Benjamin Britten Academy of Music and Mathematics

MATHEMATICS HOMEWORK BOOKLET

Year 7 Book A

SUMMER

NAME:

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.

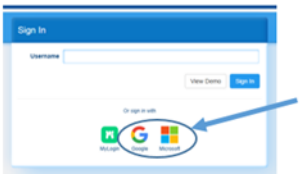
Login details

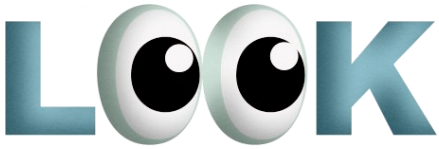
Below are the log in instructions you will need in order to access and complete some of the homework tasks in this booklet.

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

example

Given that 34 × 7 = 238, calculate 340 × 70

= 23,800

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

1. Calculate:

a)

6 × 4 = 24
6 × 400 = _____
60 × 4 = _____
60 × 40 = _____

b)

9 × 2 = 18
9000 × 2 = _____
9 × 200 = _____
90 × 20 = _____

c)

5 × 3 = _____
50 × 3 = _____
5 × 3000 = _____
5000 × 3 = _____

2. Calculate:

a) 2 × 60
b) 3 × 400
c) 90 × 2
d) 90 × 4
e) 7 × 30
f) 20 × 6
g) 900 × 3
h) 7000 × 4
i) 800 × 3
j) 60 × 4
k) 40 × 7
l) 500 × 5

3. Complete these multiplication grids:

a)

×	6	8	10
3			
4			
20			

b)

×	3	20	
2			60
5			
40			

c)

×	5		25
2		60	
20			
			2500

d)

×		50	100
4	8		
		350	
	180		

4. Calculate:

a) 20 × 30
b) 20 × 80
c) 400 × 20
d) 80 × 30
e) 90 × 20
f) 4000 × 60
g) 900 × 20
h) 500 × 300
i) 9000 × 300

5. Work out the missing numbers:

a) 2 × ☐ = 220
b) 5 × ☐ = 1500
c) 3 × ☐ = 210
d) 40 × ☐ = 2800
e) 9 × ☐ = 270
f) 12 × ☐ = 360
g) 7 × ☐ = 2800
h) 600 × ☐ = 1800
i) 50 × ☐ = 2500

6. Given that 4 × 3 = 12, work out:

a) 40 × 30
b) 400 × 3
c) 4 × 3,000
d) 400 × 300
e) 40 × 300
f) 4 × 3,000,000

7. Given that **19 × 25 = 475**, complete these related calculations:

a) 19 × 2500 = ☐
b) 190 × 2500 = ☐
c) 19 × ☐ = 4750
d) 1900 × 250 = ☐
e) ☐ × 25 = 47500
f) ☐ × 2500 = 475,000
g) ☐ × 25 = 4750
h) 1,900 × 2,500 = ☐
i) 1,900 × ☐ = 4,750,000
j) 19 × ☐ = 47,500

HOMEWORK 2: CORE SKILLS

Calculate $63 + 38$ Bronze	Calculate 14×9 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

$0.76 - 0.13 =$ Bronze	$0.3 \times 0.06 =$ Silver
$1.237 - 1.069 =$ Bronze	$0.28 \times 0.702 =$  Silver

Below is a customer's gas meter readings.

Previous Reading: 5397
Current Reading: 5786

Work out how many units of gas were used.

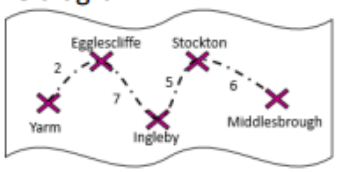
Silver

Fill in the blank squares to make the addition correct.

$$\begin{array}{r} 5\ 2\ \square \\ +\ 2\ \square\ 9 \\ \hline \square\ 1\ 6 \end{array}$$

Gold

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



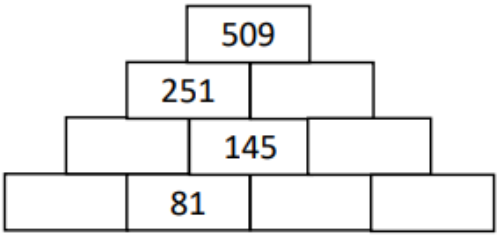
Work out the distance between

a) Egglescliffe and Stockton

b) Yarm and Middlesbrough

Silver

Use addition and subtraction to complete the pyramid.



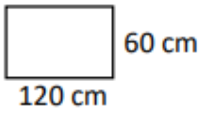
Gold

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

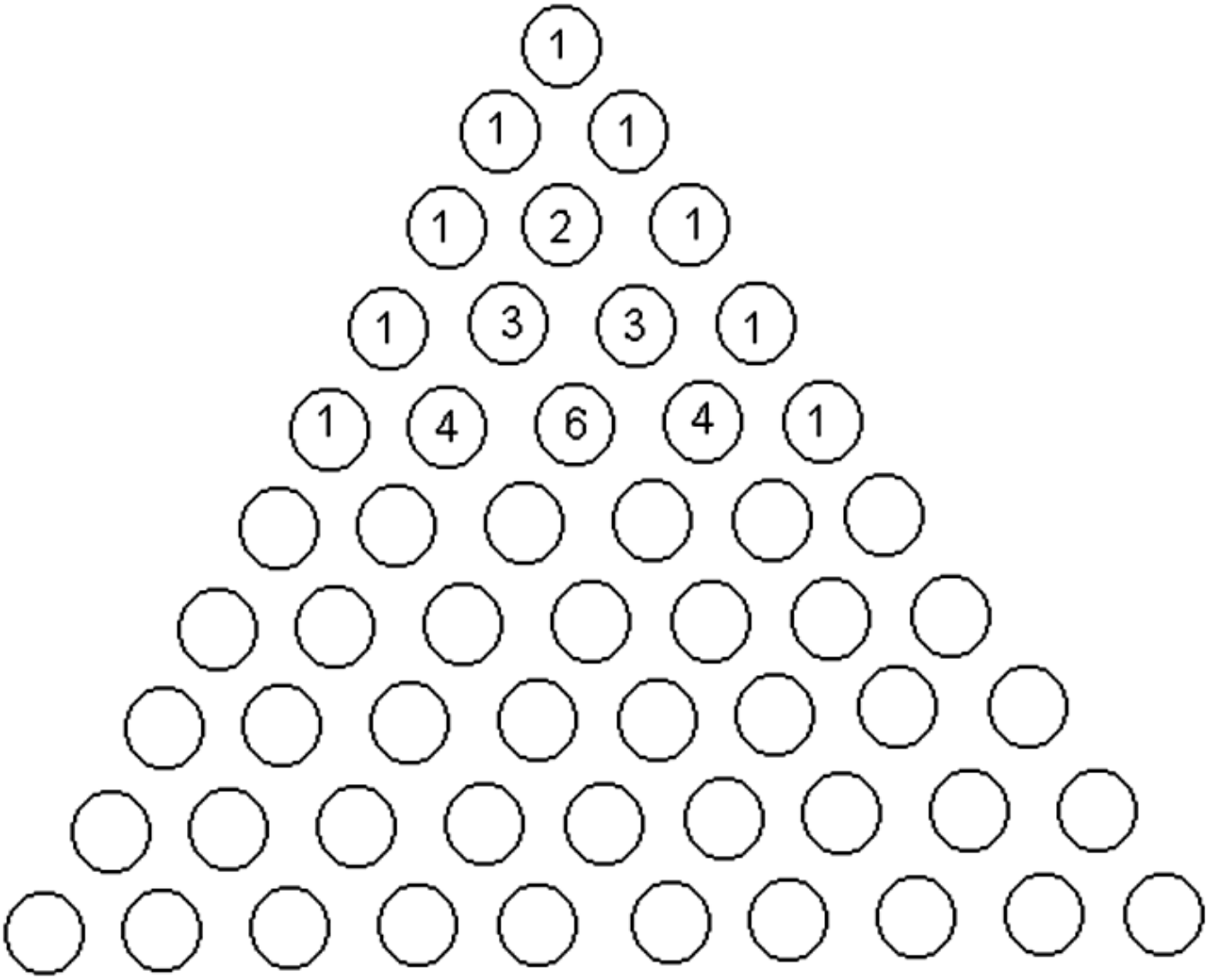
HOMEWORK 3: RESEARCH TASK

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.

Can you see any patterns?

_____

_____

How are the odd numbers arranged in the triangle?

_____

How are the even numbers arranged in the triangle?

_____

What do you notice about the diagonals?

_____

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

_____

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

_____

_____

Challenge:

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

Can you predict the next total?

HOMEWORK 4: NEGATIVE NUMBERS

1. Calculate:

a) -4 - 8 d) 12 - - 6 g) 72 - 100

b) -4 + 8 e) 12 ÷ -6 h) -100 - 72

c) -4 × 8 f) -12 × -6 i) 100 × -72

2. Fill in the blanks:

a) -3 + ____ = 10 c) ____ - 12 = -12 e) -12 ÷ ____ = 1

b) -4 × ____ = 16 d) -4 - ____ = -10 f) 8 - ____ = 15

substitution (negative numbers)

examples

Given $a = 5$ and $b = -4$, evaluate:

$b - 2a$

$= -4 - 2 \times 5$
$= -4 - 10$
$= -14$

$2b^2$

$= 2 \times (-4)^2$
$= 2 \times 16$
$= 32$

$\frac{4b + 1}{5}$

$= \frac{4 \times (-4) + 1}{5}$

$= \frac{-16 + 1}{5} = -3$

Given $x = -4$, evaluate:

a) x^2 e) $5x$ i) $2x + 1$

b) $x + 4$ f) $x + 8$ j) $x - 3$

c) $(2x)^2$ g) $-3x$ k) $3(x + 1)$

d) $2x^2$ h) $\frac{x}{2}$ l) $(x - 1)^2$

Problem solving!

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

Look at the calculations below and decide which section of the grid they belong in. Write the letter of the calculation in the correct place.

	Answer is Negative	Answer is Positive
Answer is an Integer		
Answer has 1 decimal place		
Answer has 1 significant figure		

A $-24 \div -10$

B $\frac{-250}{-10}$

C $-3 + 14$

D -26×0.5

E $\frac{24}{-2}$

F $12 - 24$

G -2×0.6

H $\frac{0.15}{-3}$

I -5×3

J $-6 \div 100$

K $-\frac{1}{1000} \times -10$

L $-3.5 + 4\frac{6}{10}$

M $-2 \div -100$

N $\frac{-60}{-5}$

O -0.8×8

P $\frac{2}{-200}$

Q $-0.3 \div -10$

R $\frac{-6}{-300}$

S $\frac{-15}{-2}$

T $4.8 \div -4$

U -0.4×-0.2

V $\frac{17}{-0.5}$

HOMEWORK 5: ALGEBRAIC EXPRESSIONS

$(a \times 2) \div b = \frac{2a}{b}$

$(x \times y) \div (2 + b) = \frac{xy}{2 + b}$

$(a + 1) \times 4 = 4(a + 1)$

we also avoid the × symbol

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

A) $3a$

B) $3 + a$

C) $3a^2$

D) $a - 3$

E) $2a + 1 = 3$

F) $a = 2b + 3$

G) $3(a + b)$

H) $3ab$

I) a^3

J) $b(a + 3)$

K) $ab + 3$

L) $3a^2 + b$

M) $2a^2 + ab$

N) ab^2

O) $(ab)^2$

P) $3 - ab + b^3 + a$

Q) $a(b - 3)$

1) The same as a × a × a

2) The coefficient of b is 1

3) The product of 3a and a

4) A formula

5) The coefficient of a^2 is 2

6) Add 3 to a, then multiply by b

7) The same as a^2b^2

8) 3 less than a

9) The product of 3 and ab

10) b is multiplied by ab

11) Subtract 3 from b, then multiply by a

12) The sum of 3 and a

13) An equation

14) Multiply a and b, then add 3

15) a is multiplied by 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

Substitution Mystery Grid

Use the clues to complete the grid:

a = -5 b = -6 c = 8 d = 3

The numbers in the bottom row add up to $10 - b$

The number below -3 is $c^2 - b^2$

The number next to 5 is $4(c + b)$

The numbers in the two diagonals have the same sum

The number above 4 is $\frac{ab}{10} + 2$

The number to the left of -3 is d^d

The number in the bottom left corner is $b - a$

The number below 4 is $(a + d)(b + c)$

The number next to 0 is $\frac{2c - a}{3}$

The numbers in the top row sum to $2 - ac$

The number in the bottom right is the product of all the other numbers and 0

The number to the right of 2 is $\sqrt{2c}$

The number to the left of 2 is $\frac{b}{2}$

		2	

One of the numbers in the left column is $20 - d$

The number above -3 is $2d^2$

HOMEWORK 6: 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 you school email address and school computer login password.

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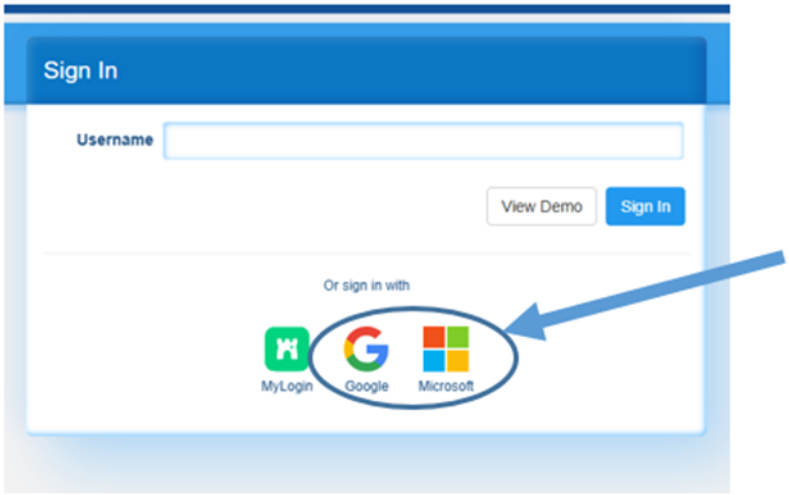
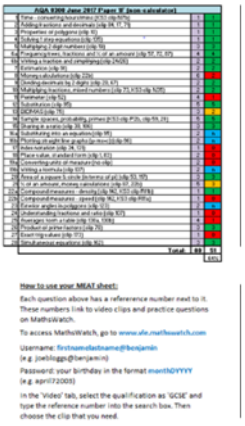


Additional working out space:

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.



HOMEWORK 7: DOUBLING

examples

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

double

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 × 2

b) 28 × 2

c) 36 × 2

d) 48 × 2

e) 63 × 2

f) 29 × 2

g) 88 × 2

h) 47 × 2

i) 16 × 2

j) 39 × 2

k) 58 × 2

l) 98 × 2

Try some larger numbers:

a) 134 × 2

b) 258 × 2

c) 786 × 2

d) 468 × 2

e) 613 × 2

f) 239 × 2

g) 888 × 2

h) 457 × 2

i) 1062 × 2

j) 3412 × 2

k) 5668 × 2

l) 9098 × 2

Think about doubles to work out these sums:

a) 45 + 46

b) 25 + 26

c) 15 + 16

e) 35 + 37

f) 30 + 31

g) 39 + 40

i) 49 + 50

j) 25 + 27

k) 40 + 41

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

Problem solving!

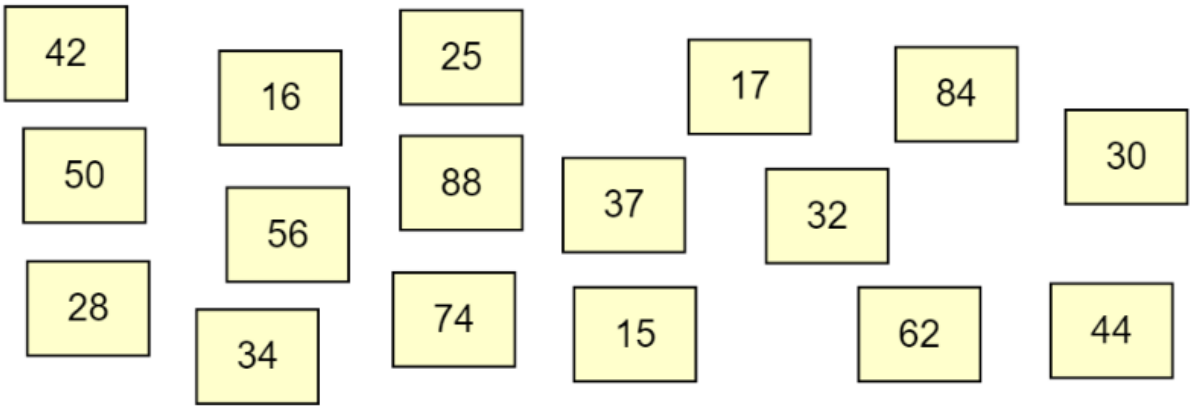
Apply your core skills to the challenge questions below...

LOOK

N1a, N1b

what's left?

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



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			
f)	9	18	36			
g)	10	20				
h)	12	24				

HOMEWORK 8: STATISTICAL DIAGRAMS

Kyle collects some information about the number of people that live in each house on his street.

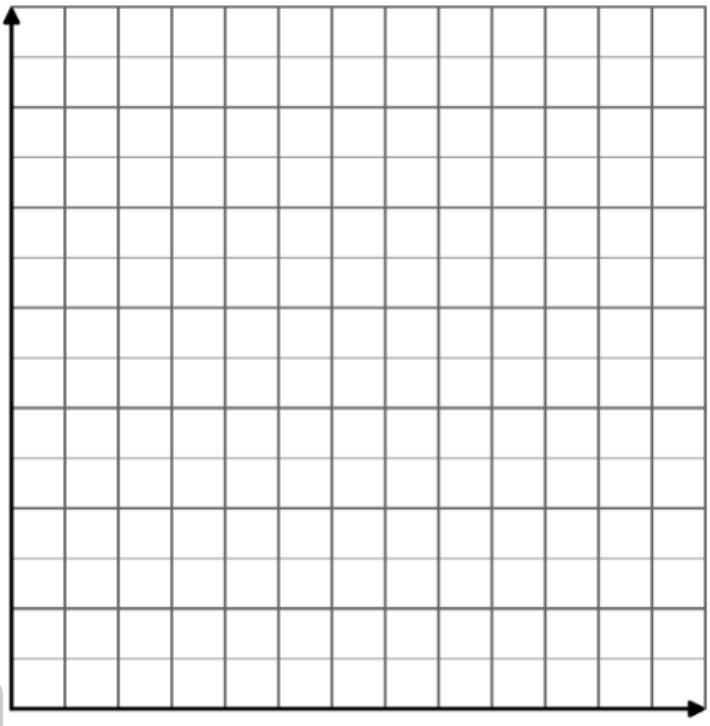
Record this raw data in the frequency table:

4	2	1	4	2
5	1	2	3	3
4	4	5	2	1

Number of people (x)	Frequency (f)

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

HW 8

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

B Nobody scored 23 marks

C Everybody scored more than 19

D Twenty four people scored 5 marks

E The lowest score was 0

F The quiz was out of 25

G At least one person scored more than 24 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

F One person in the survey was 29 years old

G 44 students were included in the survey

HW 8

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. Ava 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 Ava 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:

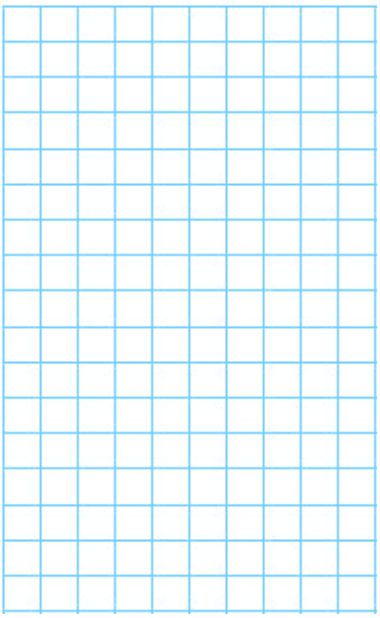
a) 26 ÷ 2

b) 48 ÷ 2

c) 60 ÷ 2

d) 68 ÷ 2

e) 84 ÷ 2



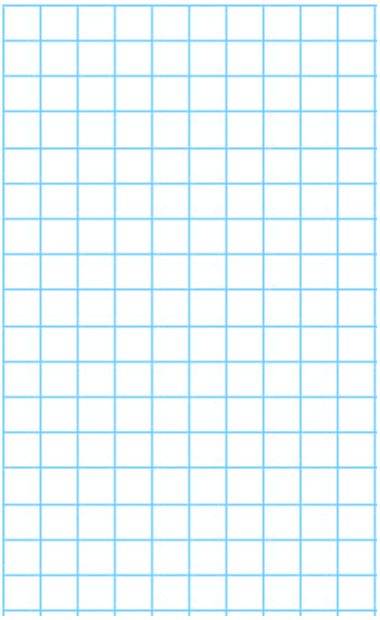
f) 17 ÷ 2

g) 21 ÷ 2

h) 25 ÷ 2

i) 29 ÷ 2

j) 31 ÷ 2



mental maths: half way between

examples

Find the number half way between 10 and 16

10 + 16 = 26
Half of 26 = 13

Find the number half way between 24 and 27

24 + 27 = 51
Half of 51 = 25.5

Find the number half way between:

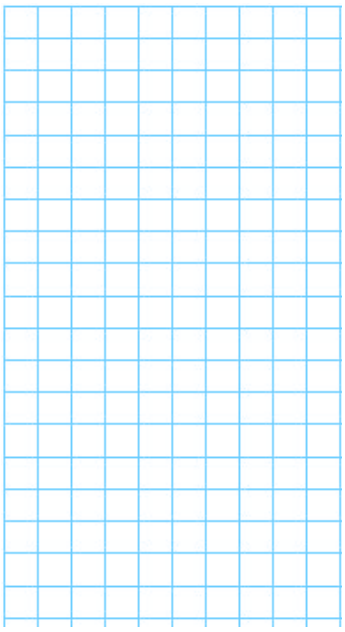
a) 3 and 7

b) 2 and 6

c) 9 and 15

d) 8 and 12

e) 14 and 20



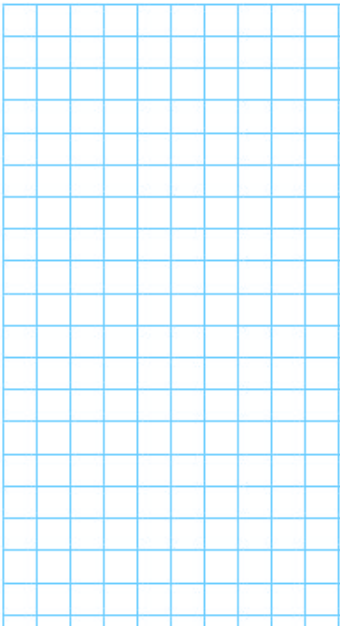
f) 15 and 20

g) 27 and 32

h) 17 and 21

i) 1 and 8

j) 3 and 7



Example 1:	Example 2:	Example 3:
30 × 0.5	8 × 1.5	12 × 2.5
Half of 30 = 15	8 × 1 = 8	12 × 2 = 24
	8 × 0.5 = 4	12 × 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				

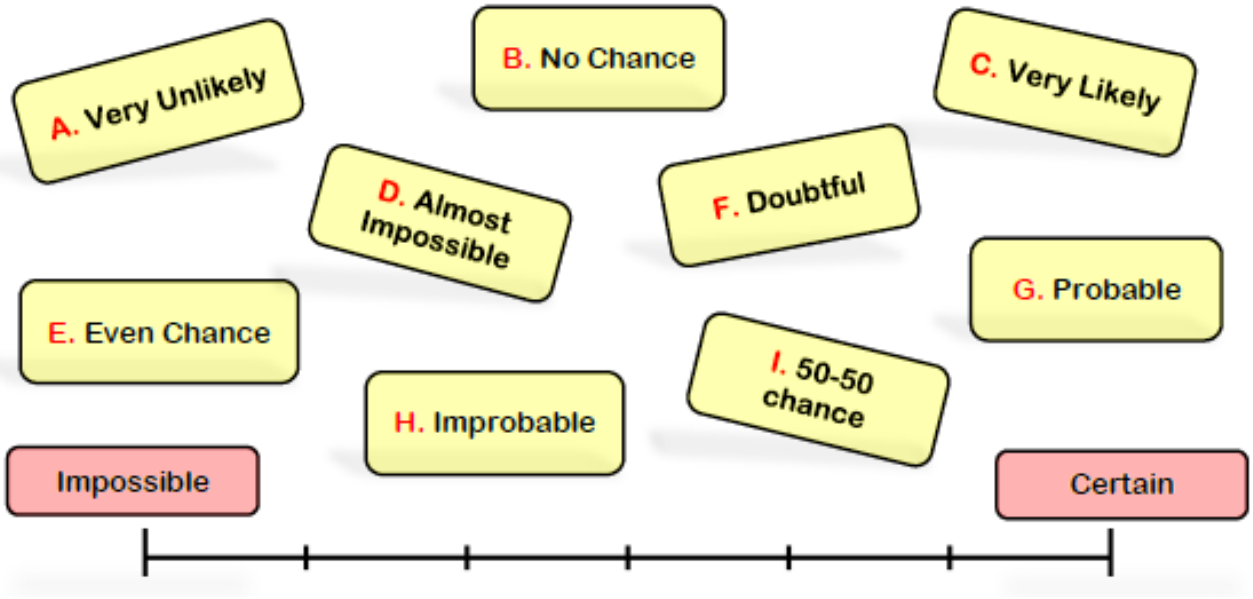
X	1.5	0.5	3.5	2.5
	9			
		4.5		
			24.5	
				75

X				
10				105
18			27	
4		10		
11	5.5			

HOMEWORK 11: PROBABILITY

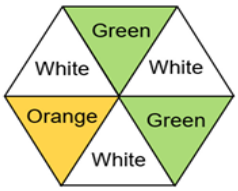
LOOK
P1, P2

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



(a)	(b)	(c)	(d)
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?	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)	(f)	(g)
What is the probability of the spinner landing on white?	What is the probability that the spinner does not land on orange?	Which is more likely – the spinner landing on white or the spinner landing on green?

T-shirts

Paul has **15** T-shirts.

The information shows the colours of his T-shirts.

5 black
3 white
3 red
2 dark blue
1 light blue
1 yellow

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

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

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

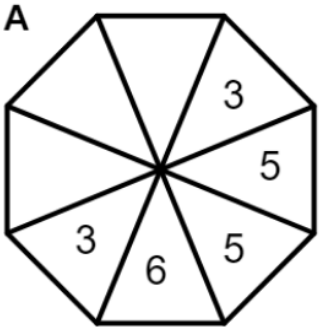
(c) He takes one of his **blue** T-shirts at random.

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

Design a Spinner!

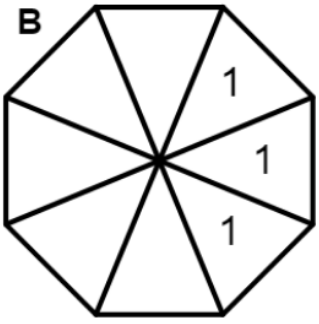
Using only the numbers 1-6, complete these spinners so they match the probability statements that describe them.

A



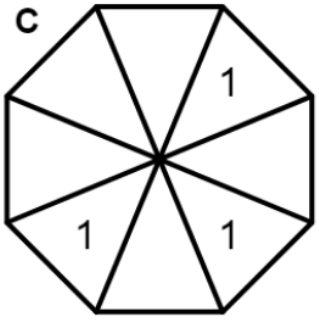
The chance of getting a 1 is zero. You are more likely to get a 2 than a 3 You have no chance of getting a 4.

B



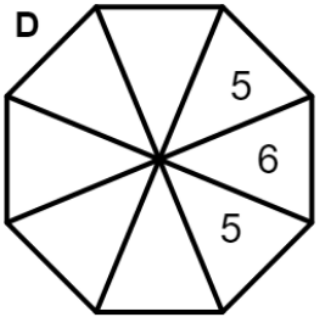
It is impossible to land on an even number. You are most likely to get a 3. You are certain to get a number less than 4.

C



You are twice as likely to land on a 4 than a 3. You are certain to get a number less than 5. It is impossible to land on a 2.

D



You are unlikely to land on a 3 or 4. You are most likely to land on a 2. You are certain to land on a number more than 1.

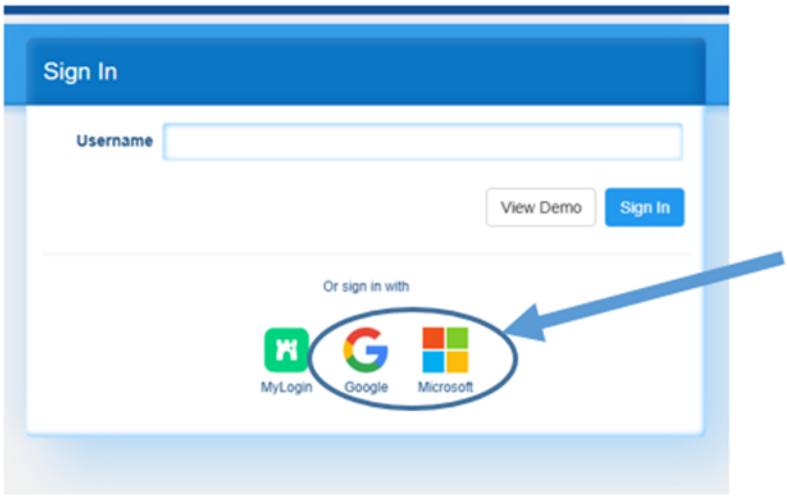
HOMEWORK 12: MATHSWATCH

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 you school email address and school computer login password.

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

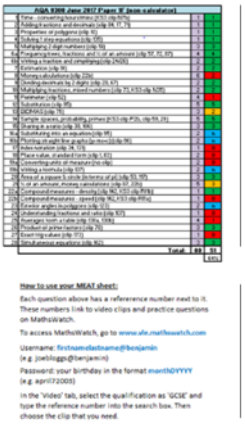
If you have any issues logging in, you must speak to your teacher as soon as possible.



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.



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

RESOURCES PROVIDED BY:

Numeracy Ninjas
Mr Carter Maths
Miss B's Resources
NRich
Worksheet Works
Dr Austin
Mathspad