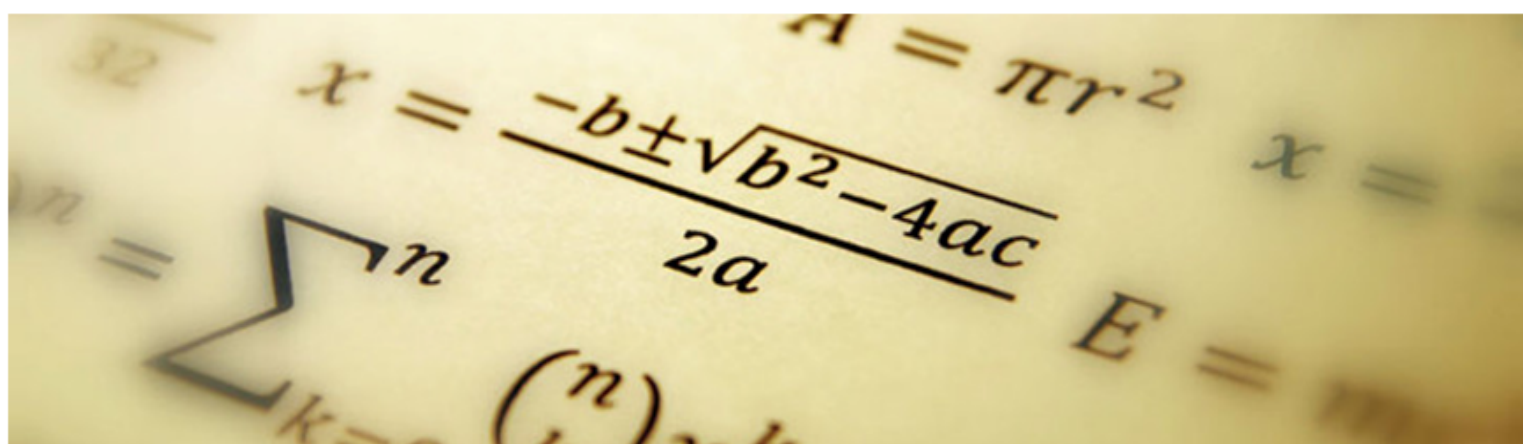




Knowledge Organiser *Maths*

Year 11 Term 1 Intermediate



Year 11 Intermediate Term 1 Overview

Number

Laws of indices (basic, overlap to algebra)	HCF and LCM	Estimates
Standard form	Surds (Simplify and expand)	Bounds

Algebra

Substituting & Collecting like terms	Expanding and simplifying	Expand quadratics	Solve linear inequalities	Deriving equations from words	Sketching straight line graphs	Real-life graphs	
nth term	Solving linear equations	Factorise and solve quadratics	Rearrange formulae	Shape algebra	$y=mx+c$	Sketching quadratic and cubic graphs	Solve simultaneous equations graphically

Geometry, Shape and Measures

Angles on line/triangle/point/quadrilateral	Plans and elevations	Bearings	Constructing triangles	Shape problem solving	Angles in polygons	Pythagoras' theorem	Area and perimeter of sectors
Angles in parallel lines	Constructing Angle and line bisectors	Loci	Reflection and rotation	Enlargement and translation		Area and circumference of circles	SOH CAH TOA

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

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

Term 1 Homework 1 Intermediate

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) Write the following in standard form
(i) **32000**
(ii) **0.0032**

Mathswatch clip 83

- 2) The mean of 5 numbers is 6. What was the total of the 5 numbers?

Mathswatch clip 62

- 3) A kettle in a 20% off sale is priced at £43.20.
Work out the **original price**.

Mathswatch 110

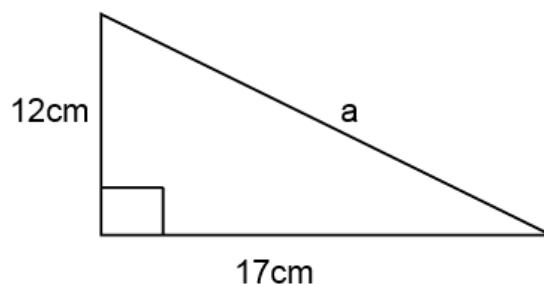
- 4) Factorise $x^2 + 9x + 20$

Mathswatch clip 157

- 5) Solve $8x + 6 = 2(2x + 1)$

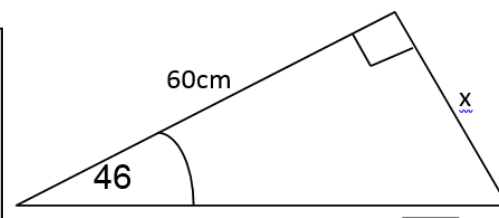
Mathswatch clip 135a/135b

- 6) Work out the length of a



Mathswatch clip 150a/150b

Calculate x



7) Mathswatch clip 168

- 8) Solve the simultaneous equations:
 $3x + y = 1$
 $x - 2y = 19$

Mathswatch clip 162

- 9) Calculate the mean

x	frequency
15	4
16	15
17	2
18	0
19	4

Mathswatch clip 130a

10) Estimate Mathswatch clip 91

$$\begin{array}{r} 48 + 54 \\ \hline 13 \end{array}$$

- 11) Simplify Mathswatch clip 82/131

$$2^5 \div 2^2 = \qquad (2^2)^4 = \qquad 3^5 \times 3^3 =$$

- 12) A gold bracelet has a volume of 10cm^3 .
The density of silver is silver is 19.3g per cm^3
Work out the mass of the gold bracelet.

Mathswatch clip 142

- 13) X has been rounded to 4.8 to 1 decimal place

Write down the error interval Mathswatch

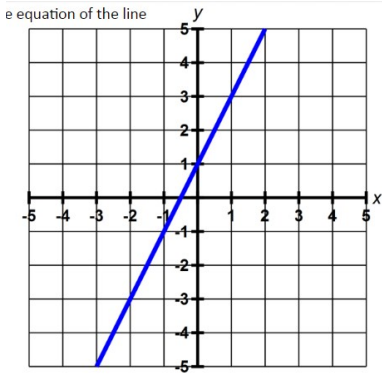
\leq

x

$<$

clip 155

- 14) Find the gradient of the line (rise over run) Mathswatch clip 97



- 15) Complete the table Mathswatch clip 186

Weight, w, Lbs	Frequency	Cumulative Frequency
$0 < w \leq 2$	2	
$2 < w \leq 4$	17	
$4 < w \leq 6$	24	
$6 < w \leq 8$	23	
$8 < w \leq 10$	10	
$10 < w \leq 12$	4	

16)

Number of sides (regular)	Sum Interior Angles	Exterior Angle	Interior Angle
4			
5			
6			

Term 1 Homework 2 Intermediate

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)

Write as an ordinary number

(i) 1.82×10^3

(ii) 2.3×10^{-2}

Mathswatch clip 83

2) The mean of 8 numbers is 7 What was the total of the 8 numbers?

Mathswatch clip 62

3) The cost of a roofing job including 20% VAT comes to £624.
Work out the **price excluding VAT**

Mathswatch 110

4) Factorise

$$x^2 + 5x + 4$$

4) Factorise

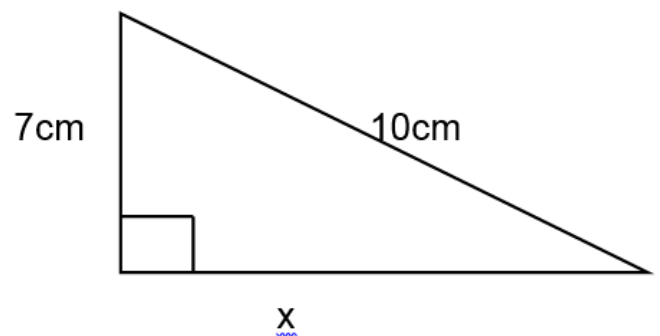
Mathswatch clip 157

5) Solve

$$5x - 6 = 2(2x - 1)$$

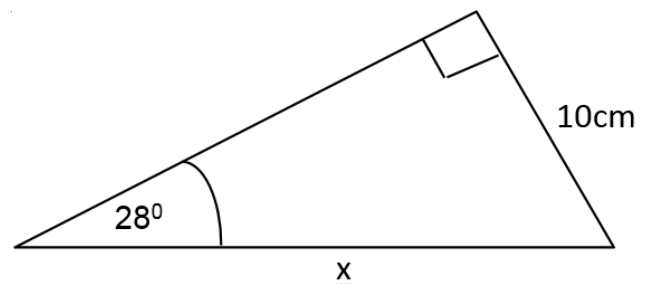
Mathswatch clip 135a/135b

6) Calculate x



Mathswatch clip 150a/150b

7) Calculate x



7) Mathswatch clip 168

- 8) Solve the simultaneous equations
 $3x + 2y = 12$
 $4x - y = 5$

- 12) 428g of platinum has a volume of 20cm³.
Work out the density of the platinum.

Mathswatch clip 162

- 9) Calculate an estimate for the mean

x	frequency
$0 < x \leq 10$	16
$10 < x \leq 20$	7
$20 < x \leq 30$	4
$30 < x \leq 40$	0
$40 < x \leq 50$	3

Mathswatch clip 142

- 13) X has been rounded to 40 to the nearest 10m

Write down the error interval

\leq

x

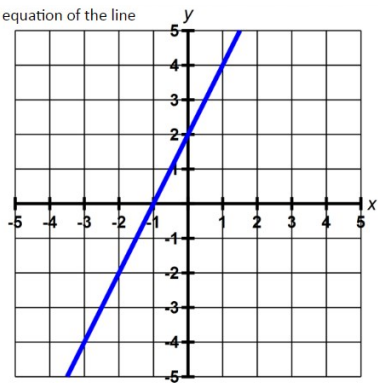
$<$

155

Mathswatch clip

- 14) Find the gradient of the line (rise over run)

Mathswatch clip 97



- 15) Complete the table Mathswatch clip 186

Weight, w, Lbs	Frequency	Cumulative Frequency
$0 < w \leq 2$	5	
$2 < w \leq 4$	4	
$4 < w \leq 6$	3	
$6 < w \leq 8$	6	
$8 < w \leq 10$	3	
$10 < w \leq 12$	2	

Mathswatch clip 130a

- 10) Estimate Mathswatch clip 91

$84 + 750$

22

Mathswatch clip 82/131

- 11) Simplify

$(3^5)^2 =$

$2^6 \div 2 =$

$2^4 \times 2^5 =$

16)

Number of	Sum Interior	Exterior Angle	Interior Angle
4			
5			
6			

Term 1 Homework 3 Intermediate

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) Write in standard form

(i) 540

(ii) 0.00005

Mathswatch clip 83

2) The mean of 20 numbers is 4 What was the total of the 10 numbers?

Mathswatch clip 62

3) A 1500m runner did a time of 5.12minutes which was a 20% reduction in his original time. What was his original time?

Mathswatch 110

4) Factorise

$$x^2 - 7x + 10$$

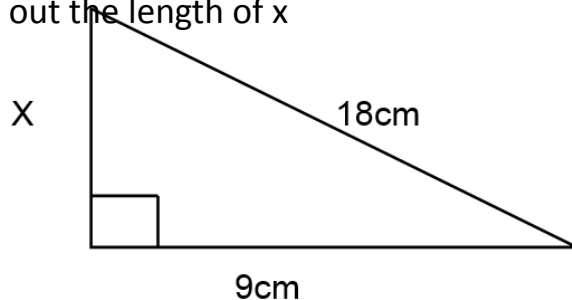
Mathswatch clip 157

5) Solve

$$6x + 1 = 2(2x + 1)$$

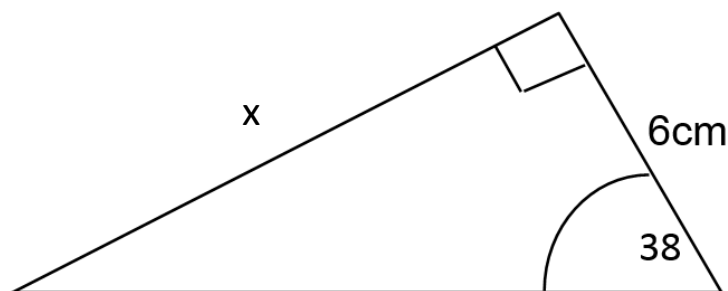
Mathswatch clip 135a/135b

6) Work out the length of x



Mathswatch clip 150a/150b

7) Calculate x



7) Mathswatch clip 168

8)Solve the simultaneous equations:

$$\begin{aligned} 3x + 4y &= 5 \\ x + 2y &= 1 \end{aligned}$$

Mathswatch clip 162

9) Calculate an estimated mean

x	frequency
$20 < x \leq 30$	4
$30 < x \leq 40$	9
$40 < x \leq 50$	16
$50 < x \leq 60$	8
$60 < x \leq 70$	3

Mathswatch clip 130a

10) Estimate Mathswatch clip 91

$$\begin{array}{r} 524 + 195 \\ \hline 23 - 11 \end{array}$$

Mathswatch clip 82/131

11) Simplify

$$2^3 \times 2^4 =$$

$$(2^6)^2 =$$

$$2^5 \times 2 =$$

12) Density = 672g/cm3

$$\text{Volume} = 1000\text{cm}^3$$

Mathswatch clip 142

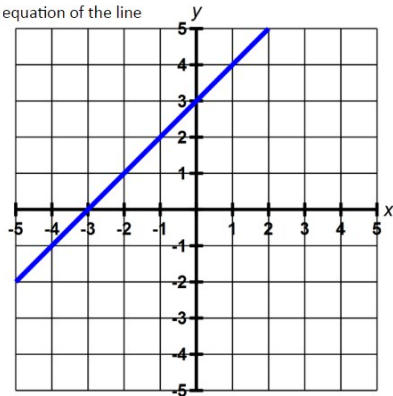
13) X has been rounded to 15 to the nearest whole number

Write down the error interval

$$\boxed{} \leq x < \boxed{} \quad 155$$

Mathswatch clip

14) Find the gradient of the line (rise over run) Mathswatch clip 97



15) Complete the table Mathswatch clip 186

Weight, w, Lbs	Frequency	Cumulative Frequency
$0 < w \leq 2$	2	
$2 < w \leq 4$	17	
$4 < w \leq 6$	24	
$6 < w \leq 8$	23	
$8 < w \leq 10$	10	
$10 < w \leq 12$	4	

16)

Number of	Sum Interior	Exterior Angle	Interior Angle
4			
5			
6			