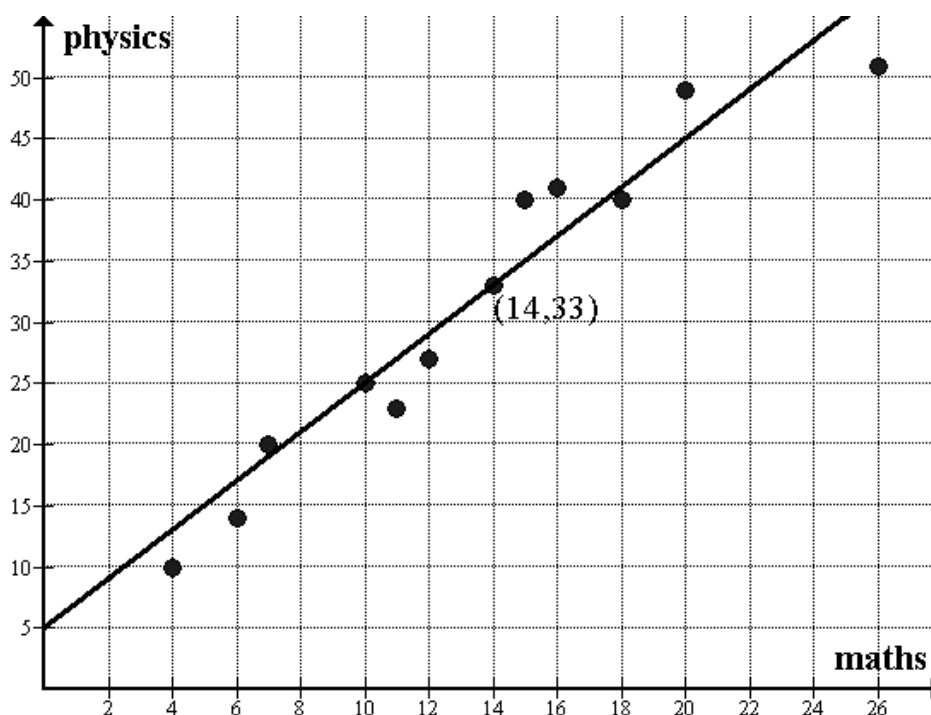


S3 Homework 10

Non-calculator section:

- Express as a single fraction $(1\frac{2}{3})^2 - 2\frac{1}{2}$
- $f(x) = 20 - 2x^2$.
 - Calculate $f(-3)$
 - Given $f(x) = -12$, find two values for x .
- Express as a single fraction in its simplest form $\frac{6}{3x-4} - \frac{2}{x}$ $x \neq 0, \frac{4}{3}$
- The scattergraph below shows the marks of 12 pupils in maths and physics tests.



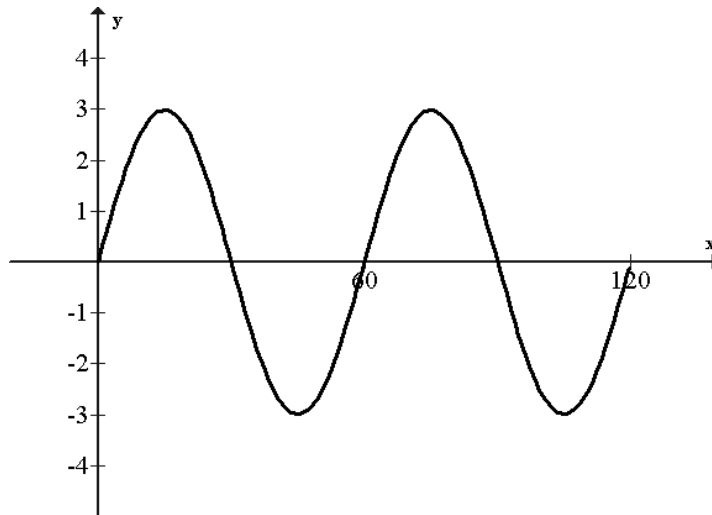
A line of best-fit has been drawn on the diagram.

- Calculate the equation of the line of best-fit.
 - Laura scored 23 in her maths test. Use your equation to estimate her physics mark.
- P varies as the square of Q and inversely as R .
 - Write down a formula connecting P , Q and R .
 - If Q is trebled and R is halved, what effect will this have on P .
 - Express the formula $P = 2u^2 - rs$ in terms of u .

Calculator section:

- Solve the equation $x^2 - 7x - 2 = 0$, giving your answers correct to 1 d.p.

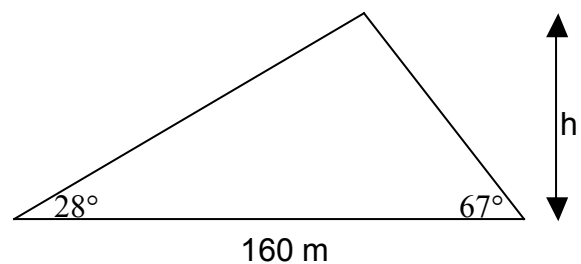
8. The diagram below shows part of the graph of $y = a \sin bx$.



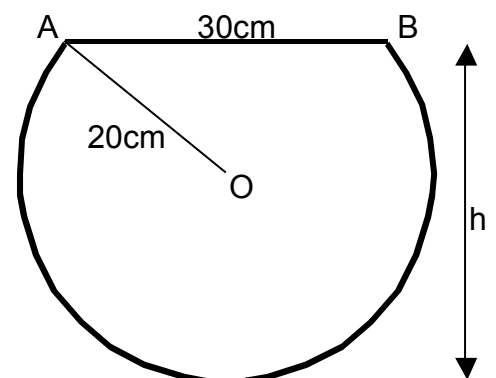
Write down the values of a and b .

9. The speed of light in a vacuum is approximately 2.998×10^8 metres per second.
How far does light travel in one year?
Give your answer in Scientific Notation.

10. Calculate h in the diagram opposite.



11. A logo for a company is in the shape of a circle with a horizontal top.
The radius OA of the circle is 20 cm and the distance AB is 30 cm.



Calculate h , the height of the logo.

12. A triangle ABC has area 105 cm^2 . $AB = 15 \text{ cm}$ and $AC = 24 \text{ cm}$.
Calculate two possible sizes for angle BAC .