

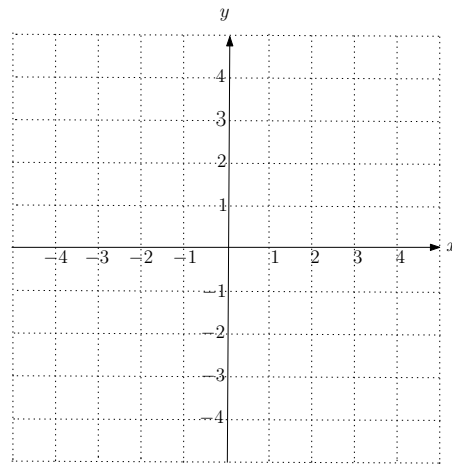
# Maths Exercises - Worksheet 1

## Pure Maths

1. Show that  $(n + 2)^2 - (n - 2)^2 = 8n$ .  
 .....  
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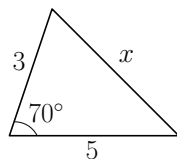
2. Solve the equation  $x^2 - 5x - 14 = 0$ .  
 .....

3. Sketch the graph of  $y = 4x - 2$ . Label where the graph cuts the  $x$  and  $y$  axes.



4. Find the  $n$ th term of the sequence 2,6,10,14,18,....  
 .....

5. Given the triangle with sides 3cm and 5cm and an angle of  $70^\circ$  as follows, find the side labelled  $x$ .

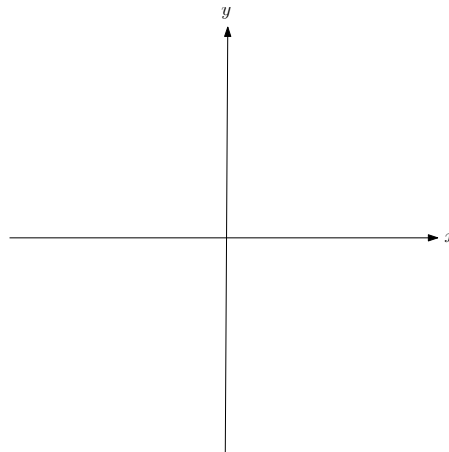


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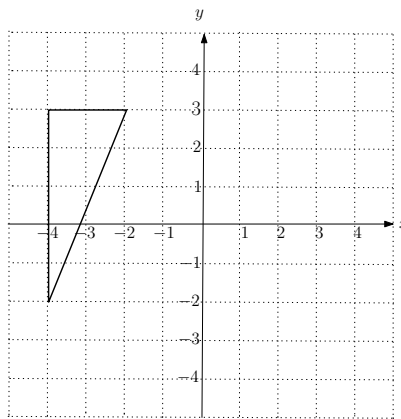
6. Fill in the following table of values for  $y = x^2 - 5x - 14$ .

$x$	-4	-2	0	2	4	6	8
$y$							

Sketch the graph of  $y = x^2 - 5x - 14$ . What parts of your sketch relate to the solutions of question 2?  
 .....



7. Find the equation of the line that passes through the points (-1,2) and (2,8).  
 .....  
 .....
8. Find the area of the triangle drawn in question 9. ....
9. Translate the following triangle by  $\begin{pmatrix} 5 \\ -2 \end{pmatrix}$ .



**Statistics**

1. Find the mean, median, mode, range and interquartile range for the following data:

11, 31, 25, 13, 22, 33, 17, 25, 16, 24.

Sketch a box plot to display this data.

.....  
 .....  
 .....



- Draw the outcomes and associated probabilities on a tree diagram of three consecutive fair coin tosses. What is the probability of getting three tails in a row?

### Mechanics

- Speed can be measured in kilometres per hour ( $\text{kmh}^{-1}$ ) or metres per second ( $\text{ms}^{-1}$ ). Convert  $72\text{kmh}^{-1}$  into  $\text{ms}^{-1}$ .
- If you are travelling at a speed of 30 miles per hour, how long would it take to travel 75 miles?

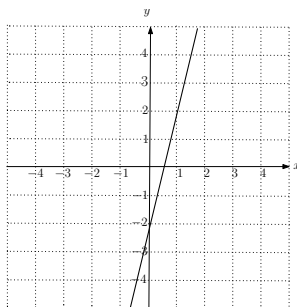
### Exam Practice

- A swimming pool has width  $x$  and length  $2x$ . The perimeter of the pool is 90 metres, find  $x$ .
- Find the area of the pool cover.
- If you swam from one corner to the diagonally opposite corner, how far would you swim?

### Solutions

#### Pure Maths

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- $x = 7, x = -2$

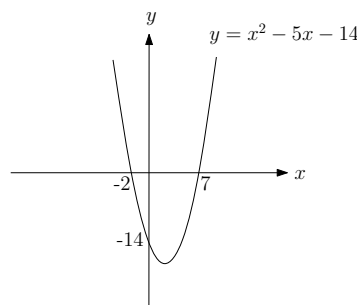


- 
- $4n - 2$

5.  $x = 4.872$  to 3 d.p.

6.

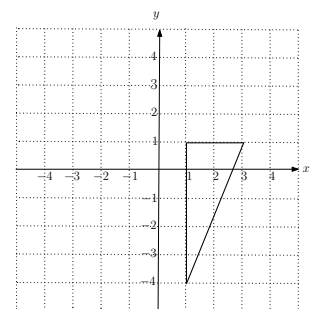
$x$	-4	-2	0	2
$y$	22	0	-14	-20
$x$	4	6	8	
$y$	-18	-8	10	



The solutions of Question 2

are the roots of this graph - where the graph crosses the  $x$ -axis, i.e. when  $y = 0$ .

- $y = 2x + 4$
- 5 units<sup>2</sup>



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