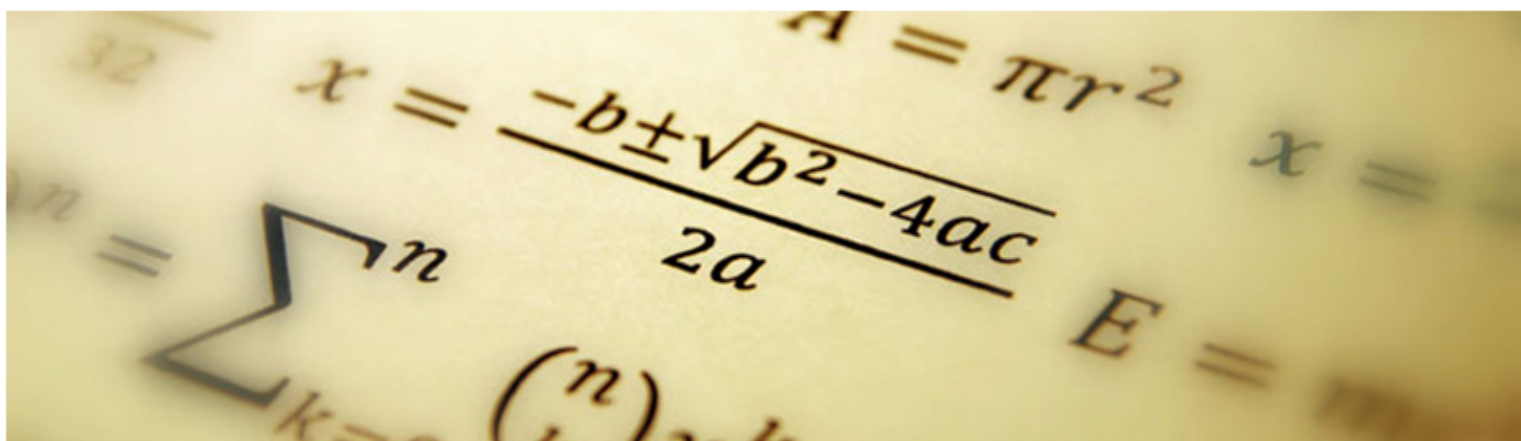




# Knowledge Organiser *Maths*

**Year 11 Term 1 Foundation**



# Year 11 Foundation Term 1 Overview

## Number

Factors, multiples and primes	BIDMAS	Place value	Rounding
HCF and LCM	Laws of indices (basic, overlap to algebra)	Directed numbers	Estimates

## Algebra

Patterns and sequences	Next term	Function machines	Expanding and simplifying	Use the symbols =, ≠, <, >, ≤, ≥.	Coordinates	Solving linear equations
Substituting & Collecting like terms	nth term	Expanding and simplifying		Solve linear inequalities	Sketching straight line graphs	Real-life graphs

## Geometry, Shape and Measures

Types of 2D/3D shapes and properties	Types of lines and angles	Measuring lines and angles	Plans and elevations	Read scales	Symmetry and rotational symmetry	Area & perimeter	Area & perimeter problems	Pythagoras' theorem	SOH CAH TOA
Angles on line/ triangle/ point/ quadrilateral	Angles in polygons	Angles in parallel lines	Constructing triangles	Bearings	Transformations	Area and perimeter of compound shapes and trapeziums	Volume and surface area of cuboids	Volume and surface area of prisms	Volume and surface area of spheres & cones

## Useful Websites—Resources, Past Papers, Video Tutorials and Solutions

- ♦ <https://corbettmaths.com/contents/>
- ♦ <https://vle.mathswatch.co.uk/vle/>  
 USERNAME: namesurname@dustonschool.org  
 PASSWORD: berrywood
- ♦ <https://www.methodmaths.com/>  
 CENTRE ID: duston  
 USERNAME: namesurname@dustonschool    PASSWORD: berrywood

# Term 1 Homework 1 Foundation

Use the websites suggested on the overview page to help complete these questions.

Your teacher will let you know when this homework is due. You will go over how to complete these together in class and then you have a go at the next homework which has similar questions.

This will increase your success in these topics in the Summer.

1) BIDMAS (clip 75 mathswatch)

$$10^2 - 4 \times 10 =$$

2) Add the fractions.  $\frac{3}{10} + \frac{2}{5}$

Mathswatch clip 71a/71b

3) Multiply the fractions and **simplify** your answer.

$$\frac{3}{8} \times \frac{4}{5}$$

Mathswatch clip 73

4) Find 15% of 360.

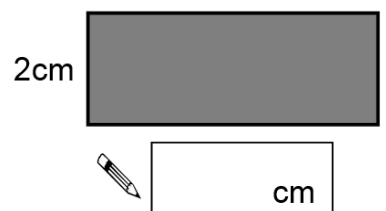
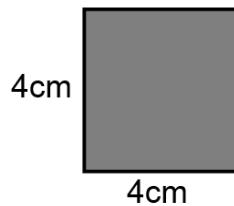
Clip 87 mathswatch

5 The cost, in pounds (£), of hiring a car can be worked out using the following rule:

**Add 3 to the number of days hire.**  
**Multiply your answer by 10.**

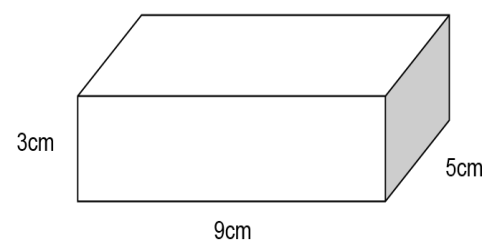
Work out the cost of hiring a car for 9 days.

6) The square and rectangle below both have the **same area**.  
Find the missing side length.



Mathswatch clip 53

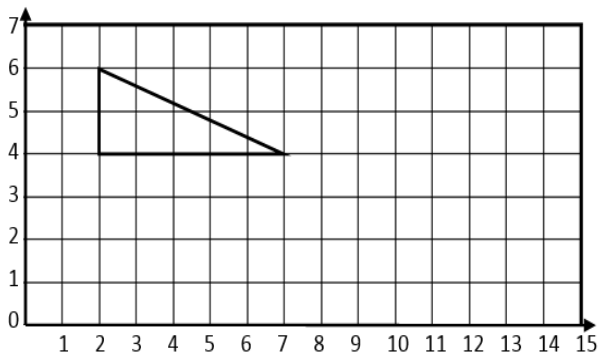
Calculate the **volume** of the cuboid.



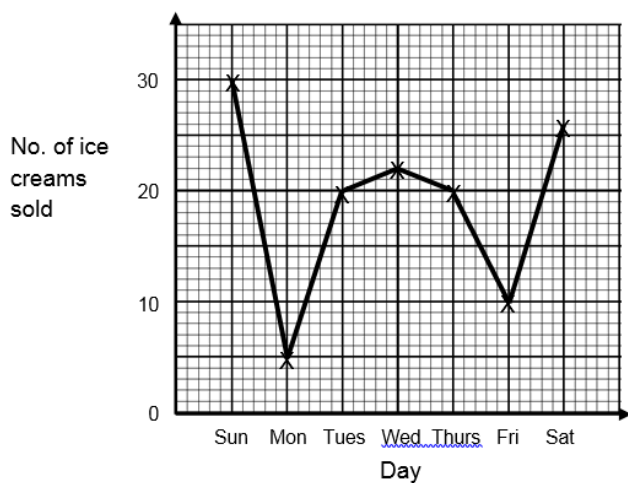
Mathswatch clip 115

8) Mathswatch clip 50

On the co-ordinate below, **translate** the shape by vector  $\begin{pmatrix} 5 \\ -3 \end{pmatrix}$



9) The graph shows the number of ice creams sold



Work out the mean number of ice-cream sold

Mathswatch clip 60/130b

10) Work out the LCM of 12 and 15.

Mathswatch clip 80

11) (a) Expand :  $4(x + 3)$

(b) Expand and simplify the expression:  
 $2(x+4)+2(x-1)$

Mathswatch clip 93/134a

12) Evaluate the expression  $2x + y$   
 when  $x = 4$  and  $y = -3$

Mathswatch clip 95

13) **Ratio, Proportion & Rates of Change**

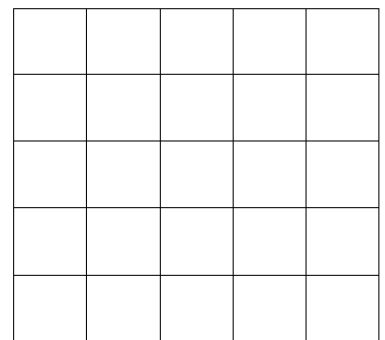
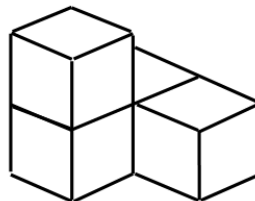
Reduce the ratio  $36 : 48$  to its simplest form:

Mathswatch clip 38

14) A snack bar weighs 20g and contains 7g of sugar.  
 What **percentage** of the bar is sugar?

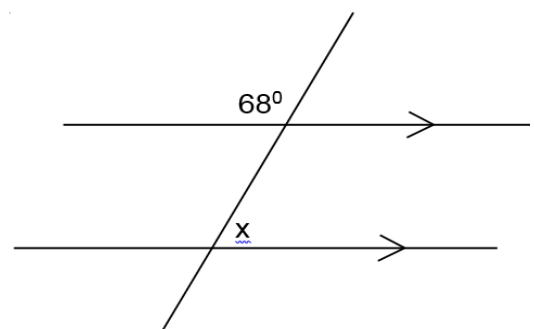
Mathswatch clip 89

15) Draw the plan view of the solid



Mathswatch clip 51

16) Give the size of angle 'x' and your reason.



Mathswatch clip 120

## Term 1 Homework 2 Foundation

Use the websites suggested on the overview page to help complete these questions.

Your teacher will let you know when this homework is due. You will go over how to complete these together in class and then you have a go at the next homework which has similar questions.

This will increase your success in these topics in

1) BIDMAS  $3^2 \times (5 - 3) - 1$  the Sum-

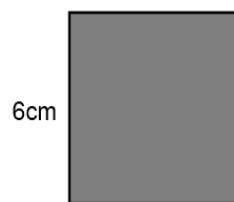
- 5) A shop sells bananas costing  $x$  pence and apples costing  $y$  pence.  
Alex buys 2 bananas and 3 apples.  
Write an expression for the total cost of his shopping

(clip 75 mathswatch)

Mathswatch clip 137

2)  $\frac{1}{3} + \frac{1}{5}$

- 6) The square and rectangle below both have the **same perimeter**.  
Find the **area** of the rectangle.



Area =  $36\text{cm}^2$



Area =   $\text{cm}^2$

Mathswatch clip 71a/71b

3)  $\frac{5}{6} \times \frac{3}{5}$

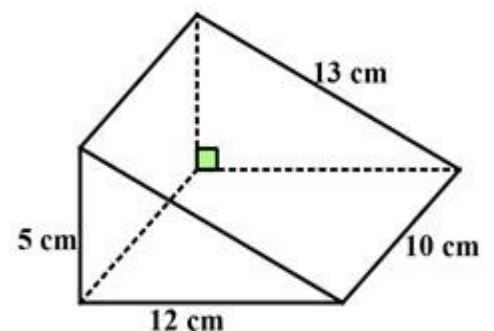
Simplify the answer

Mathswatch clip 53

Mathswatch clip 73

- 4) Find 35% of 180.

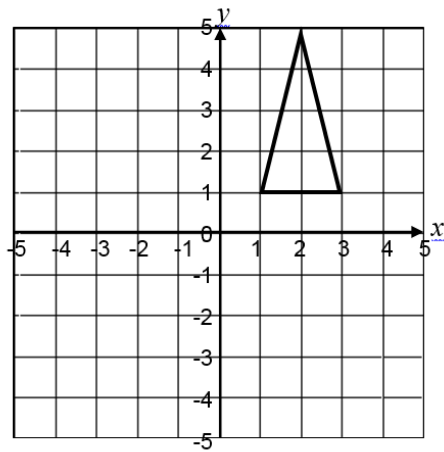
- 7) Calculate the **volume**



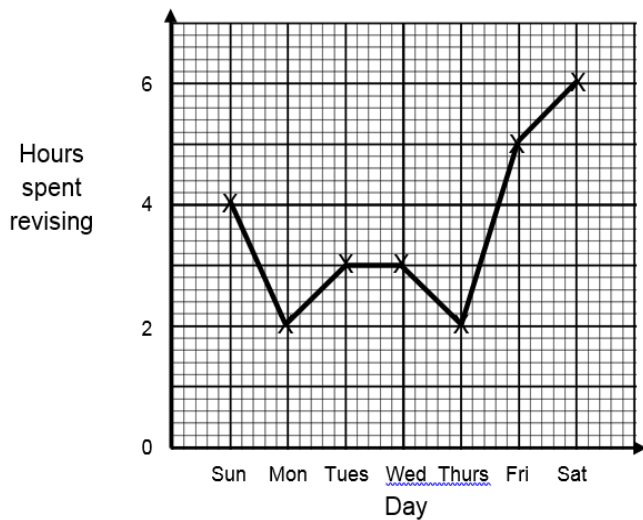
Clip 87 mathswatch

Mathswatch clip 119

- 4) On the grid below, reflect the shape in the line  $x = -1$ .



Mathswatch clip 48



5) The graph shows the number of hours spent revising

Work out the mean number of hours spent revising-

Mathswatch clip 60/103b

- 6) Work out the HCF of 12 and 15.

Mathswatch clip 79

- 7) (a) Expand :  $3(x - 4)$

(b) Show that:

$$2(2x-3) - 2(x+5) = 2x - 16$$

Mathswatch clip 93/134a

Evaluate the expression  $5b + 2c$

- 8) When  $b = 3$  and  $c = -4$

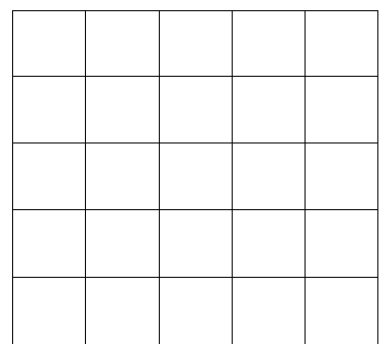
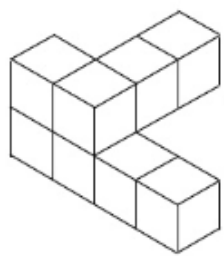
Mathswatch clip 95

- 9) Reduce the ratio  $18 : 12$  to its simplest form.

- 10) A class of 25 children has 8 boys.  
What **percentage** of the class are boys?

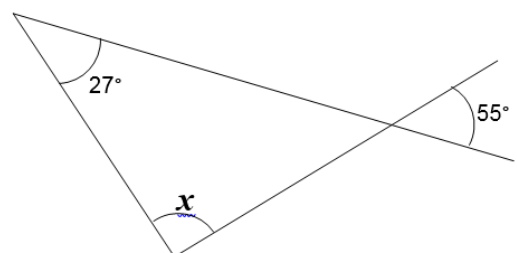
Mathswatch clip 89

- 11) Draw the plan of this shape



Mathswatch clip 51

- 12) Find the missing angle,  $x$ .



Mathswatch clip 45/121

# Term 1 Homework 3 Foundation

Use the websites suggested on the overview page to help complete these questions.

Your teacher will let you know when this homework is due. You will go over how to complete these together in class and then you have a go at the next homework which has similar questions.

This will increase your success in these topics in the Summer.

1) BIDMAS  $5 + 3^2 - 6 \times 2$

(clip 75 mathswatch)

2)  $\frac{2}{3} + \frac{1}{5}$

Mathswatch clip 71a/71b

3) Multiply the fractions and **simplify** your answer.

$$\frac{3}{8} \times \frac{4}{5}$$

Mathswatch clip 73

4) Find 45% of 360.

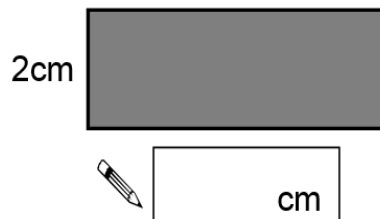
Clip 87 mathswatch

5) The points scored by a football team can be worked out using the following rule:

**Multiply the number of games won by 3.  
Add the number of games drawn.**

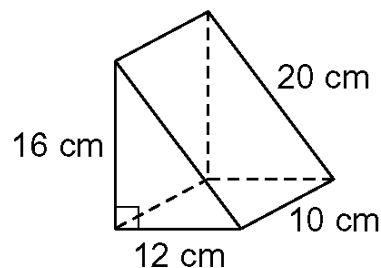
How many points does a team score for 12 games won and 8 games drawn?

6) The square and rectangle below both have the **same area**.  
Find the missing side length.



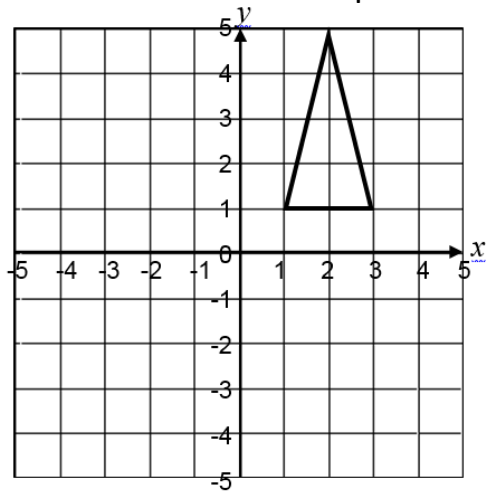
Mathswatch clip 53

7) Calculate the **volume** of the pyramid.



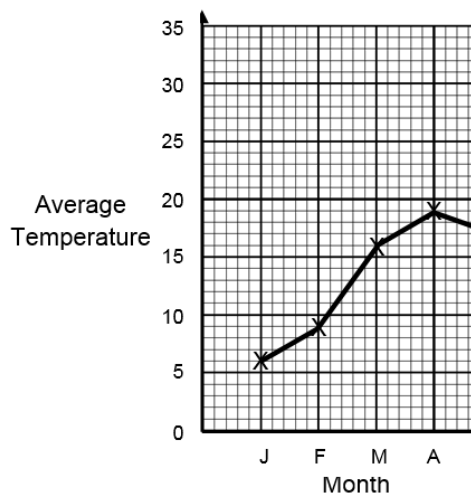
Mathswatch clip 115

8) Translate the shape by vector  $\begin{pmatrix} -3 \\ -4 \end{pmatrix}$



Mathswatch clip 50

9) The graph shows average temperature for Jan to April  
Work out the mean average temperature



Mathswatch clip 60/103b

10) Work out the LCM of 10 and 18.

Mathswatch clip 80

11) 7) (a) Expand:  $x(x + 2)$

(b) Expand and simplify the expression:  
 $4(x+2) - 3(x-1)$

Mathswatch clip 93/134a

12) Evaluate the expression  $6x - 3y$

When  $x = 3$  and  $c = 2$

Mathswatch clip 95

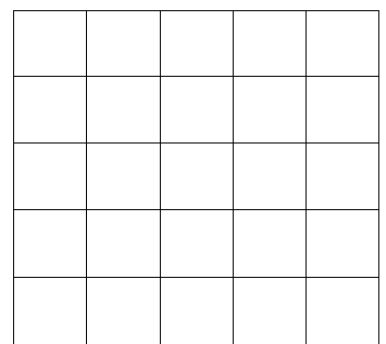
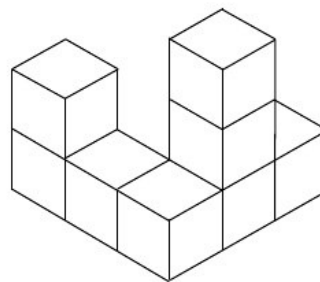
13) Reduce the ratio  $1\text{kg} : 700\text{g}$  to its simplest form.

Mathswatch clip 89

14) Express £18 as a percentage of £20.

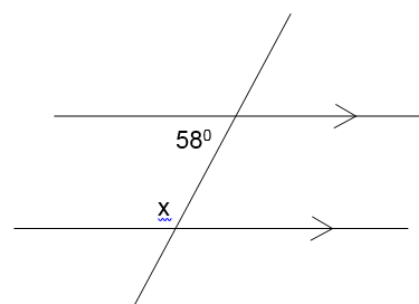
Mathswatch clip 89

15) Draw the plan of this shape



Mathswatch clip 51

12) Give the size of angle 'x' and your reason.



Mathswatch clip 120