18. Simplify fully $\dfrac{5x^2 + 14x - 3}{50x^2 - 2}$
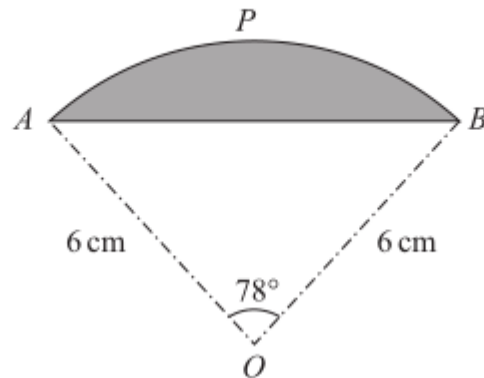
19.

Diagram **NOT** accurately drawn

The diagram shows a sector $OAPB$ of a circle, centre O.
AB is a chord of the circle.
The radius of the circle is $6\,\text{cm}$.
Angle $AOB = 78°$.

Calculate the perimeter of the shaded **segment** APB.
Give your answer correct to 3 significant figures.

20. Correct to 2 significant figures, the area of a square is $230\,\text{cm}^2$.

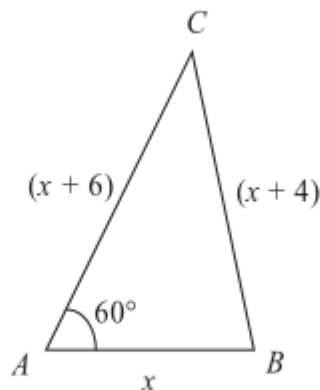Calculate the lower bound for the perimeter of the square.

21.

Diagram **NOT** accurately drawn

The diagram shows the length, in centimetres, of each side of triangle ABC.
Angle $BAC = 60°$.

Find the value of x.

22. (a) Each of the numbers x, y and z is greater than 1 and less than 10

$$x \times 10^5 + y \times 10^4 = z \times 10^5$$

Find an expression for z in terms of x and y.
Give your answer as simply as possible.

$z = $ ....

(2)

(b) Each of the numbers 3×10^n, 4×10^m and $a \times 10^p$ is in standard form.

$$\frac{3 \times 10^n}{4 \times 10^m} = a \times 10^p$$

(i) Find the value of a.

$a = $ ....

(ii) Find an expression for p in terms of n and m.