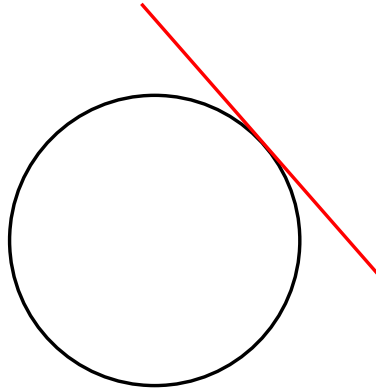
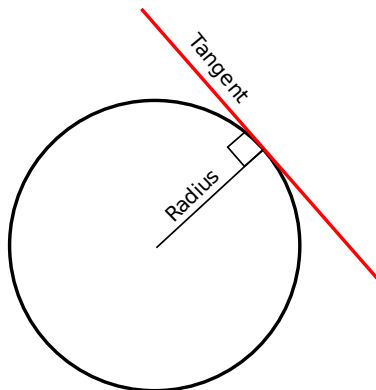


# Circle theorems (Year 9)

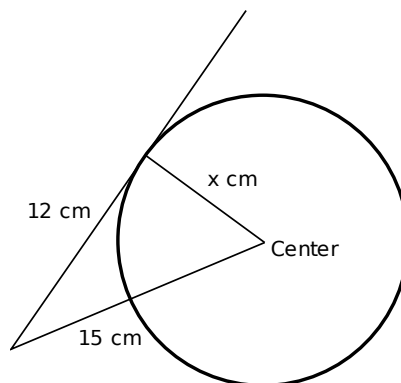
Circle theorems are “rules of angles” that work in circles. You will come across a total of 7 theorems at GCSE level (have a look on My maths if you want a sneak preview of what these all are), but you need to know one key theorem before your SATs. First, some vocabulary. A line drawn from a point outside a circle which passes the circle, just touching it, is called a **tangent**:



**Theorem 1.** *A radius and a tangent always meet at  $90^\circ$  (see diagram below)*



**Example.** Find the value of  $x$  in the following diagram.



The triangle shown must be right-angled since the radius and tangent meet at  $90^\circ$ . Hence, we can use Pythagoras' theorem to find  $x$ .

$$122 + x^2 = 152$$

$$144 + x^2 = 225$$

$$x^2 = 81$$

$$x = 9 \text{ cm}$$

*You may have noticed this is the 3, 4, 5 triple enlarged three times to give 9, 12, 15.*