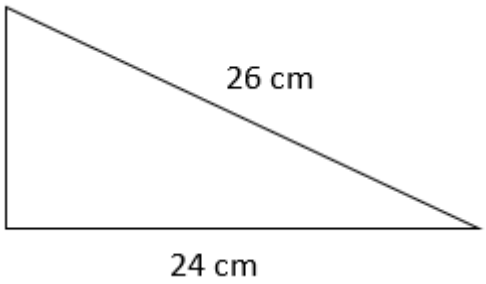
Recap Mix 3

1. Expand and simplify the following:
   a. $(x+y)(x-y)$
   b. $(2x-5)(x^2-3x+3)$

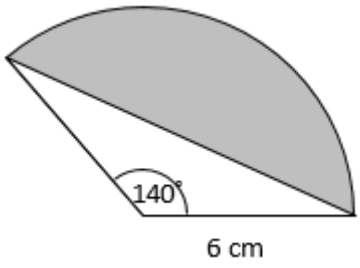
2. Use the fact that $(a+b)(a-b)$ is equivalent to a^2-b^2 in order to calculate 2020^2-2018^2 without using a calculator

3. What is the *area* of this right-angled triangle? Do not use a calculator.



4. Fully factorise the following:
   a. $4x^2+6x$
   b. $4x^2-25$

5. Find the area of the shaded segment shown. Give your answer to 3 significant figures.

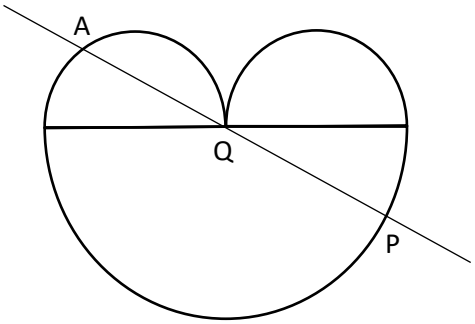


6. A cone has a **total** surface area of 144π cm^2 and a **diameter** of 16 cm. Find the cone's vertical height without using a calculator.

7. Check your answers all appear in the answer box over the page at the bottom.

PTO for bonus

Bonus. The diagram shows a shape whose external perimeter is formed of three semi-circular arcs: one large-radius arc and two identical small-radius arcs. P is some point on the large semi-circular arc; Q is the point where the two smaller semi-circular arcs meet, and A is the second point of intersection of the line PQ with the external perimeter.



Prove that, wherever P is locates on the large semi-circular arc, the external perimeter is divided into two **equal** parts by the line AQP.

Answer box (except bonus)

$2x(2x+3)$	6	x^2-y^2	32.4
8076	$(2x+5)(2x-5)$	240	$2x^3-11x^2+21x-15$