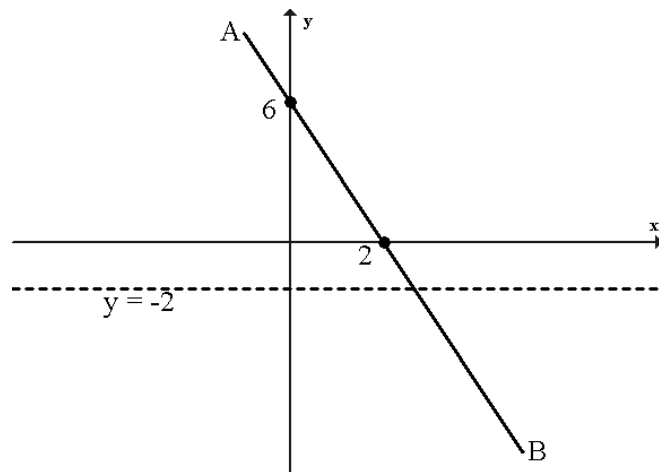


S4 Credit – Homework 7

Non-calculator section:

- Express as a single fraction $\frac{1}{2x} + \frac{2}{3x} - \frac{7}{6x+3}$ $x \neq 0, -\frac{1}{2}$
- P varies as the square of Q and inversely as R.
 - Find a formula connecting P, Q and R.
 - What happens to P when Q is multiplied by 3 and R is halved?

- Find the equation of the line AB shown opposite.
 - The line $y = -2$ is also drawn on the diagram. Find the coordinates of the point where the line AB meets the line $y = -2$.



4. $P = \frac{(2x+1)(x-2)}{3}$.

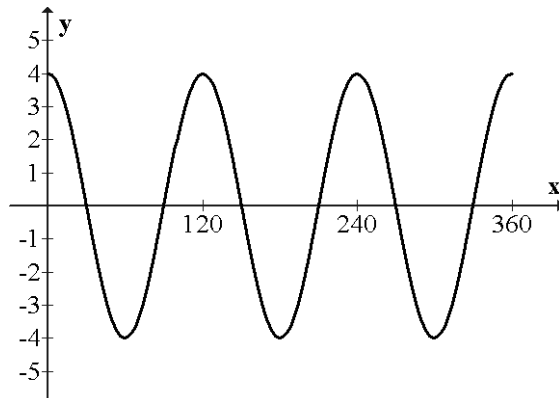
- Calculate P when $x = -5$.
- Calculate x when $P = 4$.

5. Express $\frac{\sqrt{3}}{\sqrt{15}}$ with a rational denominator.

6. Solve $3 - (7 - x) > 3(x + 2)$

Calculator section:

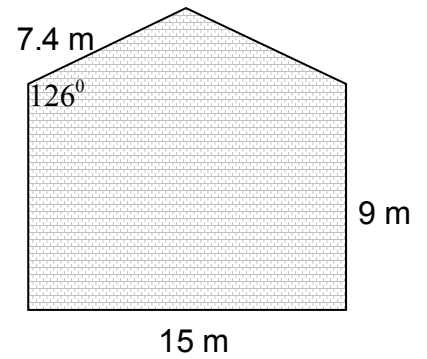
7. The graph below can be written in the form $y = k \cos ax$.



Write down the values of k and a.

8. Solve $3a^2 = 2a + 2$ giving your answers correct to 3 significant figures.

9. The diagram opposite shows the end wall of a warehouse.
 The wall is in the shape of a rectangle with a triangular top.
 The wall is to be painted, the cost of paint being £1.55 per square metre.

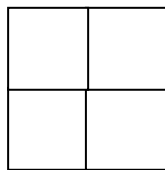


Calculate the area of the wall and hence the total cost of the paint required.

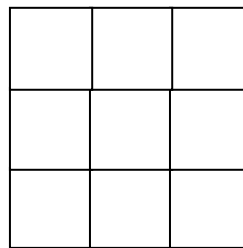
10. Patterns can be made from matches as shown below.



$N = 1$



$N = 2$



$N = 3$

The formula for M , the number of matches needed to make a square of side N matches is given by

$$M = aN^2 + bN$$

Find the values of a and b .

11. The diagram opposite shows part of the graph of $y = x^2 - 2x - 15$.

- (a) Find the coordinates of A and B.
 (b) Find the minimum turning point on the curve.

