

*Benjamin Britten Academy of Music and Mathematics*

# MATHEMATICS HOMEWORK BOOKLET

**Year 7 Book B**  
**SUMMER**



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**NAME:**

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# Mathematics homework

## Contents

### How does it work?

- One homework will be set a week
- The set and due date for each homework will be written on this page
- Some homework will need completing on this booklet, others on the internet
- If you need help logging onto a website, you need to see your class teacher
- If you need help with the homework task, you must speak to your teacher before the due date
- The school runs a homework club. Speak to your teacher to find out which day.
- If you loose your booklet they can be found on your class google classroom or on the schools website.
- Your teacher will give you information on where to find the answers.

WEEK	HOMEWORK TITLE	Due
1	NUMERACY	
2	CORE SKILLS	
3	RESEARCH TASK	
4	NEGATIVE NUMBERS	
5	WRITING EXPRESSIONS	
6	MATHSWATCH	
7	DOUBLING	
8	STATISTICAL DIAGRAMS	
9	RESEARCH TASK	
10	HALVING	
11	PROBABILITY	
12	MATHSWATCH	

## Completing your homework

All homework tasks need to be completed in this booklet or on a specific website.

There are also **answers** for all booklet tasks. Your teacher will either upload these to your class google classroom and expect you to mark it in class. Speak to your teacher if you are unsure.

**Remember** - if you need help, you must speak to your teacher **before** the due date.

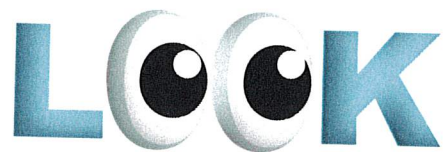
### Login details

Below are the log in instructions you will need in order to access and complete some of the homework tasks in this booklet.

If you have any issues logging in, you **must** speak to your teacher as soon as possible.

To log in, all students should use the **Single Sign-on service** through either Google or Microsoft. Click either the Google or Microsoft buttons (see below) and then enter you school email address and school computer login password.

e.g. 25bloggsj@benjaminbritten.school and password which could be: BlueCat123 (example)



If you see the logo above next to a task, you can type the clip number into Mathswatch for extra help! Watch the video and make notes, then try the homework task again. If you still need help, then speak to your maths teacher at school.



# HOMEWORK 1: NUMERACY

## Multiplication

example

Given that  $34 \times 7 = 238$ , calculate  $340 \times 70$   
 $= 23,800$

Each number became 10 times larger, so the answer became 100 times larger

1. Calculate:

a)

$6 \times 4 = \underline{24}$
$6 \times 400 = \underline{\hspace{2cm}}$
$60 \times 4 = \underline{\hspace{2cm}}$
$60 \times 40 = \underline{\hspace{2cm}}$

b)

$9 \times 2 = \underline{18}$
$9000 \times 2 = \underline{\hspace{2cm}}$
$9 \times 200 = \underline{\hspace{2cm}}$
$90 \times 20 = \underline{\hspace{2cm}}$

c)

$5 \times 3 = \underline{\hspace{2cm}}$
$50 \times 3 = \underline{\hspace{2cm}}$
$5 \times 3000 = \underline{\hspace{2cm}}$
$5000 \times 3 = \underline{\hspace{2cm}}$

2. Calculate:

a)  $2 \times 60$

e)  $7 \times 30$

i)  $800 \times 3$

b)  $3 \times 400$

f)  $20 \times 6$

j)  $60 \times 4$

c)  $90 \times 2$

g)  $900 \times 3$

k)  $40 \times 7$

d)  $90 \times 4$

h)  $7000 \times 4$

l)  $500 \times 5$

3. Complete these multiplication grids:

a)

x	6	8	10
3			
4			
20			

b)

x	3	20	
2			60
5			
40			

c)

x	5		25
2		60	
20			
			2500

d)

x		50	100
4	8		
		350	
	180		



# Addition



$$\begin{array}{|c|c|} \hline 2 & 4 \\ \hline 3 & 6 \\ \hline \end{array} + \begin{array}{|c|c|} \hline 3 & 7 \\ \hline 5 & 3 \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 3 & 7 \\ \hline 5 & 3 \\ \hline \end{array} + \begin{array}{|c|c|} \hline 4 & 9 \\ \hline 3 & \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 4 & 9 \\ \hline 3 & \\ \hline \end{array} + \begin{array}{|c|c|} \hline & 3 \\ \hline 3 & \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline & 0 \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline & 3 \\ \hline 3 & \\ \hline \end{array} + \begin{array}{|c|c|} \hline & 9 \\ \hline 3 & 1 \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline 7 & 0 \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 4 & \\ \hline & 4 \\ \hline \end{array} + \begin{array}{|c|c|} \hline 5 & 3 \\ \hline & \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline 7 & 0 \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 5 & 3 \\ \hline & \\ \hline \end{array} + \begin{array}{|c|c|} \hline 2 & 4 \\ \hline & 6 \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline 8 & 0 \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline 2 & 4 \\ \hline & 6 \\ \hline \end{array} + \begin{array}{|c|c|} \hline & 9 \\ \hline 3 & 1 \\ \hline \end{array}$$


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$$\begin{array}{|c|c|} \hline 4 & \\ \hline & \\ \hline \end{array}$$

$$\begin{array}{|c|c|} \hline & 9 \\ \hline 3 & 1 \\ \hline \end{array} + \begin{array}{|c|c|} \hline & \\ \hline 6 & \\ \hline \end{array}$$

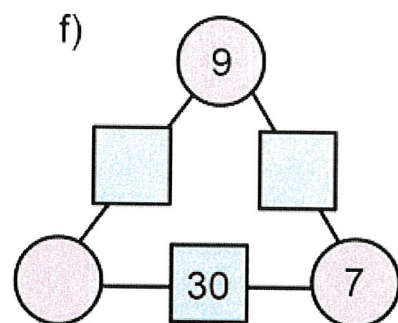
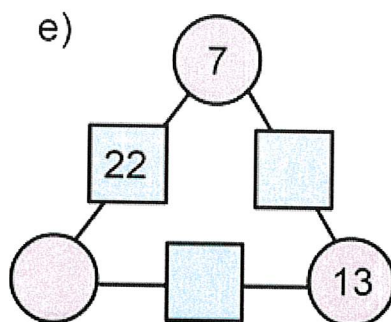
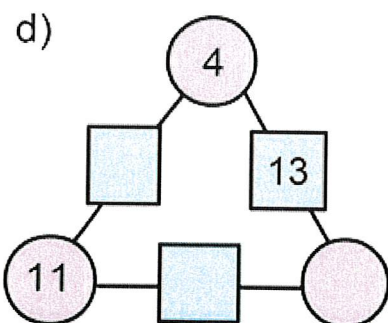
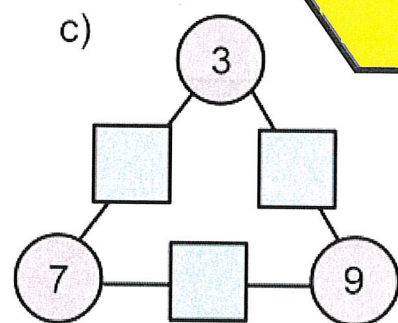
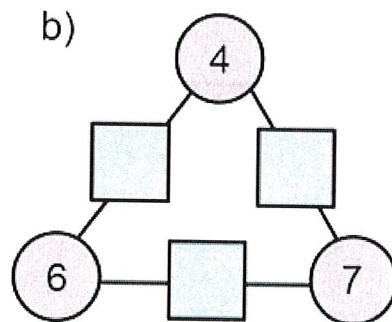
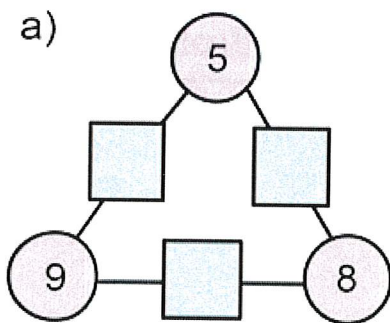
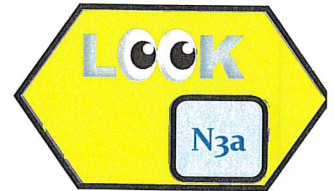

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$$\begin{array}{|c|c|} \hline & \\ \hline & \\ \hline \end{array}$$

Use your mental arithmetic skills

## arithmagons

Complete the arithmagons so that the pink circles add together to make the blue squares in between them.





## HOMework 2: CORE SKILLS

Calculate  $63 + 38$

Bronze ★

Calculate  $14 \times 9$

Bronze ★

Calculate  $63 - 38$

Bronze ★

Calculate  $399 \div 7$

Bronze ★

Find the difference between 804 and 357.

Bronze ★

Find the product of 24 and 32

Bronze ★

Find the sum of 634 and 173.

Bronze ★

Calculate  $3255 \div 15$

Bronze ★



Can you see any patterns?

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How are the odd numbers arranged in the triangle?

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How are the even numbers arranged in the triangle?

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What do you notice about the diagonals?

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What type of numbers can you find in the 3 diagonal?

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Who was Pascal and what can Pascal's Triangle be used for?

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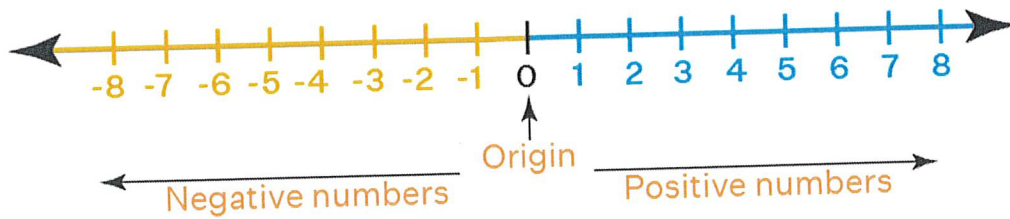
### **Challenge:**

Investigate the totals of the numbers in each horizontal row. Is there a pattern?

Can you predict the next total?



## HOMWORK 4: NEGATIVE NUMBERS



1. Which is the **larger** number in each pair?

a) -3 or 2

b) 4 or -2

c) 5 or -5

d) 0 or -6

e) -1 or -10

f) 6 or 8

g) -4 or -5

h) 2 or -9

i) -3 or -7

2. State the number that is:

a) one larger than -3

b) one smaller than -5

c) one smaller than -12

d) one larger than -1

e) one larger than -2.5

f) one smaller than -4.5

3. List the numbers from the box that are:

a) **larger** than -12

b) **smaller** than -12

-15	13	-8	-11
-12.5	0	-1200	120

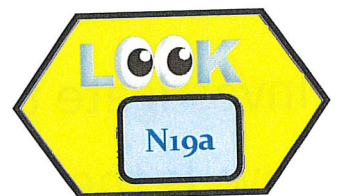
4. Write each set of numbers in order, from smallest to largest.

a) -5    3    -7    1

b) -3    -9    1    -4    0

c) -8    -4.5    -2    -4

d) 0.5    3    -0.5    -1    -1.5



5. State the number that is directly above each of these on the number line:

a) -1

b) -12

c) -54

d) -1,000

Below is a customer's gas meter readings.

Previous Reading: 5397  
Current Reading: 5786

Work out how many units of gas were used.

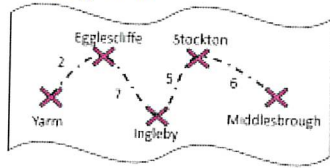
Silver ★

Fill in the blank squares to make the addition correct.

$$\begin{array}{r} 52\square + \\ 2\square9 \\ \hline \square16 \end{array}$$

Gold ★

The distance, in miles, between 5 towns is shown in the diagram.

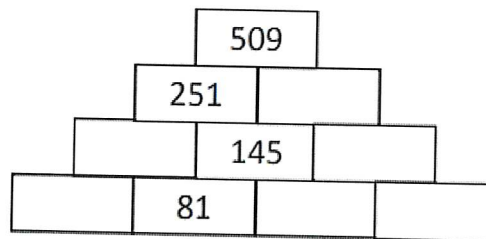


Work out the distance between

- Egglecliffe and Stockton
- Yarm and Middlesbrough

Silver ★

Use addition and subtraction to complete the pyramid.



Gold ★

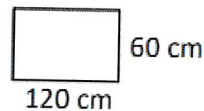
Hunter needs to make 420 cakes for a wedding. Each batch of cake mix makes 12 cakes.

How many batches will he need to make?



Silver ★

George is tiling the splash back behind the oven in her kitchen.



The splash back is 120cm by 60cm. Each square tile costs £2 and measures 10cm by 10cm. Calculate the cost of tiling the splash back.

Gold ★

A school takes 7 coaches of students to the cinema as a reward. Each coach holds 42 passengers and is full.

How many students went to the cinema?



Silver ★

Mr T buys a car which costs £13 995. He pays a £195 deposit and pays the rest in 24 monthly payments.

Work out the cost of each monthly payment.



Gold ★



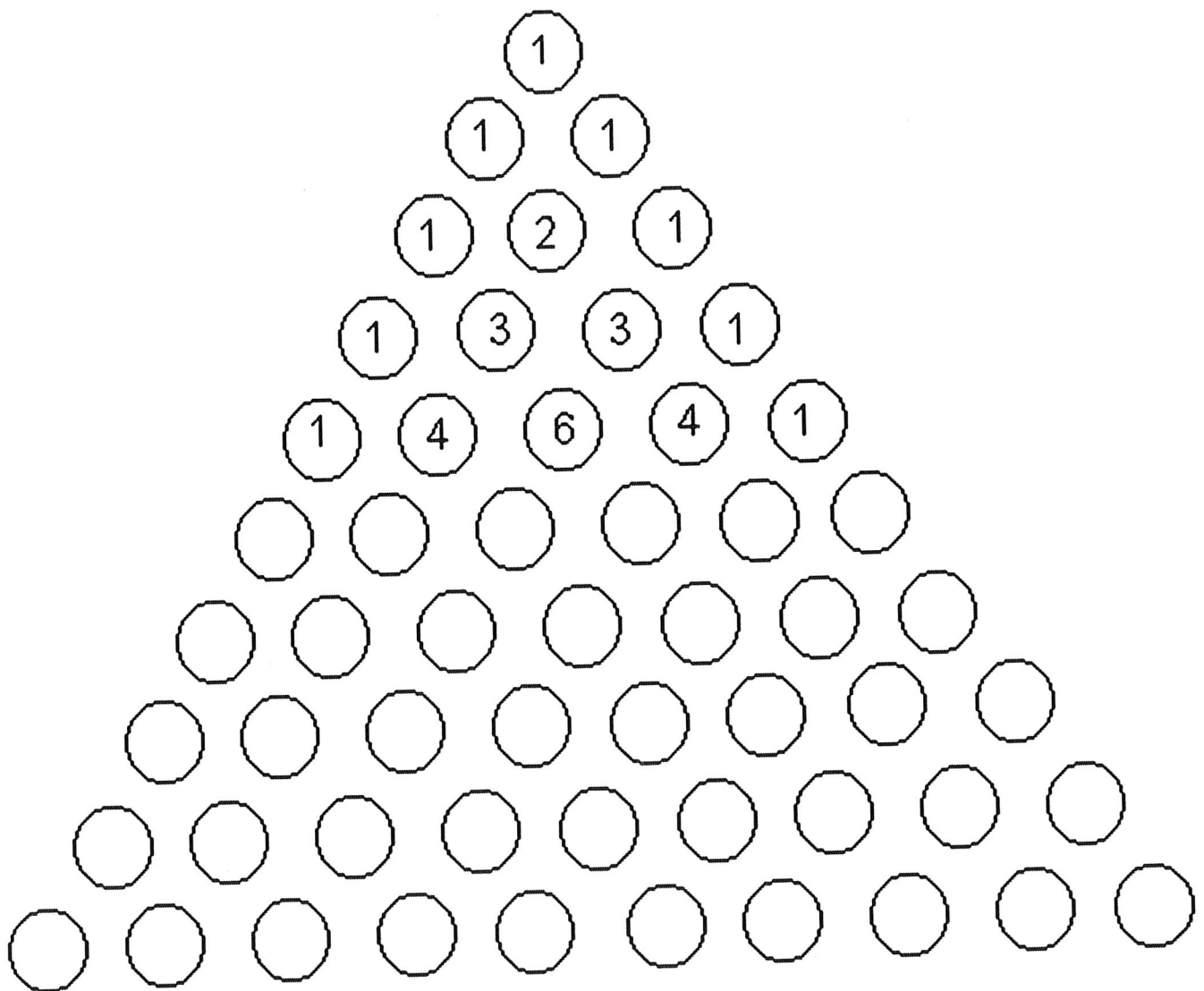
## HOMWORK 3: RESEARCH TASK

To research Pascal's Triangle you can use the internet or a book to find the answers to the following questions.

Remember, if you need to, you can use the computers in the breakout area at school .

**This picture shows the first five lines of Pascal's Triangle.**

**Can you work out how it is made?**



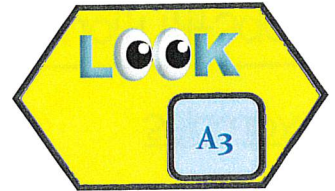
**Each number is the total of the two numbers above it.**

**Use this fact to calculate the remaining 5 rows of Pascal's Triangle.**





# HOMWORK 5: EXPRESSIONS



## substitution (positive numbers)

### examples

Given  $y = 3$ , evaluate:

$$\begin{aligned}
 y + 7 \\
 = 3 + 7 \\
 = 10
 \end{aligned}$$

$$\begin{aligned}
 2y + 5 \\
 = 2 \times 3 + 5 \\
 = 6 + 5 \\
 = 11
 \end{aligned}$$

$$\begin{aligned}
 2(y + 5) \\
 = 2 \times (3 + 5) \\
 = 2 \times 8 \\
 = 16
 \end{aligned}$$

1. Given that  $a = 3$ , evaluate:

a)  $10a$

e)  $4a + 2$

i)  $5 - a$

Handwritten grid for working out question 1a, 1e, and 1i.

c)  $\frac{a}{3}$

g)  $7a$

k)  $4 + 2a$

Handwritten grid for working out question 1c, 1g, and 1k.

d)  $5a - 1$

h)  $2a + 5$

l)  $3a - 2$

Handwritten grid for working out question 1d, 1h, and 1l.

## substitution with negatives

### recall

A negative  $\times$  a positive = a negative

A negative  $\times$  a negative = a positive

1. Given  $a = -3$ , work out:

a)  $2a$

b)  $a^2$

c)  $a + 4$

Handwritten grid for working out question 1a, 1b, and 1c.



# Problem solving!

Apply your core skills to the challenge questions below...

Match the algebraic notation on the left with its description on the right. Record your answers in the table.

A) $3a$	I) $a^3$	1) The same as $a \times a \times a$	2) The coefficient of $b$ is 1
B) $3 + a$	J) $b(a + 3)$	3) The product of $3a$ and $a$	4) A formula
C) $3a^2$	K) $ab + 3$	5) The coefficient of $a^2$ is 2	6) Add 3 to $a$ , then multiply by $b$
D) $a - 3$	L) $3a^2 + b$	7) The same as $a^2b^2$	8) 3 less than $a$
E) $2a + 1 = 3$	M) $2a^2 + ab$	9) The product of 3 and $ab$	10) $b$ is multiplied by $ab$
F) $a = 2b + 3$	N) $ab^2$	11) Subtract 3 from $b$ , then multiply by $a$	
G) $3(a + b)$	O) $(ab)^2$	12) The sum of 3 and $a$	13) An equation
H) $3ab$	P) $3 - ab + b^3 + a$	14) Multiply $a$ and $b$ , then add 3	15) $a$ is multiplied by 3
	Q) $a(b - 3)$	16) An expression with 4 terms	17) $(a + b) + (a + b) + (a + b)$

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q



## HOMEWORK 6: MATHSWATCH



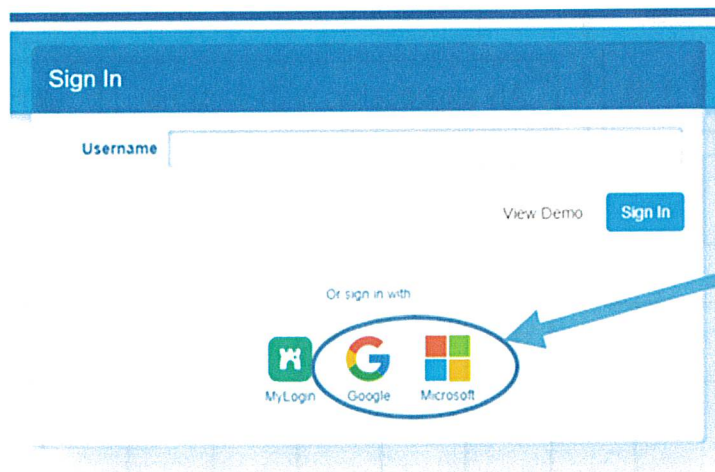
# MathsWatch

For this week's homework, your teacher will set you a task to complete on the website MathsWatch. The task will be based on the content you have learnt over the past half term in your mathematics lessons. You can use the space on the next page to do any working out if you need to.

To log in, all students should use the **Single Sign-on service** through either Google or Microsoft. Click either the Google or Microsoft buttons (see below) and then enter your school email address and school computer login password.

e.g. 25bloggsj@benjaminbritten.school and password which could be: BlueCat123 (example)

**If you have any issues logging in, you must speak to your teacher as soon as possible.**







# HOMWORK 7: DOUBLING

1	2	3	4	5	6	7	8	9
2	4	6	8	10	12	14	16	18

↪ double

examples

Double 64

$$= 60 \times 2 + 4 \times 2$$

$$= 128$$

Double 87

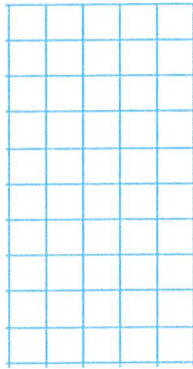
$$= 80 \times 2 + 7 \times 2$$

$$= 160 + 14 = 174$$

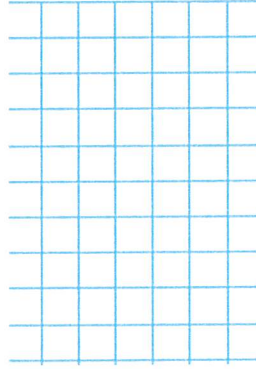
mental maths: quick doubling

Work out:

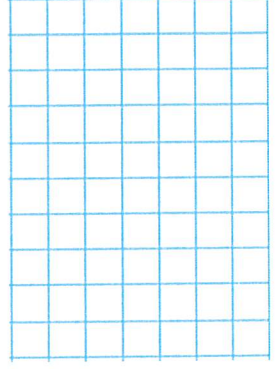
a)  $14 \times 2$



e)  $63 \times 2$



i)  $16 \times 2$



b)  $28 \times 2$

f)  $29 \times 2$

j)  $39 \times 2$

c)  $36 \times 2$

g)  $88 \times 2$

k)  $58 \times 2$

d)  $48 \times 2$

h)  $47 \times 2$

l)  $98 \times 2$

Complete these number sequences by doubling:

a)

4

8

16

b)

5

10

20

c)

6

12

24

d)

7

14

28

e)

8

16

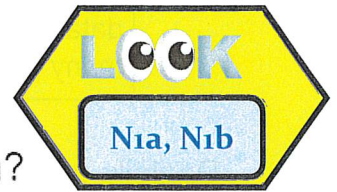
32

# Problem solving!

Apply your core skills to the challenge questions below...

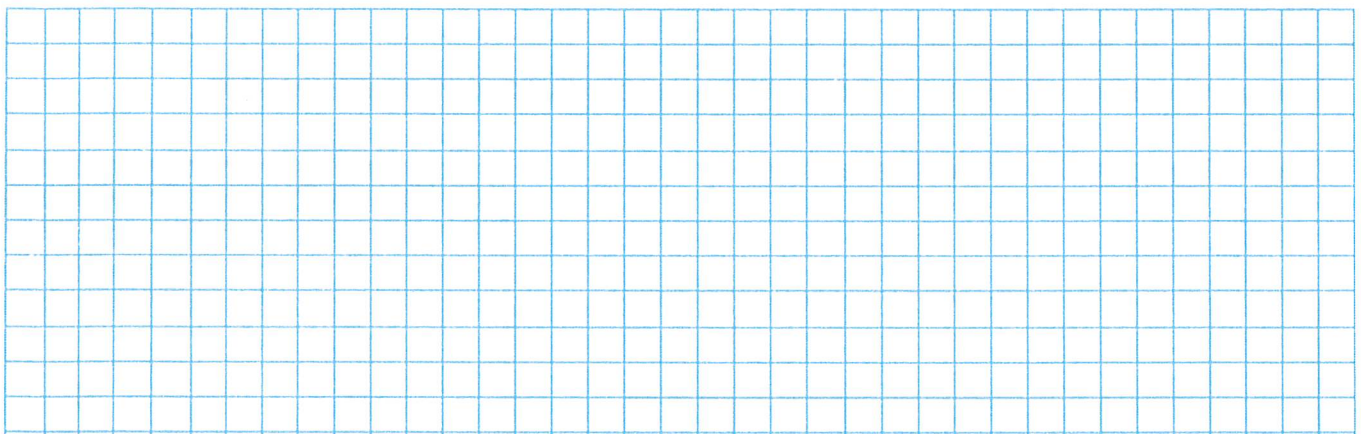


## what's left?



Match each number to its double. Which number is left on its own?

42	16	25	17	84	
50	56	88	37	32	30
28	34	74	15	62	44



Think about doubles to work out these sums:

a)  $45 + 46$

e)  $35 + 37$

i)  $49 + 50$

b)  $25 + 26$

f)  $30 + 31$

j)  $25 + 27$

c)  $15 + 16$

g)  $39 + 40$

k)  $40 + 41$

True or False: When you double a number, the answer is always even.



# HOMEWORK 8: STATISTICAL DIAGRAMS

**Tally Table:** A way of collecting data so that it is easy to see how many people are in each group.

Option	Tally	Total
French	I	6
German		10

Each group of 5 is completed with a diagonal line

1. Danielle asks some students in her class about their favourite animal. A list of their responses is below.  
a) Record the results in a tally table.

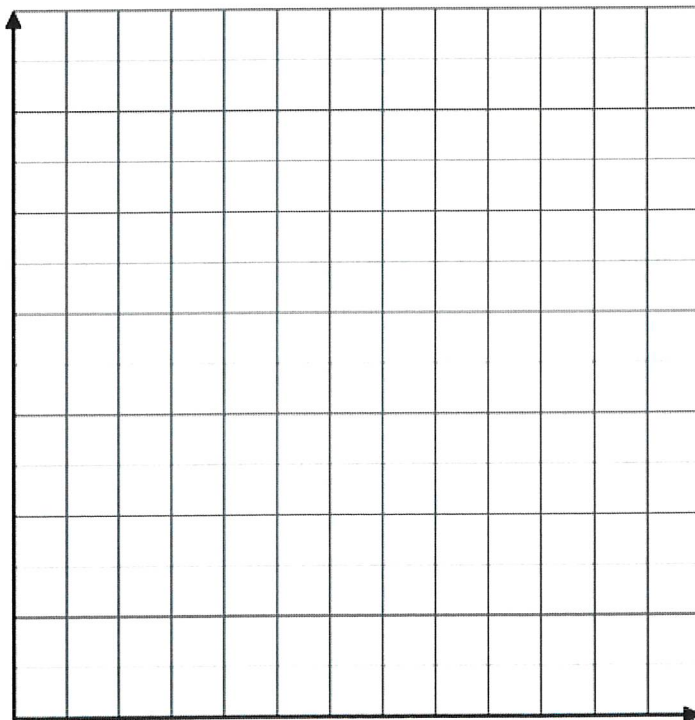
Dog    Fish    Dog    Dog  
 Bird    Dog    Cat    Dog  
 Dog    Fish    Cat    Dog  
 Bird    Cat    Cat    Cat

Animal	Tally	Total
Dog		
Cat		
Bird		
Fish		

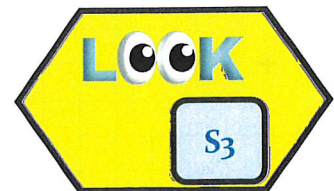
- b) How many people did Danielle ask as part of her survey?

Jenny asked her classmates how many people lived in their household.

Draw a bar chart to show the results.



Number of People	Frequency
1	0
2	1
3	9
4	12
5	3
6+	3





# True or False?

A group of people took part in a quiz. Table 1 shows the scores of everyone who played. From the statements below, shade FOUR that are DEFINITELY TRUE

Table 1

Score	Frequency
20	3
21	0
22	1
23	2
24	5
25	1

**A** Twelve people took part in the quiz

**E** The lowest score was 0

**B** Nobody scored 23 marks

**F** The quiz was out of 25

**C** Everybody scored more than 19

**G** At least one person scored more than 24 marks

**D** Twenty four people scored 5 marks

**H** The most common score was 24 points

Table 2

Age ( $x$ )	Frequency
$15 \leq x \leq 18$	4
$18 < x \leq 20$	12
$20 < x \leq 22$	15
$22 < x \leq 24$	12
$24 < x \leq 26$	0
$26 < x \leq 30$	1

Table 2 shows the ages of a group of students.

From the statements below, shade FOUR that are DEFINITELY TRUE

**A** Everyone who was surveyed was less than 30 years old

**B** The class widths are all equal

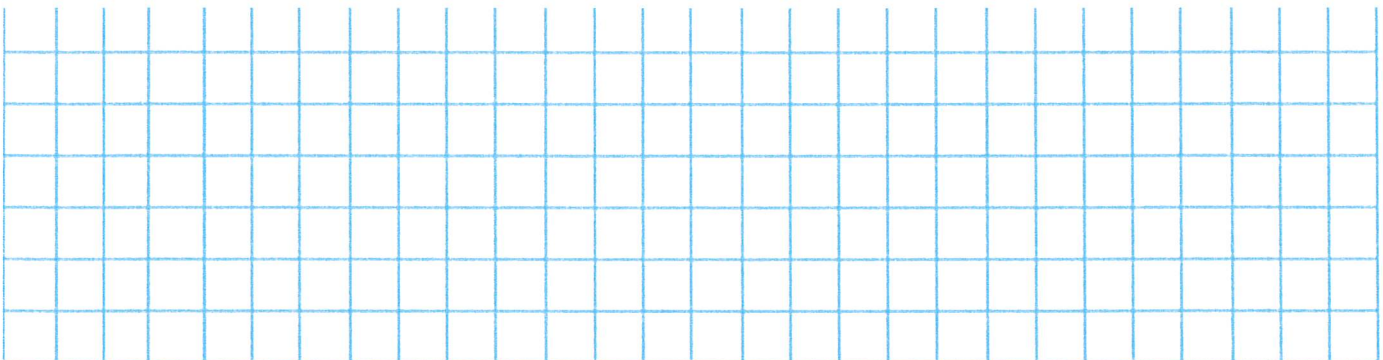
**C** 1 person was older than 26

**D** Nobody in the survey was 25 years old

**E** There were 16 students less than 21 years old

**G** 44 students were included in the survey

**F** One person in the survey was 29 years old





## HOMEWORK 9: FAMOUS MATHEMATICIANS

**Ada Lovelace** and **Katherine Johnson** made significant contributions to their fields. Their work has and will affect the lives of many for years to come. Using the internet or books to help you, answer the following questions. You may present your answers as full sentences, bullet points, or even as a storyboard or video. Be creative!

### Ada Lovelace

1. What year was she born?
2. Ada Lovelace never met her father, what was she famous for?
3. What is she regarded as being one of the first of?
4. In which film did a computer scientist communicate with her in the past?
5. When is Ada Lovelace Day celebrated?
6. Which famous author was she friends with?
7. Why was her work significant?
8. What would life be like without her contributions to maths?

Answer here:

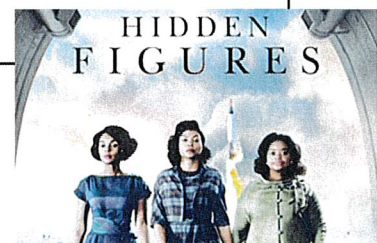


# Katherine Johnson

1. What year was she born?
2. What was her full name?
3. How old was she when she graduated high school?
4. In 2015 Barack Obama awarded her which medal?
5. What did she calculate for NASA?
6. Which space missions was she involved in?
7. Why was her work significant?
8. What would life be like without her contributions to maths?

Answer here:

Check out the Hidden Figures movie, a dramatized version of her experiences at NASA. IMDB rating 7.8/10 , 93% Rotten Tomatoes.





# HOMEWORK 10: HALVING

mental maths: halving

You may want to use the bus stop method on this side:

Calculate:

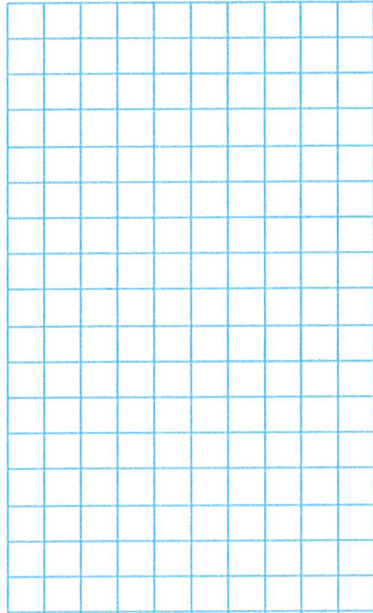
a)  $26 \div 2$

b)  $48 \div 2$

c)  $60 \div 2$

d)  $68 \div 2$

e)  $84 \div 2$



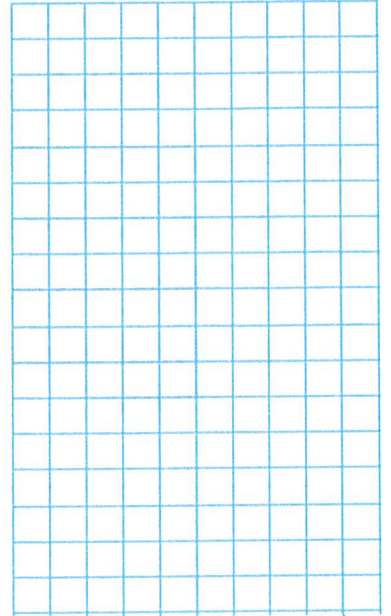
f)  $17 \div 2$

g)  $21 \div 2$

h)  $25 \div 2$

i)  $29 \div 2$

j)  $31 \div 2$



examples

mental maths: half way between

Find the number half way between 10 and 16

$$10 + 16 = 26$$
$$\text{Half of } 26 = 13$$

Find the number half way between 24 and 27

$$24 + 27 = 51$$
$$\text{Half of } 51 = 25.5$$

Find the number half way between:

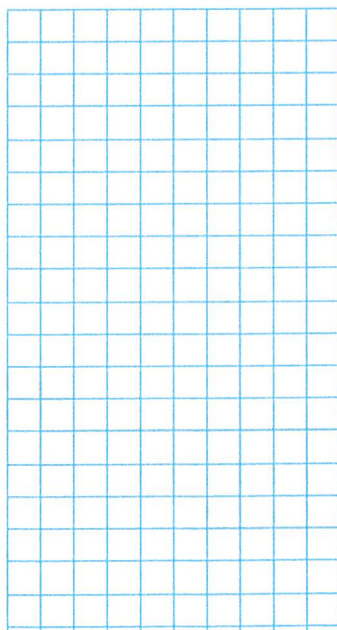
a) 3 and 7

b) 2 and 6

c) 9 and 15

d) 8 and 12

e) 14 and 20



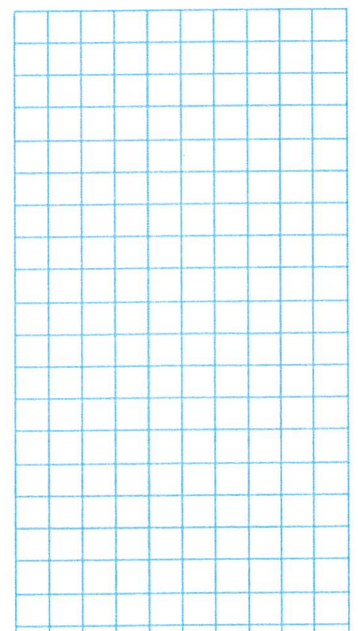
f) 15 and 20

g) 27 and 32

h) 17 and 21

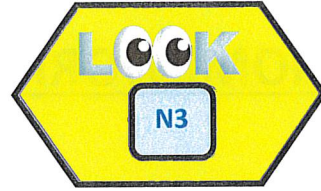
i) 1 and 8

j) 3 and 7



# Problem solving!

Apply your core skills to the challenge questions below...



Remember...  
a half is the same as:

- $\div 2$
- $1/2$
- $0.5$

- 1)  $4 \times 0.5 =$
- 2)  $8 \times 0.5 =$
- 3)  $9 \times 0.5 =$
- 4)  $10 \times 1.5 =$
- 5)  $2.5 \times 6 =$

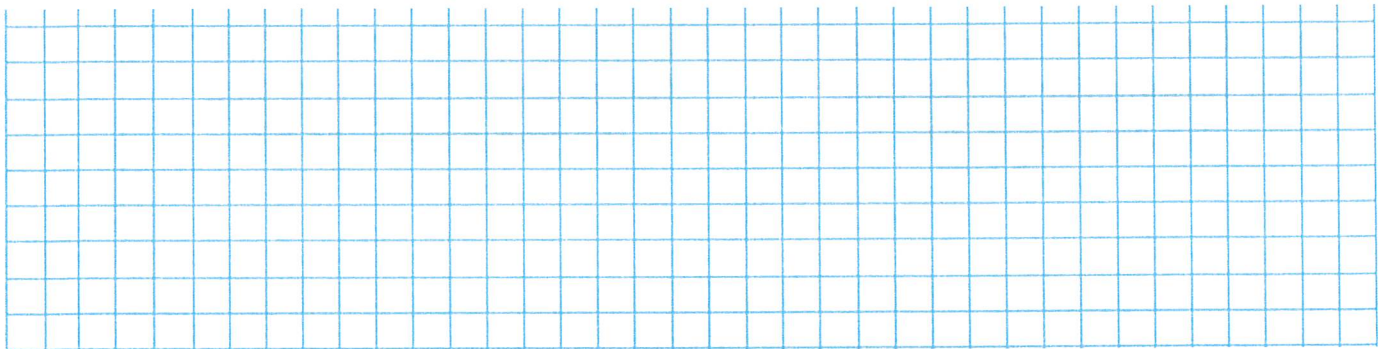
Example 1:  
 $30 \times 0.5$   
Half of 30 = 15

Example 2:  
 $8 \times 1.5$   
 $8 \times 1 = 8$   
 $8 \times 0.5 = 4$

Example 3:  
 $12 \times 2.5$   
 $12 \times 2 = 24$   
 $12 \times 0.5 = 6$

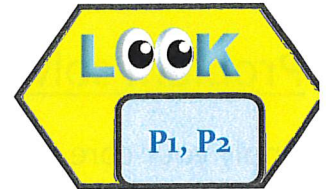
X	0.5	3.5	2.5	1.5
12				
6				
8				
3				

X	2	7	16	40
1.5				
0.5				
3.5				
2.5				

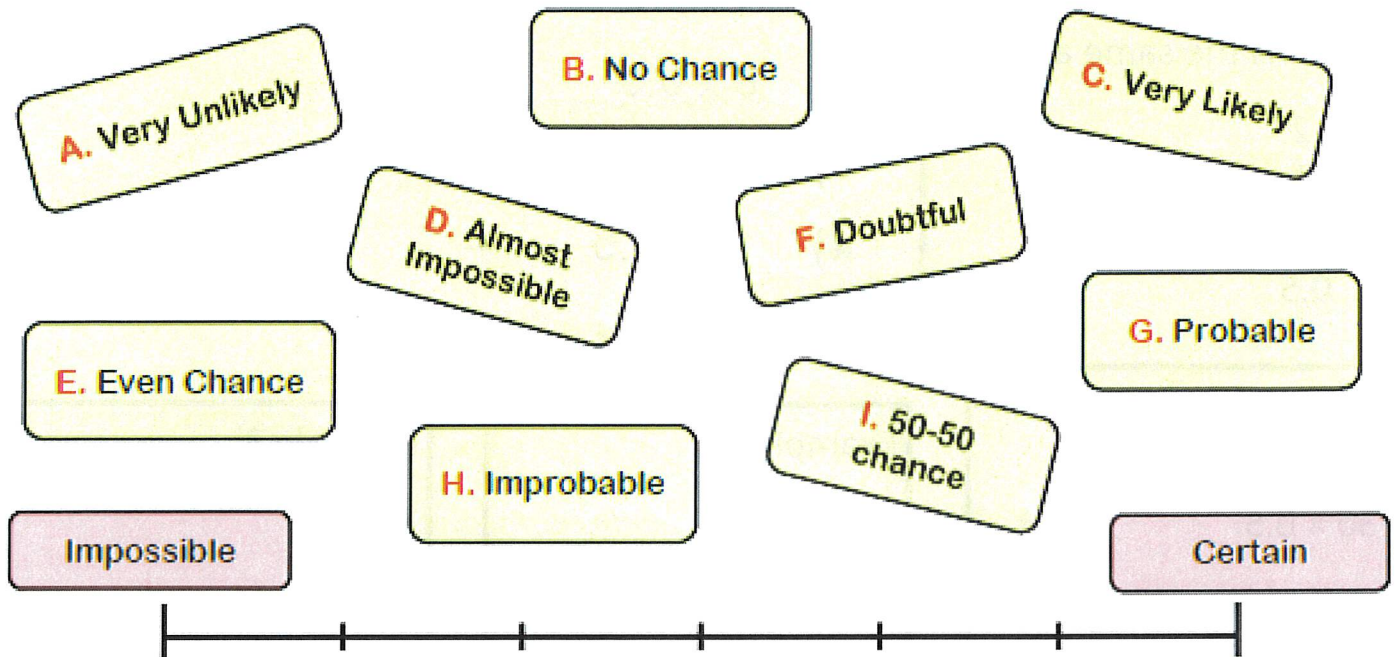




# HOMWORK 11: PROBABILITY



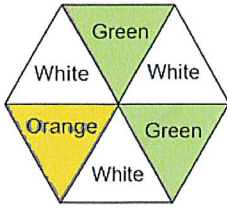
Place the words somewhere on the scale, going from impossible to certain.



<b>(a)</b>	<b>(b)</b>
A fair, six-sided dice numbered 1 to 6 is rolled once. What is the probability of the dice landing on a 5?	A fair four-sided dice numbered 1 to 4 is rolled once. What is the probability of the dice landing on a 3?
<b>(c)</b>	<b>(d)</b>
A fair ten-sided dice numbered 1 to 10 is rolled once. What is the probability of the dice landing on a 7?	A fair ten-sided dice numbered 1 to 10 is rolled once. What is the probability of the dice landing on a 5 or 6?



The fair six-sided spinner shown is spun once.



**(e)**

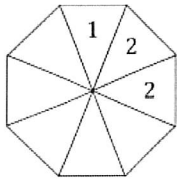
What is the probability of the spinner landing on white?

**(f)**

What is the probability that the spinner does not land on orange?

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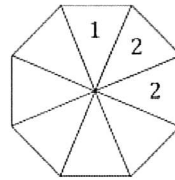
**(m)**



Here is a fair eight-sided spinner. Complete the spinner so that:

- The probability of landing on a 1 is the same as the probability of landing on a 2
- The probability of landing on a 4 is  $\frac{1}{8}$
- The total of all the numbers on the spinner is 16.

**(n)**



Here is a fair eight-sided spinner. Complete the spinner so that:

- The probability of landing on an odd number is 0.5
- The probability of spinning a 3 is the same as the probability of spinning a 4
- All the numbers on the spinner are less than 8
- The total of all the numbers is 24.

--	--

### T-shirts

Paul has 15 T-shirts.

The information shows the colours of his T-shirts.

<p>5 black</p> <p>3 white</p> <p>3 red</p> <p>2 dark blue</p> <p>1 light blue</p> <p>1 yellow</p>
---

(b) What is the probability that the T-shirt will **not** be **black**?

*1/15*

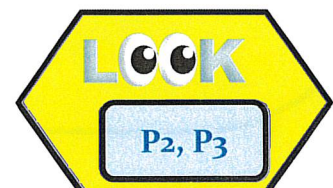
(c) He takes one of his **blue** T-shirts at random.

What is the probability that the T-shirt is **light blue**?

*1/2*

Paul is going to take one of his T-shirts at random.

(a) What is the probability that the T-shirt will be **red**?





## HOMWORK 12: MATHSWATCH



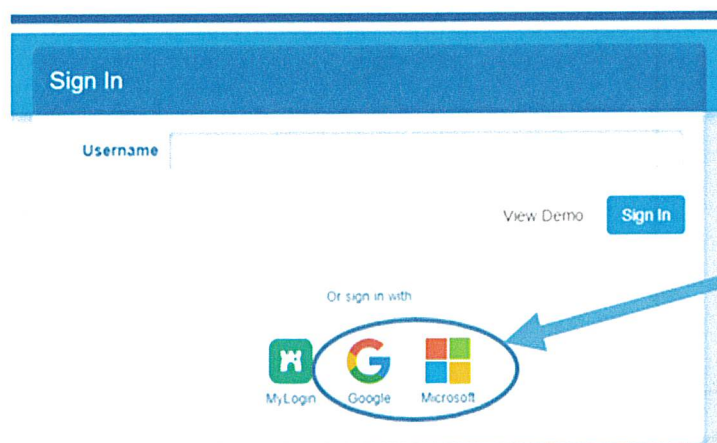
# MathsWatch

For this week's homework, your teacher will set you a task to complete on the website MathsWatch. The task will be based on the content you have learnt over the past half term in your mathematics lessons. You can use the space on the next page to do any working out if you need to.

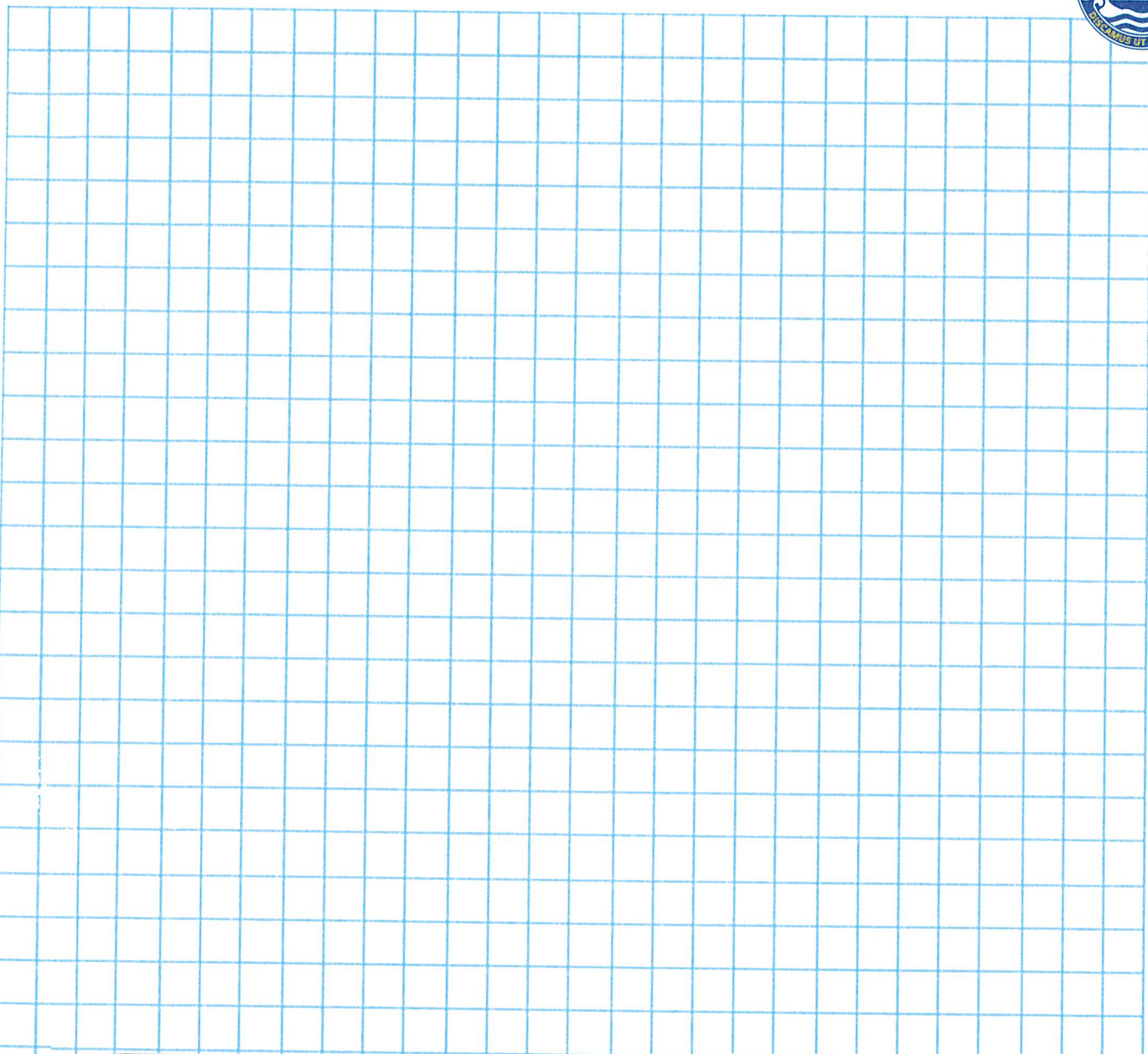
To log in, all students should use the **Single Sign-on service** through either Google or Microsoft. Click either the Google or Microsoft buttons (see below) and then enter your school email address and school computer login password.

e.g. 25bloggsj@benjaminbritten.school and password which could be: BlueCat123 (example)

**If you have any issues logging in, you must speak to your teacher as soon as possible.**



# Additional working out space:



## Don't forget about your MEAT SHEETS

The purpose of your MEAT sheet is to identify both strengths and areas for development for you to work on independently using MathsWatch.

Topic	Status
1. Fractions	Done
2. Decimals	Done
3. Percentages	Done
4. Addition	Done
5. Subtraction	Done
6. Multiplication	Done
7. Division	Done
8. Fractions, Decimals and Percentages	Done
9. Fractions	Done
10. Decimals	Done
11. Percentages	Done
12. Addition	Done
13. Subtraction	Done
14. Multiplication	Done
15. Division	Done
16. Fractions, Decimals and Percentages	Done
17. Fractions	Done
18. Decimals	Done
19. Percentages	Done
20. Addition	Done
21. Subtraction	Done
22. Multiplication	Done
23. Division	Done
24. Fractions, Decimals and Percentages	Done
25. Fractions	Done
26. Decimals	Done
27. Percentages	Done
28. Addition	Done
29. Subtraction	Done
30. Multiplication	Done
31. Division	Done
32. Fractions, Decimals and Percentages	Done

How to use your MEAT sheet.  
Each question above has a reference number next to it. These numbers are to address gaps and print or questions on MathsWatch.  
To access MathsWatch go to [www.mathsWatch.com](http://www.mathsWatch.com)  
Use name: [mathsWatch@benbradley.com](mailto:mathsWatch@benbradley.com)  
Eg: [mathsWatch@benbradley.com](mailto:mathsWatch@benbradley.com)  
Password: your 8 digits in the format 00000000  
Eg: 4401712001  
The index tab select the question as GCSE and type the reference number into the search box. Then choose the link that you need.

# EXTRA SUPPORT

If you need help with completing your homework, please use the Mathswatch clips in the LOOK boxes first. If you are still stuck, speak to your class teacher.

If you need to contact the Head of Maths regarding any worries or concerns, you can contact Miss Pankhurst at:

**[j.pankhurst@benjaminbritten.school](mailto:j.pankhurst@benjaminbritten.school)**

