

S4 – Homework 9

Non-calculator section:

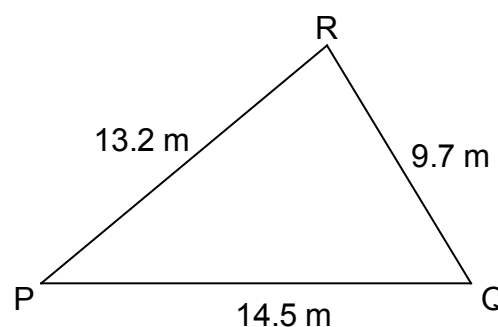
- Expand the brackets and simplify $(3x - 2y)^2 + x^2$.
- (a) Factorise fully $2x^2 - 8x$.
(b) Hence simplify $\frac{2x^2 - 8x}{2x^2 - 7x - 4}$.
- Solve the equation $2x - \frac{1}{2}(5x - 1) > 4$.
- Solve the pair of equations $5a - 3c = 33$
 $2a - 2c = 14$
- Express the formula $H = w + \frac{u}{v}$ in terms of v .
- $f(x) = \frac{5x + 2}{\sqrt{x}}$. Find $f(2)$, expressing your answer with a rational denominator.
- (a) Simplify $\frac{a^4 \times a^{-\frac{1}{2}}}{a^{\frac{3}{2}}}$ (b) Evaluate $32^{\frac{4}{5}}$

Calculator section:

- Solve the equation $x^2 - 2x - 7 = 0$, **giving your answers correct to one decimal place.**
- Solve the equation $\tan 75^\circ + 4\tan x^\circ = 3$, $0 \leq x \leq 360$.
- A satellite orbiting the Earth travels at a speed of 3.1×10^3 kmph.
How far will the satellite travel in one week?



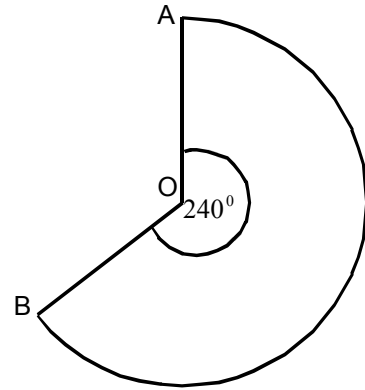
- Triangle PQR is shown opposite with $PQ = 14.5$ m, $PR = 13.2$ m and $RQ = 9.7$ m.
 - Calculate the size of the smallest angle in this triangle.
 - Hence find the area of this triangle.



12. The mean of the scores of a basketball team after 5 games was 63. If the team score 75 in the next game, calculate the mean now.

13. The shape of material used to make a tent is a sector of a circle, with radius 3.2 metres.

Calculate the area of this piece of material.



14. A company had profits of £25.7 **million** in the year 2003. The company expect their profits to increase by 6% in 2004 and again in 2005 and then by 7.5% in 2006.
Calculate, to 3 significant figures, their expected profits in the year 2006.