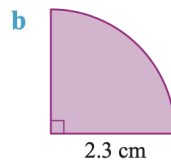
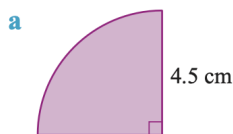
$$A = \frac{1}{4} \text{ of a } \underline{\hspace{2cm}} \text{ circle}$$

$$= \frac{1}{4} \pi \underline{\hspace{2cm}}^2$$

$$= \frac{1}{4} \times \pi \times \underline{\hspace{2cm}}^2$$

$$= \underline{\hspace{2cm}} \approx 11 \text{ cm}^2$$

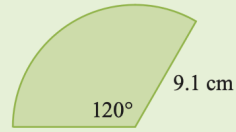
**5** Determine the fraction of a circle that is drawn, then calculate the area to the nearest  $\text{cm}^2$ .



### EXAMPLE 3

For the shape given, determine:

- a the fraction of a circle that is drawn
- b the area to the nearest  $\text{cm}^2$ .



a Fraction of circle =  $\frac{120^\circ}{360^\circ}$   
 =  $\frac{1}{3}$  of a circle

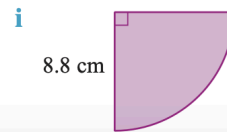
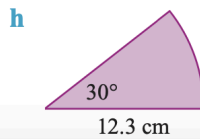
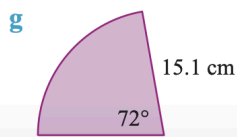
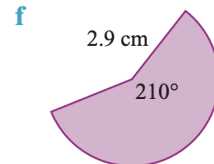
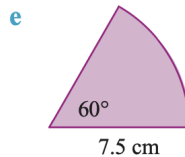
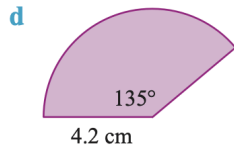
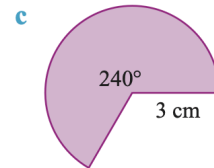
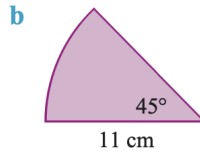
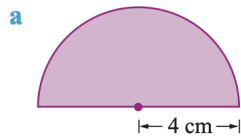
b  $A = \frac{1}{3}$  of a whole circle  
 =  $\frac{1}{3}\pi r^2$   
 =  $\frac{1}{3} \times \pi \times 9.1^2$   
 = 86.718 ...  
 $\approx 87 \text{ cm}^2$

6 Complete to calculate the area of part of a circle with radius 7.4 cm and an angle of  $150^\circ$ .

a Fraction of circle =  $\frac{150^\circ}{\square^\circ}$   
 =  $\frac{\square}{12}$  of a circle

b  $A = \frac{\square}{12}$  of a whole circle  
 =  $\frac{\square}{12} \times \pi \times r^{\square}$   
 =  $\frac{\square}{12} \times \pi \times (\underline{\quad})^2$   
 =  $\underline{\quad} \approx 72 \text{ cm}^2$

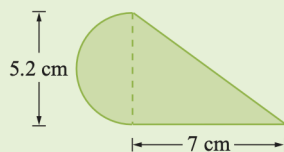
7 Determine what fraction of a circle is drawn, then calculate the area to the nearest  $\text{cm}^2$ .



## Challenge

### EXAMPLE 4

Calculate the area of the composite figure correct to 1 decimal place.



Only round off at the end. !

The shape consists of a semicircle and a triangle.

Remember area formulas. !

Area 1: semicircle

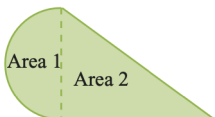
$$d = 5.2 \text{ cm}$$

$$\therefore r = \frac{5.2}{2} = 2.6 \text{ cm}$$

$$A = \frac{\pi r^2}{2}$$

$$= \pi \times \frac{(2.6)^2}{2}$$

$$\approx 10.6 \text{ cm}^2$$



Area 2: triangle

$$A = \frac{1}{2}(b \times h) \text{ or } \frac{b \times h}{2}$$

$$= \frac{7 \times 5.2}{2}$$

$$\approx 18.2 \text{ cm}^2$$

Calculator:

$$\pi \times 2.6^2 \div 2 =$$

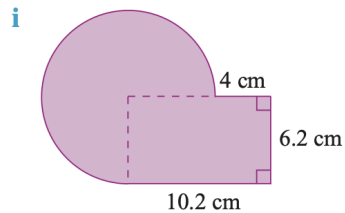
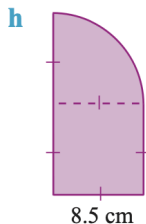
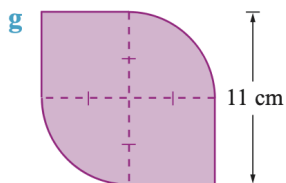
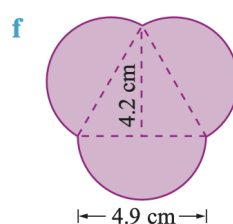
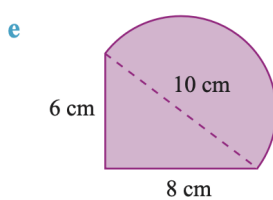
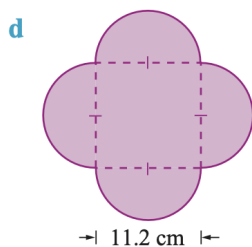
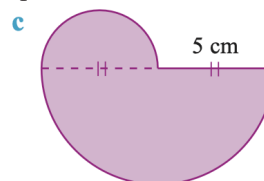
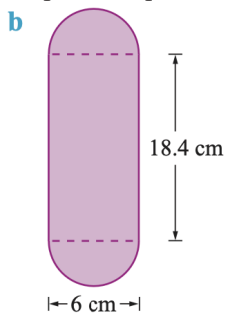
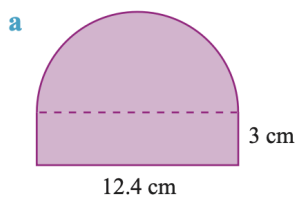
$$7 \times 5.2 \div 2 =$$

Total area = area 1 + area 2

$$\approx 10.6 + 18.2$$

$$= 28.8 \text{ cm}^2$$

8 Determine the area of the following composite shapes correct to 1 decimal place.



9 Determine the area of each shaded region correct to 1 decimal place.

