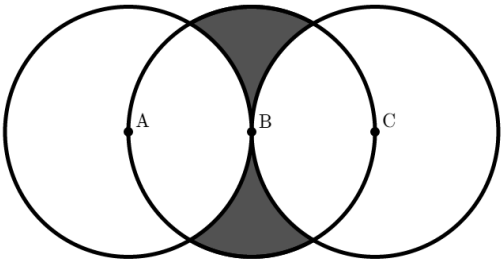
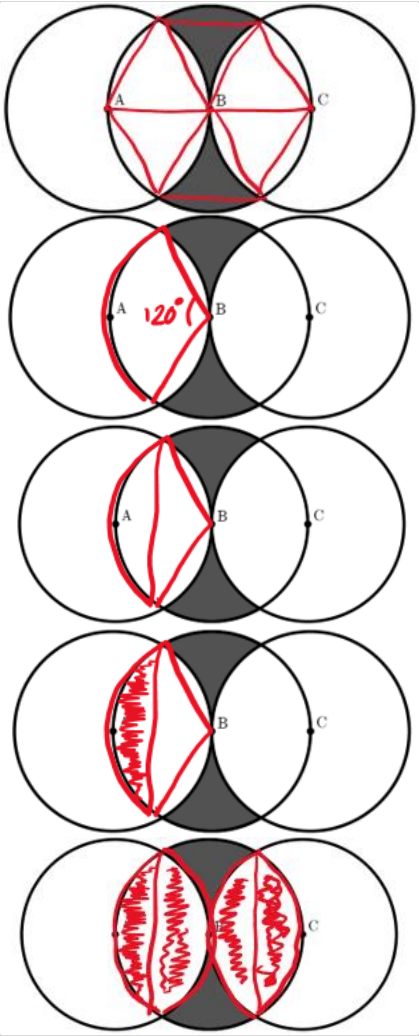
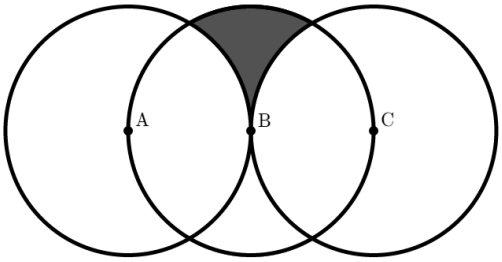
a)
The diagram shows three circles, each of radius 4cm.
The centres of the circles are A, B and C such that ABC is a straight line and AB = BC = 4cm.



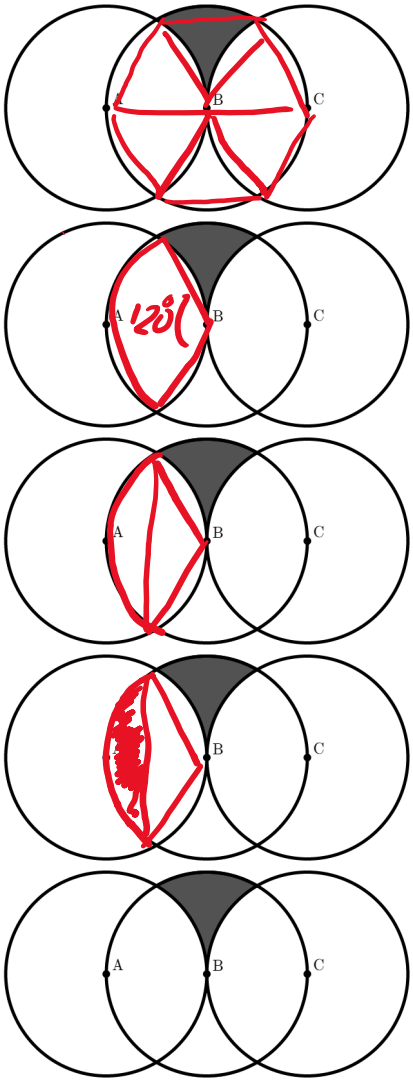
Work out the total area of the two shaded regions.
Give your answer in terms of π.

What is the area of each circle?	$A = \pi r^2 = \pi \times 4^2 = 16\pi$
How much of the circle, centre B, is unshaded?	 A regular hexagon, formed of six equilateral triangles, is inscribed in a circle. Area of the sector = $\frac{1}{3} \times 16\pi = \frac{16\pi}{3}$ Area of the triangle = $\frac{1}{2} \times 4 \times 4 \times \sin 120 =$ $8 \times \frac{\sqrt{3}}{2} = 4\sqrt{3}$ Area of the segment = Area of sector – area of triangle $= \frac{16\pi}{3} - 4\sqrt{3}$ Red area = $4 \times \left(\frac{16\pi}{3} - 4\sqrt{3}\right)$
How much of the circle, centre B is shaded?	Area of the circle – red area $= 16\pi - 4\left(\frac{16\pi}{3} - 4\sqrt{3}\right)$ $= 16\pi - \frac{64\pi}{3} + 16\sqrt{3}$ $= 16\sqrt{3} - \frac{16\pi}{3}$

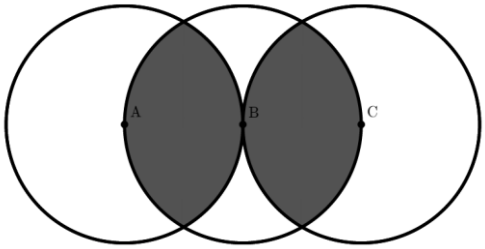
b)
The diagram shows three circles, each of radius 6cm.
The centres of the circles are A, B and C such that ABC is a straight line and AB = BC = 6cm.



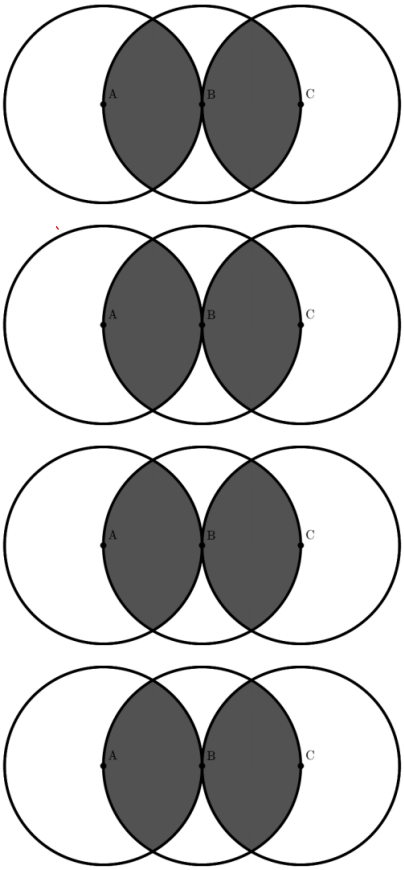
Work out the area of the shaded region.
Give your answer in terms of π.

What is the area of each circle?	$A = \pi r^2 = \pi \times 6^2 = 36\pi$
How much of the circle, centre B, is unshaded?	 A regular hexagon, formed of six equilateral triangles, is inscribed in a circle. Area of the sector = $\frac{1}{3} \times 36\pi = 12\pi$ Area of the triangle = $\frac{1}{2} \times 6 \times 6 \times \sin 120 =$ $18 \times \frac{\sqrt{3}}{2} = 9\sqrt{3}$ Area of the segment = Area of sector – area of triangle =
How much of the circle, centre B is shaded?	

c)
The diagram shows three circles, each of radius 5cm.
The centres of the circles are A, B and C such that ABC is a straight line and AB = BC = 5cm.



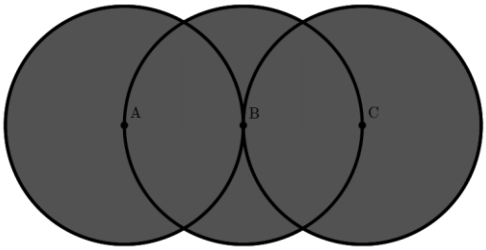
Work out the total area of the two shaded regions.
Give your answer in terms of π.

What is the area of each circle?	$A = \pi r^2 = \pi \times 5^2 = 25\pi$
How much of the circle, centre B, is shaded?	 A regular hexagon, formed of six equilateral triangles, is inscribed in a circle. Area of the sector = Area of the triangle =

d)

The diagram shows three circles, each of radius 5cm.

The centres of the circles are A, B and C such that ABC is a straight line and AB = BC = 5cm.



Work out the area of the shaded region.

Give your answer in terms of π.