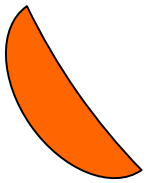
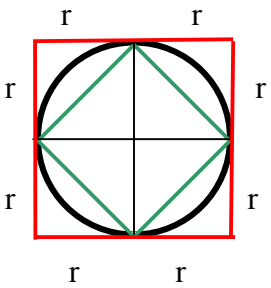
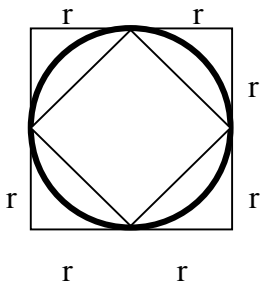
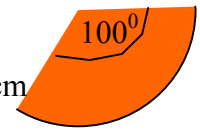
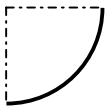
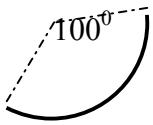
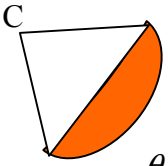
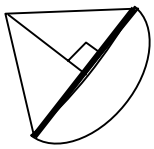
Sectors

This is a **Sector.**

This is an Arc.



This is a **Segment.** **Like an orange segment.**

WORKING WITH AREAS	WORKING WITH LENGTHS
The area of a circle is $A = \pi r^2$ With π being approximately 3.14 and r being the radius, we see four squares of area r^2 each. **The area of the square is $4 r^2$.**  The area of the diamond is equal to $2 r^2$ The area of the circle lies between $2 r^2$ and $4 r^2$. $2 r^2 < A < 4 r^2$. It is $3.14 r^2$.	The circumference of a circle is $C = 2 \pi r$ or πd where d is the diameter. The perimeter of the square is 8d. The perimeter if the diamond is $4 \sqrt{2}$ r (using Pythagoras) i.e. about 6 r. We can see that the perimeter of the circle lies between that of the diamond and the square. $6r < P < 8r$ i.e. the circumference $3d < C < 4d$ $C = 3.14 d$ 
Fractions of the area of the circle (½, ¼, ¾ etc) may be found by multiplying the whole area by that **fraction.** e.g. $\frac{1}{4} \times \pi r^2$ For other sectors, create the fraction using $\frac{\text{angle at the centre}}{360^0}$ r = 8 cm  $A = \frac{100}{360} \times \pi 8^2 = 55.85 \text{ cm}^2$	Fractions of the circumference of the circle (½, ¼, ¾ etc) may be found by multiplying the whole circumference by that **fraction.** E.g. $\frac{1}{4} \times 2\pi r$ or $\frac{1}{4} \times \pi d$  For other arcs, create the fraction  Arc length $= \frac{100}{360} \times 2\pi 8$ $= 13.96$ cm
To find the area of a segment subtract the triangle from the sector.  Use the formula ½ abSin C for the area of the triangle. a = b = radius If the angle at C is θ^0 and the radius is 8 cm. then the Area is $\frac{\theta}{360} \times \pi 8^2 - \frac{1}{2} 8^2 \sin \theta$	To find the length of a chord use the cosine formula or split the triangle in two halving the angle at the centre.  Find half the length of the chord using The top right-angled triangle and then Double this to get the full length of the chord.