MATHEMATICS HOMEWORK BOOKLET

Benjamin Britten Academy of Music and Mathematics

Year 7 Book A

AUTUMN TERM

NAME:

Mathematics homework

Contents

WEEK	Numeracy	Due
1	NUMERACY	
2	ODD AND EVEN	
3	RESEARCH TASK	
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14	MATHSWATCH	

How does it work?

- One homework will be set a week
- The 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 mathswatch, 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 lose your booklet a copy 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.

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.

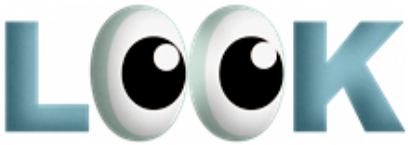
Login details

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

MENTAL STRATEGIES - do these in your head

TIMESTABLES – do these in your head

Literacy challenge: Missing vowels!

Below are 3 keywords in maths, but the vowels are missing. Can you fill the blanks?

_ DD _ T _ _ N

M _ LT _ PL _ C _ T _ _ N

_ R _ THM _ T _ C

×	7	3	11	6	2	4	8	9	5	12	10
9											
4											
2											
8											
10											
3											
7											
5											
12											
11											
6											

written methods: addition & subtraction

examples

50 Thousand + 8,654

= 50 000
8 654 +
58 654

3421 - 304

= 34~~2~~11
304 -
3117

Write the larger number on top
Line up the columns from the right
Borrow from the left if the digit on top is smaller

Complete out these column additions

1) 2607 + 1328

2) 5286 + 505

3) 2305 + 3523

4) 6817 + 1320

5) 2582 + 2173

6) 4438 + 3121

7) 7653 + 273

8) 1914 + 359

subtraction missing digit puzzles

1 8 2 2	4 1 2 □	6 □ 4 □	2 □ 3 □
2 □ 4 -	□ □ 2 -	2 2 2 -	2 5 6 -
□ □ 1 □	□ 4 2 7	6 3 □ 8	2 0 □ 9

1 0 4 2	3 6 5 □	5 0 3 7	4 □ 1 □
2 □ 5 -	□ □ 7 -	2 □ 4 -	□ 3 1 -
□ 9 □	□ 9 3 3	□ □ 9 □	3 9 □ 8

Complete the crossword

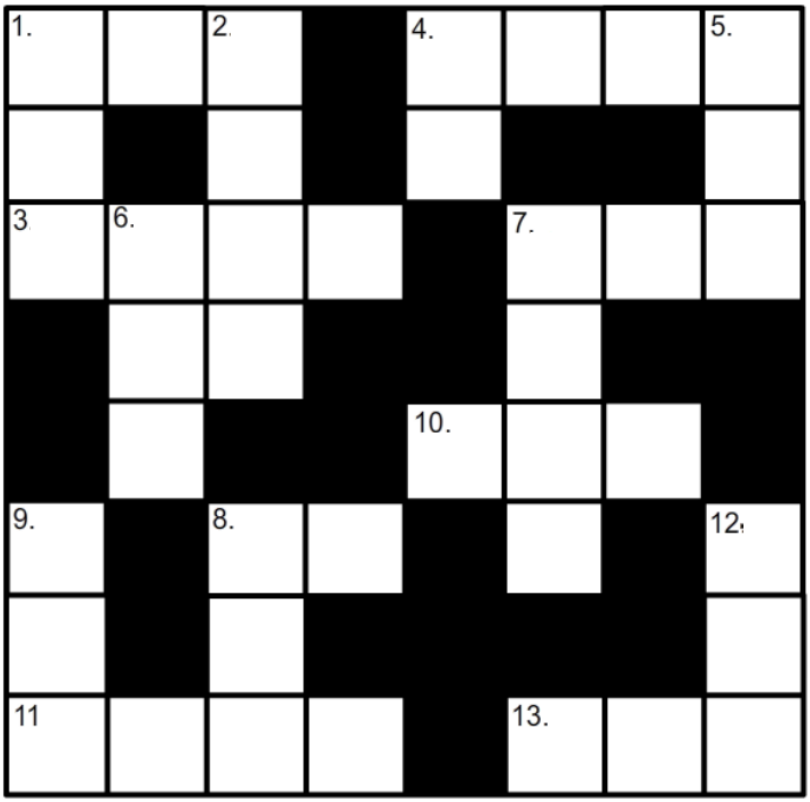
addition + subtraction crossnumber

across

1) 32 + 125
3) 896 + 2631
4) 4977 + 330
7) 1012 - 16
8) 1028 - 970
10) 2040 - 1231
11) 142 + 961
13) 1218 - 900

down

1) 98 + 15
2) 283 + 6739
4) 153 - 97
5) 654 + 122
6)1000 - 469
7) 10000 - 299
8) 613 - 63
9) 98 + 273
12) 1223 - 515



Homework 2: Odd and Even numbers

List the first 10 even numbers:_____

List the fist 10 off numbers:_____

If even numbers always end with a 0,2,4,6,8 what digits do odd numbers always end in_____

CHALLENGE 1

- *I am greater than 200.*
- *I am even.*
- *I am a multiple of 5.*

Who am I? _____

A 526	B 713	C 92	D 107
E 274	F 810	G 625	H 321

CHALLENGE 2

- *I am an odd number.*
- *I am less than 800.*
- *The total of all my digits is also odd.*
- *I am not a multiple of 5.*

Who am I? _____

A 526	B 713	C 92	D 107
E 274	F 810	G 625	H 321

CHALLENGE 1

- *I am less than 900.*
- *I am a 3-digit number.*
- *I am odd.*
- *The total of all my digits is also odd.*

Who am I? _____

A 509	B 280	C 465	D 258
E 87	F 833	G 912	H 314

CHALLENGE 2

- *I am greater than 250.*
- *My hundreds digit is less than 8.*
- *I am an even number.*
- *My smallest digit is my tens digit.*

Who am I? _____

A 509	B 280	C 465	D 258
E 87	F 833	G 912	H 314

Problem solving!

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

Shown below are 4 number cards.

2 9 8 6

Using the number cards, make

(a) the smallest possible 2 digit number.

..... **(1)**

(b) the largest possible 4 digit **odd** number.

..... **(1)**

Write down an odd prime number.

..... **(1)**

Write down an even square number.

..... **(1)**

Andrea adds two odd numbers.

Is the correct answer, odd, even or either?

☐ odd ☐ even ☐ either

Using the space below :

Convince me that adding an even number and an odd number always gives an odd answer

Convince me that the sum of two odd numbers is always even

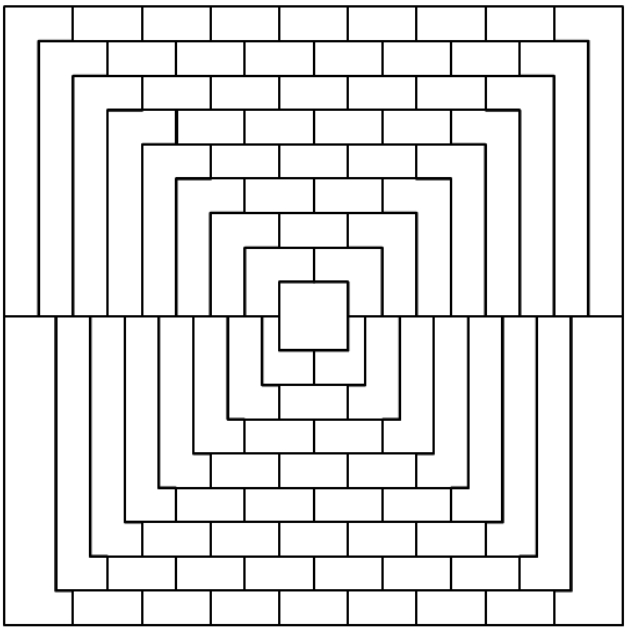
Convince me that half of an even number is not always even

Convince me that −7 is an odd number

Homework 3: Research Task
Four colour Theorem

Part A

Colour in the pattern so that no areas which touch have the same colour. Try to use the least number of different colours possible.



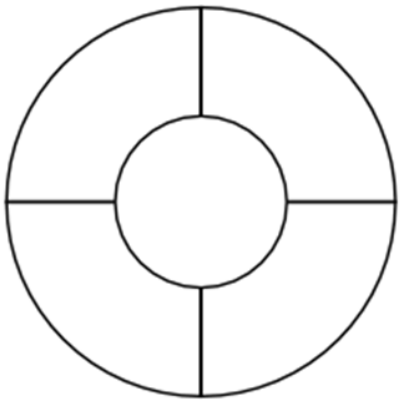
What is the least number of different colours that are needed?

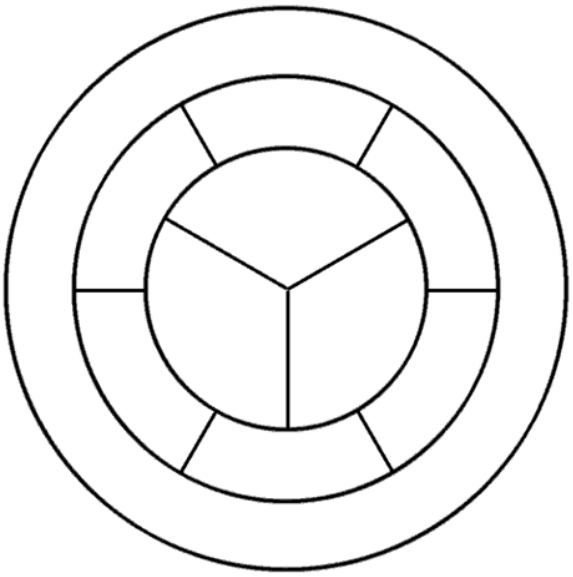
Part B

Now make your own pattern using the same rule (you can't have the same colours next to each other). Try to make a pattern which needs the greatest number of different colours.

What is the greatest number of different colours that are needed?

How many colours do you need to colour the two pictures below so that no two touching parts are the same colour? Use your own colours to test it out. Try to use the minimum number of colours possible.





Thanks to the Four Colour Theorem, we know that any picture of this kind only requires four different colours (to have no touching parts be the same colour).

RESEARCH: Use the internet or books to answer the following questions.

Q1 a) What is cartography?

b) How does the Four Colour Theorem link to cartography?

Q2 Why do some people believe that the Four Colour Theorem has not been proven properly?

Q3 Who famously thought he had proved the Four Colour Theorem but found out ten years later that he had made a mistake?

Homework 4:

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 maths lessons. You can use the space on the next page to do any working out if you need to.

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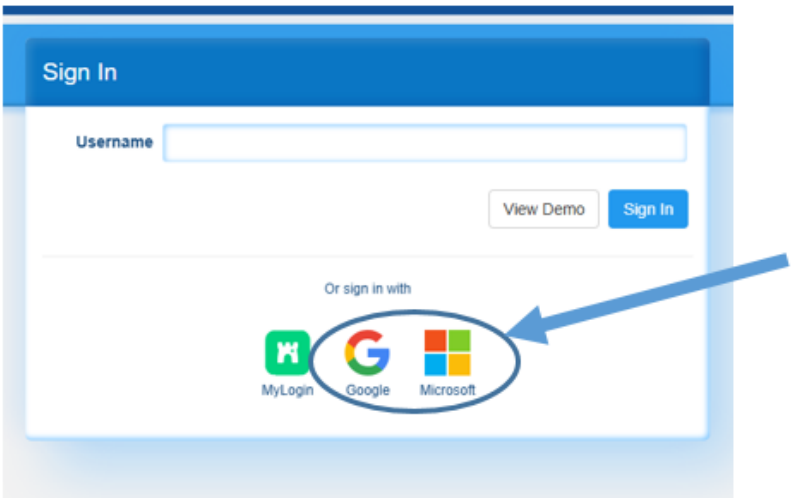

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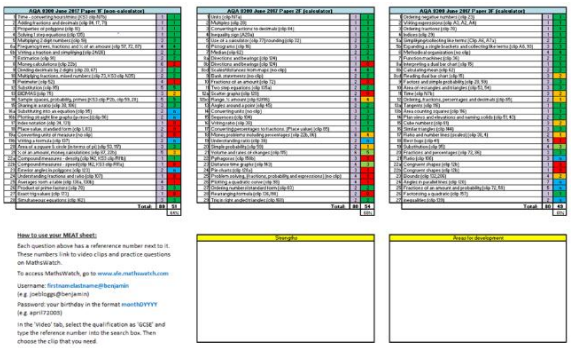

AQA 8300 June 2017 Paper 3F (non-calculator)

1	Time - converting hours/mins (KS3 clip 87b)	1	
2	Adding surface and volume (clip 84 TT7)	1	
3	Properties of polygons (clip 87)	1	
4	Rounding to nearest 10 (clip 2)	1	
5	Multiplying 2 digit numbers (clip 9b)	2	
6a	Prime factors, fractions and LCM as answer (clip 9F, F2, 89)	4	
6b	Writing a fraction and simplifying (clip KS3b)	2	
7	Estimation (clip 9b)	1	
8	Money calculations (clip 20a)	3	
9	Multiplying decimals by 2 digits (clip 20, 63)	2	
10	Ordering decimals and standard numbers (clip F3, F3D1 clip N28)	2	
11	Parallelogram (clip 87b)	1	
12	Substitution (clip 89)	1	
13	GEOMETRIC (clip 7b)	1	
14	Sample spaces, probability, pathways (KS3 clip 87b, clip 89, 3b)	3	
15	Scale drawing (clip 87b)	1	
16	Probability as a decimal/fraction (clip 9b)	1	
17a	Plotting straight line graphs (y=mx+c) (clip 9b)	1	
17b	Inverse notation (clip 9F, 57b)	1	
18	Place value, standard form (clip 1, 81)	2	
19a	Converting units of measure (mm clip)	1	
19b	Writing a formula (clip 89)	2	
20	Cost of a phone bill (in terms of all bills 90, 99)	3	
21	Cost as amount, money calculations (clip 57, 20b)	3	
22	Compound measures - density (clip 90, F57, clip P89b)	3	
23a	Compound measures - speed (clip 90, F57, clip P89a)	3	
23	Exterior angles in polygons (clip 87c)	2	
24	Understanding fractions and ratio (clip 90b)	2	
25	Mean speed - time taken (clip 90a, 90b)	3	
26	Ordering negative numbers (clip 2)	1	
27	Exporting values (clip 87c)	1	
28	Simultaneous equations (clip 96c)	2	
	Total	49	
	49%		

AQA 8300 June 2017 Paper 3F (calculator)

1	Units (clip 57a)	1	
2	Multiples (clip 3b)	1	
3	Converting a whole to decimals (clip 94)	1	
4	Rounding (clip 2)	1	
5	Use of a calculator (clip 17)(including clip 1)	1	
6	Percentages (clip 9b)	1	
7	Median (clip 92)	1	
8a	Directions and bearings (clip 87b)	1	
8b	Directions and bearings (clip 87b)	1	
9a	Quadrilaterals (KS3 clip 87b, clip 89)	2	
9b	Quadrilaterals (KS3 clip 87b, clip 89)	2	
10	Equations (clip 96b)	2	
11	Fractions of an amount (clip 12)	2	
12	Two step equations (clip 96a)	2	
13a	Quadratic graphs (clip 93)	2	
13b	Plurals, % amount (clip F2/90)	2	
14	Cubic graphs (clip 93)	2	
15	Cumulative frequency (clip 92)	1	
16	Sequences (clip 89b)	1	
17	Writing rules (clip 89)	1	
18	Converting percentages to fractions, (Place value) (clip 89)	1	
19	Money problems including percentages (clip 20b, 90)	3	
20	Understanding ratio (clip 90)	2	
21	Simple probability (clip 90)	1	
22	Volume and area of changes (clip 90)	3	
23	Pythagoras (clip 90b)	2	
24	Distance time graphs (clip 90)	2	
25	Pie charts (clip 90a)	2	
26	Problem solving, (Fractions, probability and expressions) (no clip)	3	
27	Ordering expressions (clip 96)	2	
28	Solving equations and inequalities (clip 95)	2	
29	Reversing formulas (clip 96, 96b)	2	
30	Trial & improvement (clip 96b)	3	
	Total	60	
	60%		

AQA 8300 June 2017 Paper 3F (calculator)

1	Ordering negative numbers (clip 2)	1	
2	Writing expressions (clip A1, A3, A4)	1	
3	Ordering fractions (clip 70)	1	
4	Factors (clip 3)	1	
5a	Simplifying/collecting like terms (Clip A6, A7a)	1	
5b	Expanding a single brackets and collecting like terms (clip A8, 96)	1	
6	Methods of approximation (no clip)	1	
7	Function machines (clip 96)	1	
8a	Interpreting a bar line chart (clip 86)	1	
8b	Interpreting a pie chart (clip 86)	1	
9a	Equations of lines (clip 93)	1	
9b	Equations of lines (clip 93)	1	
10	Factors and simple probability (clip 28, 90)	1	
11	Area of rectangles and triangles (clip 82, 84)	1	
12	Time (clip F67b)	1	
13	Ordering, fractions, percentages and decimals (clip 89)	1	
14a	Area of a circle (clip 82)	1	
14b	Area of a circle (clip 82)	1	
15	Plan views and elevations and naming solids (clip 87, 87c)	1	
16	Cube numbers (clip 1b)	1	
17	Similar triangles (clip 94b)	1	
18	Fractions and number lines (decimals) (clip 70, 4)	1	
19	Bar charts (clip 91)	1	
20	Sector angles (clip 91)	1	
21	Fractions and percentages (clip 70, 26)	1	
22	Ratio (clip 89)	1	
23a	Congruent shapes (clip 12b)	1	
23b	Congruent shapes (clip 12b)	1	
24	Bounds (clip 12a,12b)	1	
25	Angles in parallel lines (clip 87c)	1	
26	Tree diagrams and probability (clip 70, 93)	1	
27	Factorising a quadratic (clip 97)	1	
28	Inequalities (clip 95b)	1	
	Total	49	
	49%		

How to use your MEAT sheet:

Each question above has a reference number next to it. These numbers link to video clips and practice questions on MathsWatch.

To access MathsWatch, go to www.ofe.mathswatch.com

Username: firstnamelastname@benjamin
(e.g. joebloggs@benjamin)

Password: your birthday in the format monthDYYYY
(e.g. april172005)

In the 'Video' tab, select the qualification as 'GCSE' and type the reference number into the search box. Then choose the clip that you need.

Strengths	Areas for development

Homework 5: Sequences

learn by heart

Arithmetic sequences: **add or subtract** the same number each time.

3 9 15 21 27 ...

+6 +6 +6 +6

Geometric sequences: **multiply** by the same number each time.

4 8 16 32 64 ...

×2 ×2 ×2 ×2

arithmetic sequences

Work out what is happening in the sequences.
Can you figure out the missing terms?

A	7	12	17	22		
B	5	8	11	14		
C	16	13	10	7		
D	15	9	3	-3		
E	22	14	6			
F	9		15		21	
G	-3		5		13	

H	-2			-8		
I	-12			-3		
J	0.1		0.14		0.18	
K		0.24		0.18		
L		-1.3	-1.36			
M	$\frac{1}{2}$	1	$\frac{3}{2}$			
N	$\frac{1}{2}$	$\frac{3}{4}$	1	$\frac{5}{4}$		

Think hard...

(a) Is 205 a term in the sequence 1, 5, 9, 13, ... ?
(b) Is 200 a term in the sequence 4, 10, 16, 22, ... ?
(c) Is 1000 a term in the sequence 50, 65, 80, 95, ... ?
(d) Is 999 a term in the sequence 11, 20, 29, 38, ... ?
(e) Is 458 a term in the sequence 5, 12, 19, 26, ... ?

other types of sequence

learn by heart

The triangle numbers are:

1 3 6 10 15

+2 +3 +4 +5

Fibonacci Sequence:
To get to the next term, you add together the previous two terms,
e.g. 1, 1, 2, 3, 5, 8, 13....
e.g. 7, 2, 9, 11, 20, 31 ...

Geometric Sequence: To get to the next term, you multiply or divide the previous term,
e.g. 1, 2, 4, 8, 16... the term-to -term rule is '× 2'

1. Write down the first 10 triangular numbers.

2. In each **geometric** sequence below, fill in the next term:

a) 1, 3, 9, _____

b) 2, 20, 200, _____

c) 2, 10, 50, _____

d) 0.4, 4, 40, _____

3. In each **fibonacci** sequence below, fill in the next term:

a) 1, 1, 2, 3, 5, _____

b) 2, 2, 4, 6, 10, _____

c) 0.1, 0.1, 0.2, 0.3, 0.5, _____

d) -2, -1, -3, -4, -7, _____

4. For each sequence below, say whether it is geometric, arithmetic or fibonacci:

a) 10, 12, 14, 16, 18

b) 3, 6, 12, 24, 48

c) 1, 5, 25, 125, 625

d) 3, 3, 6, 9, 15, 24

e) 18, 15, 12, 9, 6

f) -1, -2, -4, -8, -16, -32

g) 0.5, 0.5, 1, 1.5, 2.5, 4

h) 10, 9, 8, 7, 6, 5

i) 10,000, 1,000, 100, 10, 1

j) -4, -2, 0, 2, 4, 6

HW 5

Homework 6: Substitution

examples

Given $y = 3$, evaluate:

$2y + 5$	$2y^3$	$\frac{4(y+1)}{10}$
$= 2 \times 3 + 5$ $= 6 + 5$ $= 11$	$= 2 \times 3^3$ $= 2 \times 27$ $= 54$	$= \frac{4 \times (3+1)}{10}$ $= \frac{16}{10} = 1.6$

Given that $a = 3$, evaluate:

a) $10a$

b) a^2

c) $\frac{4a}{6}$

d) $5a - 1$

e) $4a + 2$

f) $9(a - 1)$

g) $2a^2$

h) $(2a)^2$

i) $5(a - 1)$

j) a^3

k) $(2a)^3$

l) $(a + 2)^2$

If $x = 2$ and $y = 3$, evaluate:

a) xy

b) $x - y$

c) $3x^2$

Now use what you've learned to find the answers to these:

5 + 4 = ◯ 7 − 4 = ☆

(1) ☆ + ☆ + ☆ =

(2) ☆ + ◯ + ☆ =

(3) ◯ + ☆ + ◯ =

(4) ☆ + 5 + ◯ =

(5) ◯ + ◯ − ◯ =

(6) ◯ + ☆ − 3 =

(7) 4 × ☆ × ◯ =

(8) ◯ + ☆ − ◯ =

(9) 4 × ☆ ÷ ☆ =

(10) 7 × ◯ ÷ ◯ =

(11) ☆ + ◯ × ☆ =

(12) ◯ + ☆ × ◯ =

(13) ◯ × ☆ − ◯ =

(14) ◯ + 24 ÷ ☆ =

(15) ◯ × ☆ − ☆ =

(16) 2 × ◯ − ☆ =

(17) ☆ + 54 ÷ ◯ =

(18) ☆ + ☆ × ◯ =

(19) ☆ + ☆ + ◯ × ◯ =

(20) ◯ × ◯ + ☆ × ☆ =

Use the clues to complete the grid at the bottom

the number above 2 is 2a + 1

b = 3

a = 2

the number in the middle is 2b - 2a

the number in the bottom right is 4b

the number in the top left is 2a + b

the number below 7 is a - 1

the number below 6 is b - b

the top row adds up to 6b

the number between 3 and 12 is 10 - a

the left column adds up to 5a + 1

Homework 7:

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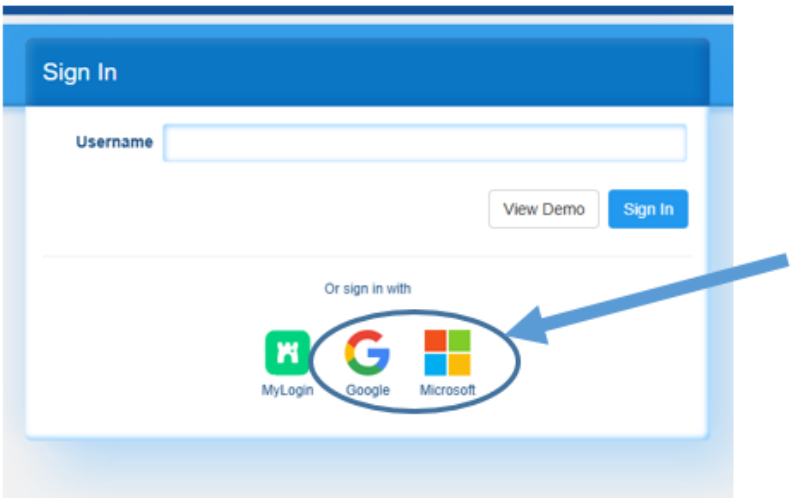

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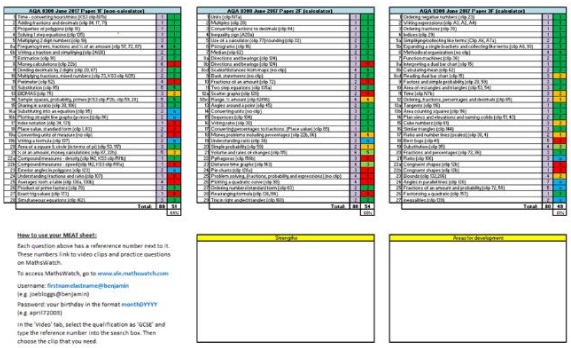


AQA 8300 June 2017 Paper 3F (non-calculator)

1	Time - converting hours/mins (KS3 clip 87b)	1	
2	Adding surface and volume (clip 84 TT7)	1	
3	Properties of polygons (clip 87)	1	
4	Rounding to nearest 10 (clip 2)	1	
5	Multiplying 2 digit numbers (clip 4b)	1	
6a	Prime factors, fractions and LCM as answer (clip 9F, 9J, 89)	3	
6b	Writing a fraction and simplifying (clip 9J&K)	2	
7	Estimation (clip 9b)	1	
8	Money calculations (clip 20a)	2	
9	Multiplying decimals by 2 digits (clip 20, 6A)	2	
10	Multiplying and dividing numbers (clip 7J, 9.9D clip 9.9D)	2	
11	Parallelogram (clip 87b)	1	
12	Substitution (clip 8B)	1	
13	GEOMETRY (clip 7E)	2	
14	Sample spaces, probability, pathways (KS3 clip 87b, clip 89, 8b)	3	
15	Ordering decimals (clip 6A)	1	
16	Scale drawing and bearings (clip 9B)	2	
17a	Plotting straight line graphs (gr+nm) (clip 9K)	1	
17b	Gradient (clip 9L, 9.7B)	1	
18	Place value, standard form (clip 1, 6D)	2	
19a	Converting units of measure (inc mph)	1	
19b	Writing a formula (clip 9J)	1	
20	Cost of a journey (clip 20 in terms of all bills 9D, 9F)	2	
21	Cost as amount, money calculations (clip 7J, 20b)	2	
22	Compound measures - density (clip 9D, 9.5D clip 9F&G)	2	
23a	Compound measures - speed (clip 9G, 9.5E clip 9F&G)	2	
23b	Greater angles in polygons (clip 87E)	2	
24	Understanding fractions and ratio (clip 9J5)	2	
25	Proportion - ratio in cake (clip 9J6, 9J&L)	2	
26	Rounding to 1 sf (clip 9.9B)	1	
27	Converting values (clip 87J)	1	
28	Simultaneous equations (clip 9L)	2	
	Total	49	
		65%	

AQA 8300 June 2017 Paper 3F (calculator)

1	Units (clip 5F,6J)	1	
2	Multiples (clip 3D)	1	
3	Converting ordinal to decimals (clip 9H)	1	
4	Rounding (clip 2)	1	
5	Use of a calculator (clip 17)(rounding (clip 1))	1	
6	Percentages (clip 9L)	1	
7	Median (clip 9J)	1	
8a	Directions and bearings (clip 9B)	1	
8b	Directions and bearings (clip 9B)	1	
9a	Quadrilaterals (KS3 clip 87a, clip 89)	2	
9b	Quadrilaterals (inc clips)	2	
10	Fractions of an amount (clip 7J)	2	
11	Two step equations (clip 9J&L)	2	
12a	Quadratic graphs (clip 9N)	2	
12b	Plurals, 5 amount (clip 9J9N)	2	
13	Cubic graphs (clip 9N)	2	
14	Cumulative frequency (clip 9J)	2	
15	Sequences (clip 9M)	2	
16	Writing rules (clip 9J)	2	
17	Converting percentages to fractions, (Place value) (clip 9F)	2	
18	Money problems including percentages (clip 20b, 9L)	2	
19	Interpreting pie charts (clip 9B)	2	
20	Scale drawing (clip 9B)	2	
21	Volume and area of changes (clip 9F)	2	
22	Pythagoras (clip 9M&L)	2	
23	Distance time graphs (clip 9K)	2	
24	Pie charts (clip 20b)	2	
25	Problem solving, (Fractions, probability and expressions) (inc clips)	2	
26	Writing expressions (clip 9J)	2	
27	Distance and speed (clip 9G)	2	
28	Reverse percentages (clip 9L)	2	
29	Trial & improvement (clip 9J)	2	
	Total	49	
		65%	

AQA 8300 June 2017 Paper 3F (calculator)

1	Ordering negative numbers (clip 7J)	1	
2	Writing expressions (clip 7J, 7K)	1	
3	Ordering fractions (clip 7E)	1	
4	Rounding (clip 2)	1	
5a	Simplifying/collecting like terms (Clip 7K, 7L, 7J's)	1	
5b	Expanding a single brackets and collecting like terms (clip 7K, 9J)	1	
6	Methods of approximation (inc clips)	1	
7	Function machines (clip 7K)	1	
8a	Interpreting a bar line chart (clip 9B)	1	
8b	Interpreting a pie chart (clip 9B)	1	
9a	Sketching graphs (clip 9N)	1	
9b	Sketching graphs (clip 9N)	1	
10	Factors and simple probability (clip 7J, 9A)	1	
11	Area of rectangles and triangles (clip 87, 9M)	1	
12	Time (clip 9J7N)	1	
13	Ordering, fractions, percentages and decimals (clip 6F)	1	
14a	Area of a circle (clip 9M)	1	
14b	Area of a circle (clip 9M)	1	
15	Plan views and elevations and naming solids (clip 87, 87J)	1	
16	Cube numbers (clip 6A)	1	
17	Similar triangles (clip 9M)	1	
18	Fractions and number lines (decimals) (clip 7K, 9)	1	
19	Bar charts (clip 9B)	1	
20	Sketching graphs (clip 9N)	1	
21	Fractions and percentages (clip 7J, 9L)	1	
22	Ratio (clip 9J6)	1	
23a	Congruent shapes (clip 9N)	1	
23b	Congruent shapes (clip 9N)	1	
24	Rounding (clip 2)(clip 1)	1	
25	Angles in parallel lines (clip 9N)	1	
26	Tree diagrams and probability (clip 7J, 9A)	1	
27	Factorising a quadratic (clip 9J)	1	
28	Inequalities (clip 9J)	1	
	Total	49	
		65%	

How to use your MEAT sheet:

Each question above has a reference number next to it. These numbers link to video clips and practice questions on MathsWatch.

To access MathsWatch, go to www.ofe.mathswatch.com

Username: firstnamelastname@benjamin
(e.g. joebloggs@benjamin)

Password: your birthday in the format monthDYYYY
(e.g. april172005)

In the 'Video' tab, select the qualification as 'GCSE' and type the reference number into the search box. Then choose the clip that you need.

Strengths	Areas for development

Homework 8: Research Task

Roman Numerals

Many clock faces still use roman numerals like IV and XI.
At the end of a film, the year it was made is often given using roman numerals. For example. MCMLXXX means 1980.

I	one	XI	eleven
II	two	XII	twelve
III	three	XX	twenty
IV	four (one before five)	XXX	thirty
V	five	XL	forty (ten before fifty)
VI	six	L	fifty
VII	seven	LX	sixty
VIII	eight	C	hundred
IX	nine (one before ten)	CM	nine hundred
X	ten	M	thousand

1 Write down the value of each of the numbers written below in roman numerals.

(a) VII (b) XIII (c) XVI (d) XXVII

(e) XVIII (f) XIX (g) XLV (h) LXXII

2 Write these numbers in roman numerals.

(a) 8 (b) 17 (c) 22

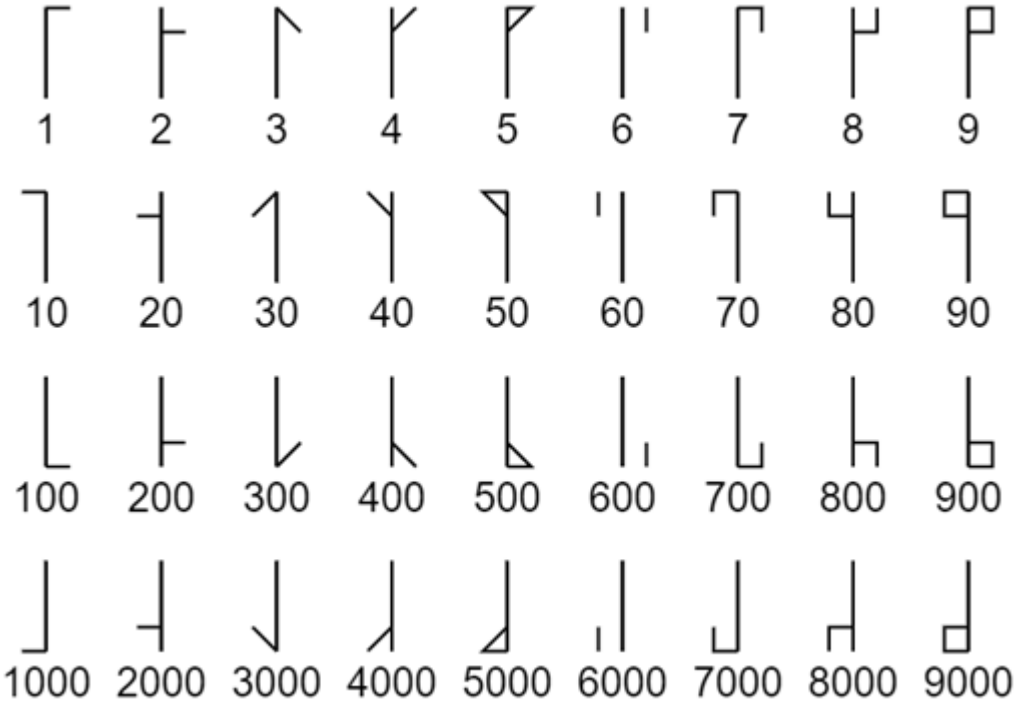
(d) 58 (e) 39 (f) 84

(g) 78 (h) 123 (i) 339

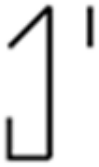
(j) 1265 (k) 1066 (l) 3194

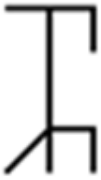
Cistercian Numerals!

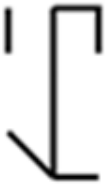
Using the key below, see if you can work out what numbers these Cistercian numerals represent.



For example = 6085

 = 70__

 = _8__

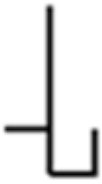
 =

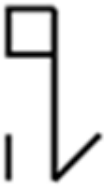
= _9_5

= 0___

=

= __8_

 =

 =

Homework 9: Numeracy

MENTAL STRATEGIES - do these in your head

TIMESTABLES – do these in your head

×	6	12	11	2	5	7	3	9	4	10	8
6											
2											
11											
5											
7											
3											
10											
8											
4											
12											
9											

comparing decimals

learn by heart

Decimal Places: the number of digits after the decimal point, e.g. 0.405 has 3 decimal places.

Adding zeros to the end of a decimal does not effect its size, so 0.1 = 0.10 = 0.10000000

examples

Which is larger 0.4 or 0.34?

0.4 = 0.40, so 0.4 is larger.

True or false: 0.30 > 0.3

False, these numbers are equal.

By adding a zero to 0.4, both numbers have two decimal places and we can easily see that '40 hundredths' is bigger than '34 hundredths'

1. 0.6 is the same as:

   a) 0.600 b) 6.0 c) 0.06 d) 0.66

2. Which of these numbers is the **largest**?

   a) 0.92 b) 0.149 c) 0.840 d) 0.09999

3. Select the **larger** number in each pair, or write = if they are the same.

   a) 0.412 or 0.48 b) 1.38 or 1.4 c) 0.508 or 0.507

   d) 7.05 or 7.005 e) 5.125 or 5.25 f) 0.3 or 0.29

   g) 9.49 or 9.491 h) 10.46 or 1.047 i) 0.16 or 0.106

4. True or false?

   a) 0.4 = 0.400 c) 0.24 ≥ 0.240 e) 0.99 < 1.0

   b) 0.6 > 0.06 d) 0.71 < 0.707 f) 0.647 < 0.7

5. Write down a positive number that is less than 0.01

6. Which of these numbers is the **smallest**?

   a) 0.02 b) 0.4 c) 0.009 d) 0.013

types of decimals

learn by heart

There are 3 types of decimal:

Terminating:	**Recurring:**	**Irrational:**
Does not continue forever, e.g. 0.25	Continues forever with a repeating pattern	Continues forever with no repeating pattern, e.g. 0.123456...

We often give irrational numbers a symbol, such as π ('pi') or $\sqrt{7}$ because we can't write down all the digits. You will learn more about these symbols later on.

Recurring decimals are written using dot notation:

$0.\dot{8} = 0.888....$	$0.\dot{5}8\dot{3} = 0.58358358....$	$0.2\dot{5}\dot{3} = 0.253535....$	$5.37\dot{6}9\dot{1} = 5.37691691...$

1. Which of the following equals 0.676767...?

   a) $0.6\dot{7}$ b) $\dot{0}.6\dot{7}$ c) $0.\dot{6}7$ d) $0.\dot{6}\dot{7}$

2. Which of the following equals 1.588888...?

   a) $1.5\dot{8}$ b) $\dot{1}.5\dot{8}$ c) $1.\dot{5}8$ d) $1.\dot{5}\dot{8}$

3. Which of the following equals 4.219219...?

   a) $4.21\dot{9}$ b) $4.2\dot{1}\dot{9}$ c) $4.\dot{2}1\dot{9}$ d) $4.\dot{2}\dot{1}9$

4. Write each of these recurring decimals using dot notation:

   a) 0.7222222... b) 4.3232323...

   c) 1.421421421... d) 5.5555555...

   e) 6.728282828... f) 3.4151515....

5. Which of these are terminating decimals? Select all that apply.

   a) 0.26 b) 1.8 c) 0.3131... d) 0.0000004

6. The number 4.44444 is:

   a) a terminating decimal c) a recurring decimal

   b) an irrational number d) an integer

Investigating Terminating and Recurring Decimals

For each of the following fractions, use your calculator to convert it to a decimal, then decide whether it is terminating or recurring.

Fraction	Decimal using Calculator	Terminating or Recurring
$\frac{1}{2}$		
$\frac{1}{3}$		
$\frac{1}{4}$		
$\frac{1}{5}$		
$\frac{1}{6}$		

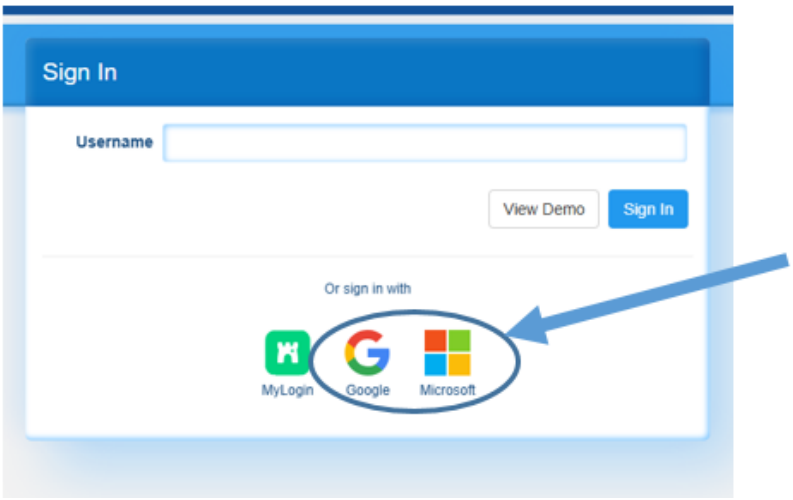
Fraction	Decimal using Calculator	Terminating or Recurring
$\frac{1}{12}$		
$\frac{1}{13}$		
$\frac{1}{14}$		
$\frac{1}{15}$		

HW 9

Homework 10:

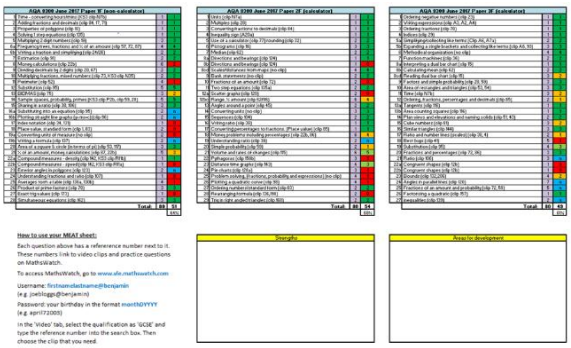
For this week's homework, your teacher will set you a task to complete on the website Mathswatch. The task will be based on the content you have learnt over the past half term in your maths lessons. You can use the space on the next page to do any working out if you need to.

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: BlueCat123 (example)



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.



AQA 8300 June 2017 Paper 3F (non-calculator)

1	Time - converting hours/mins (KS3 clip 87b)	1	
2	Adding surface and volume (clip 84 TT7b)	1	
3	Properties of polygons (clip 87)	1	
4	Rounding to nearest 10 (clip 2)	1	
5	Multiplying 2 digit numbers (clip 4b)	1	
6a	Prime factors, fractions and LCM as answer (clip 9F, 9J, 89)	4	
6b	Writing a fraction and simplifying (clip 9J&K)	2	
7	Estimation (clip 9b)	1	
8	Money calculations (clip 20a)	2	
9	Multiplying decimals by 2 digits (clip 20, 6H)	2	
10	Ordering decimals and standard numbers (clip 7J, 9.5H clip 9.5H)	2	
11	Perimeter (clip 75b)	2	
12	Substitution (clip 8B)	1	
13	GEOMATRIS (clip 75)	1	
14a	Sample spaces, probability, pathways (KS3 clip 87b, clip 89, 8b)	3	
14b	Probability of 2 events (clip 89)	2	
15	Scatter graphs and descriptions (clip 38)	2	
16a	Plotting straight line graphs (y=mx+c) (clip 96)	2	
17	Prime notation (clip 9F, 9J)	2	
18	Place value, standard form (clip 1, 6S)	2	
19a	Converting units of measure (inc mph)	2	
19b	Writing a formula (clip 8J)	2	
20	Cost of a journey (clip 20 in terms of all bills 9J, 9K)	2	
21	Cost as amount, money calculations (clip 7J, 20b)	2	
22a	Compound measures - density (clip 9G, 9J5) (clip 9F&G)	2	
22b	Compound measures - speed (clip 9G, 9J5 clip 9F&G)	2	
23	Exterior angles in polygons (clip 97J)	2	
24	Understanding fractions and ratio (clip 9J5)	2	
25	Proportion - ratio in cake (clip 20a, 20b)	2	
26	Reading off graphs (clip 96b)	2	
27	Converting values (clip 97J)	2	
28	Simultaneous equations (clip 96c)	2	
	Total	49	13
			26%

AQA 8300 June 2017 Paper 3F (calculator)

1	Units (clip 9J1a)	1	
2	Multiples (clip 3b)	1	
3	Converting ordinal to decimals (clip 9K)	1	
4	Rounding (clip 2)	1	
5	Use of a calculator (clip 17)(including (clip 1))	1	
6	Percentages (clip 9L)	1	
7	Median (clip 92)	1	
8a	Directions and bearings (clip 10A)	1	
8b	Directions and bearings (clip 10A)	1	
9a	Quadratic graphs (clip 96 inc clip)	1	
9b	Quadratic graphs (inc clip)	1	
10	Fractions of an amount (clip 12)	1	
11	Two step equations (clip 10Ka)	1	
12a	Quadratic graphs (clip 96)	1	
12b	Plurals, % amount (clip 9J9K)	1	
13	Cubic graphs (clip 96)	1	
14	Cubic graphs (clip 96)	1	
15	Sequences (clip 10K)	1	
16	Converting percentages to fractions, (Place value) (clip 9K)	1	
17	Money problems including percentages (clip 20b, 9K)	1	
18	Understanding ratio (clip 9J)	1	
19	Ratio and sharing (clip 9J)	1	
20	Volume and area of changes (clip 9K)	1	
21	Pythagoras (clip 96b)	1	
22	Distance time graphs (clip 96J)	1	
23	Pie charts (clip 99a)	1	
24	Problem solving, (Fractions, probability and expressions) (inc clip)	1	
25	Solving equations (clip 10Ka)	1	
26	Probability and tree diagrams (clip 9V)	1	
27	Rearranging formula (clip 10L, 96K)	1	
28	Trial & improvement (clip 96b)	1	
	Total	49	13
			26%

AQA 8300 June 2017 Paper 3F (calculator)

1	Ordering negative numbers (clip 7J)	1	
2	Writing expressions (clip 7J, 7K, 7M)	1	
3	Ordering fractions (clip 7K)	1	
4	Rounding (clip 2)	1	
5a	Simplifying collecting like terms (Clip 7K, 7L, 7L*)	1	
5b	Expanding a single brackets and collecting like terms (clip 7L, 9G)	1	
6	Methods of organisations (inc clip)	1	
7	Function machines (clip 7K)	1	
8a	Interpreting a bar line chart (clip 9K)	1	
8b	Reading a bar chart (clip 9K)	1	
9a	Sketching graphs (clip 7L)	1	
9b	Factors and simple probability (clip 7J, 9K)	1	
10	Area of rectangles and triangles (clip 9J, 9M)	1	
11	Time (clip 9J7b)	1	
12	Ordering, fractions, percentages and decimals (clip 9K)	1	
13a	Frequency tables (clip 9L)	1	
13b	Frequency tables (clip 9L)	1	
14	Plan views and elevations and naming solids (clip 9J, 9L)	1	
15	Cube numbers (clip 9L)	1	
16	Similar triangles (clip 9M)	1	
17	Ratio and number lines (derivatives) (clip 9K, 9J)	1	
18	Bar charts (clip 9J)	1	
19	Ratio and sharing (clip 9J)	1	
20	Fractions and percentages (clip 7J, 9K)	1	
21	Ratio (clip 9J)	1	
22a	Congruent shapes (clip 10A)	1	
22b	Congruent shapes (clip 10A)	1	
23	Bounds (clip 10a,10b)	1	
24	Angles in parallel lines (clip 10c)	1	
25	Probability as a fraction and probability (clip 7J, 9J)	1	
26	Factorising a quadratic (clip 9L)	1	
27	Inequalities (clip 10b)	1	
	Total	49	13
			26%

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Each question above has a reference number next to it. These numbers link to video clips and practice questions on MathsWatch.

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(e.g. joeblogg@benjamin)

Password: your birthday in the format monthDYYYY
(e.g. april172005)

In the 'Video' tab, select the qualification as 'GCSE' and type the reference number into the search box. Then choose the clip that you need.

Strengths	Areas for development

HW 10

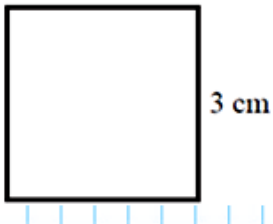
Homework 11: Perimeter

learn by heart

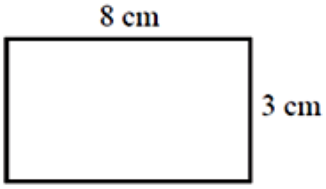
The perimeter of a shape is the total length of all of its sides.

Find the perimeter of the following rectangles and squares.
Remember to give the units for each answer. (Diagrams are not to scale).

1).



2).



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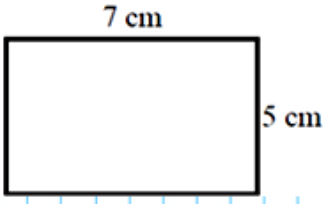

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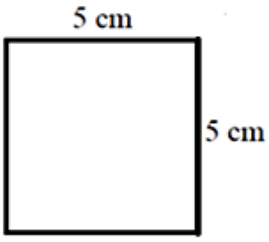

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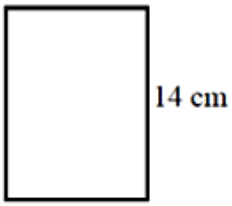
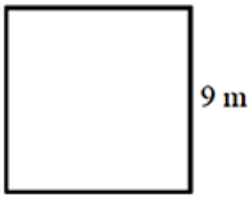
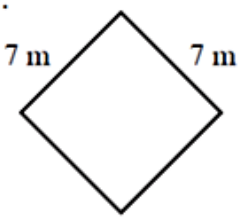


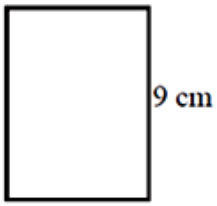
7).



8).

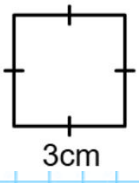


9).

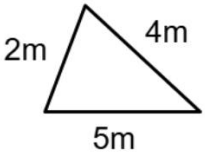


1. Work out the perimeter of each shape:

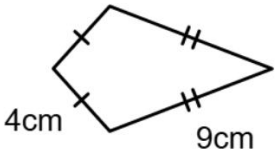
a)



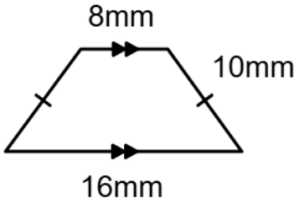
b)



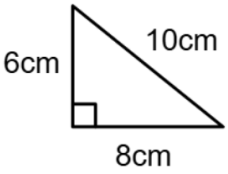
c)



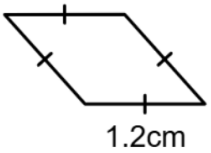
d)



e)



f)



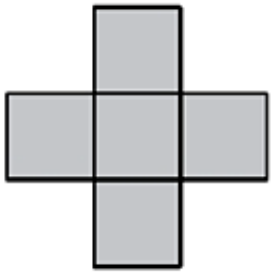
Problem solving!

Apply your core skills to the challenge questions below…

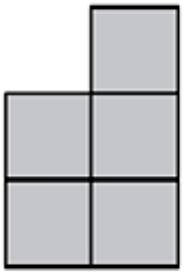
LOOK G8

Two shapes

Shape A and shape B are each made from five identical squares.



A



B

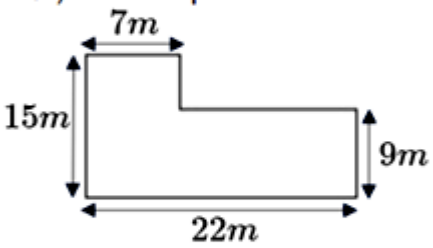
Not drawn accurately

The **perimeter** of shape A is **72cm**.

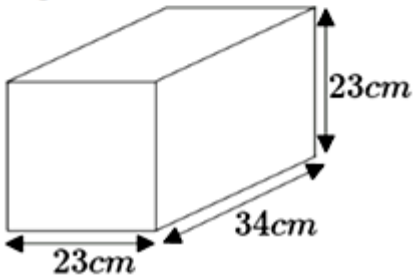
Work out the **perimeter** of shape B.

Q1) A field is $36m$ long by $42m$ wide. David wants to paint a white border around the perimeter of the field. For every $1m$ of field it costs $67p$. How much will it cost to paint the border?

Q2) Find the perimeter:



Q3) Find the total distance of edges:



HW 11

Homework 12: Numeracy

Literacy challenge: Anagrams!

Rearrange the letters below to form 3 keywords used in maths:

ONVIIIDS

NOICTALLACU

POSTRANEIO

MENTAL STRATEGIES - do these in your head

TIMESTABLES – do these in your head

×	3	9	8	4	2	10	7	5	11	6	12
9											
2											
4											
8											
10											
3											
7											
11											
5											
12											
6											

rounding to the nearest 10, 100, 1000

examples

Round 45 to the nearest 10	Round 573 to the nearest 100	Round 2,035 to the nearest 1,000
= 50	= 600	= 2000

Rules for rounding 5 or more let it sore, (round up)
4 or less let it rest. (round down)

1. Round these numbers to the nearest 10:

   a) 64 c) 108

   b) 92 d) 203

2. Round these numbers to the nearest 100:

   a) 556 c) 76

   b) 289 d) 1450

Arrange these cards to make a number that rounds to 9480, to the nearest ten: 5 7 9 4

Arrange these cards to make a number that rounds to 2700, to the nearest hundred: 4 7 2 9

Arrange these cards to make a number that rounds to 4000, to the nearest thousand: 1 6 3 0

Round:

a) 4.327 to 1 decimal place 4.3|27 4.3

b) 17.0269 to 2 decimal places 17.02|69 17.03

c) 3.7997 to 3 decimal places 3.799|7 3.800

d) 1.996 to the nearest 0.1 1.9|96 2.0

This means 1 decimal place

1. Which of these numbers have 1 decimal place? Select all that apply.

a) 43 b) 4.5 c) 2.75 d) 62.0 e) 200.30

2. Round each number to 1 decimal place:

a) 3.62 c) 2.45 e) 4.319 g) 105.1098

Decode the Joke | Rounding to Decimal Places

Calculate a value for each of the letters of the alphabet.

A	4.84 *to* 1 *d.p.*	
B	5.36 *to* 1 *d.p.*	
C	5.666 *to* 2 *d.p.*	
D	6.099 *to* 2 *d.p.*	
E	4.88 *to* 1 *d.p.*	
F	5.77 *to* 1 *d.p.*	
G	4.8515 *to* 2 *d.p.*	
H	5.5454 *to* 2 *d.p.*	
I	6.234 *to* 2 *d.p.*	
J	5.081 *to* 1 *d.p.*	
K	4.987 *to* 2 *d.p.*	
L	4.534 *to* 2 *d.p.*	
M	5.67 *to* 1 *d.p.*	

N	4.809 *to* 2 *d.p.*	
O	5.012 *to* 2 *d.p.*	
P	4.956 *to* 1 *d.p.*	
Q	5.601 *to* 1 *d.p.*	
R	5.873 *to* 2 *d.p.*	
S	5.26 *to* 1 *d.p.*	
T	4.561 *to* 2 *d.p.*	
U	4.795 *to* 2 *d.p.*	
V	5.997 *to* 2 *d.p.*	
W	5.45 *to* 1 *d.p.*	
X	5.117 *to* 2 *d.p.*	
Y	5.23 *to* 1 *d.p.*	
Z	5.987 *to* 2 *d.p.*	

Now decode the joke....

4.81	4.9	6.00	4.9	5.87		4.8	5.87	4.85	4.80	4.9		5.5	6.23	4.56	5.55

6.10	4.9	5.67	6.23	5.7	4.8	4.53	5.3	.		4.56	5.55	4.9	5.2		4.8	4.53

5.5	4.8	5.2	5.3		5.55	4.8	6.00	4.9		4.8		5.0	5.01	6.23	4.81	4.56

Homework 13: Analogue clock

learn by heart

The hour hand is the shorter hand

The minute hand is longer

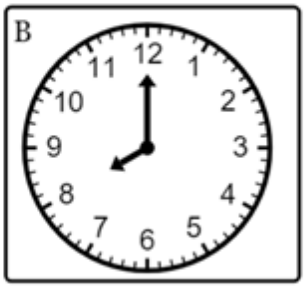
The hour is split into 5 minute intervals.
The 1 represents 1 lot of 5 minutes after the hour

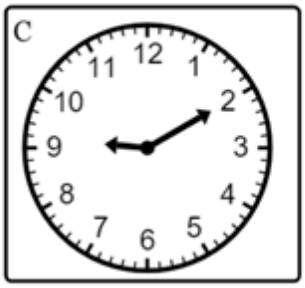
15 minutes past the hour (at 3) is pronounced 'quarter past'

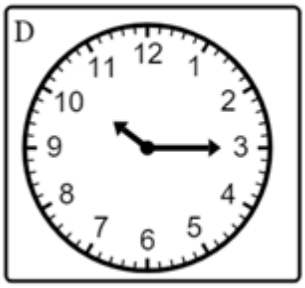
30 minutes past the hour (at 6) is pronounced 'half past'

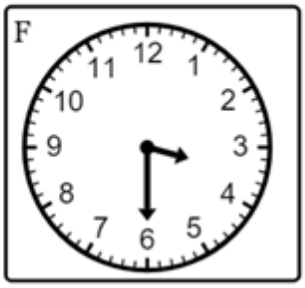
The minute hand is at 2, this means $2 \times 5 = 10$ minutes past the hour, so 4.10

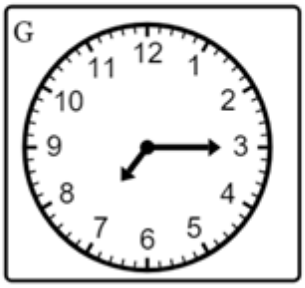
1. Write the correct time under each clock



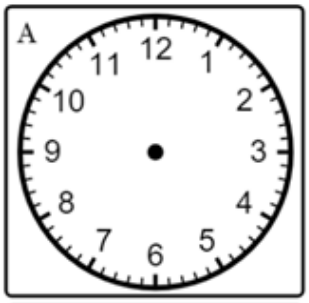




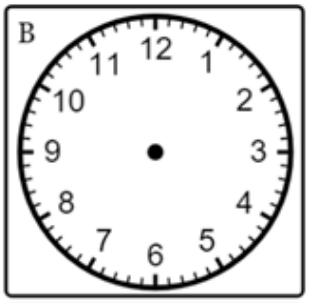




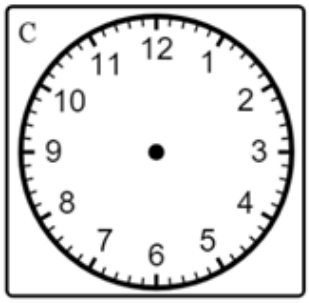
2. On each clock draw the hands in the correct place to show the time given



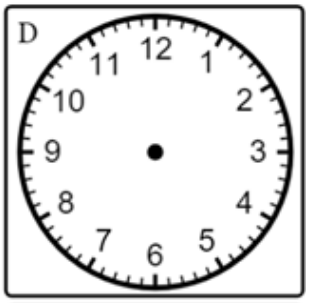
11.05



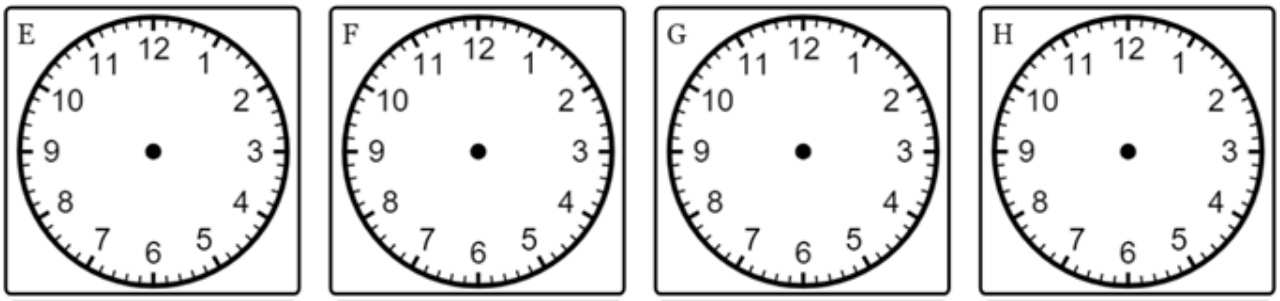
4.15



9.20



6.30



Twenty past eight	Twenty five past seven	Half past one	Ten past twelve

1. Work out the given times:

   a) 20 minutes after 3:15 pm

   b) 4 hours after 11 am

   c) $\frac{1}{2}$ hour after 6:50 pm

   d) 35 minutes after 10:40 am

   e) 40 minutes ***before*** 9:30 am

   f) $\frac{3}{4}$ hour ***before*** 4:20 pm

2. A TV programme is 30 minutes long and starts at 7:10 pm.
   At what time does the programme end?

3. Vikki leaves home at 2:45 pm and walks to a park.
   She arrives at the park 25 minutes later. At what time is this?

4. A meal takes 50 minutes to cook.
   The meal needs to be ready for 6:30 pm.
   At what time should the chef start cooking the meal?

CHALLENGE

Hayley left her home at 10.40 am.

She walked from her home to the shop.
It took her 14 minutes to walk to the shop.

Hayley was at the shop for 10 minutes.

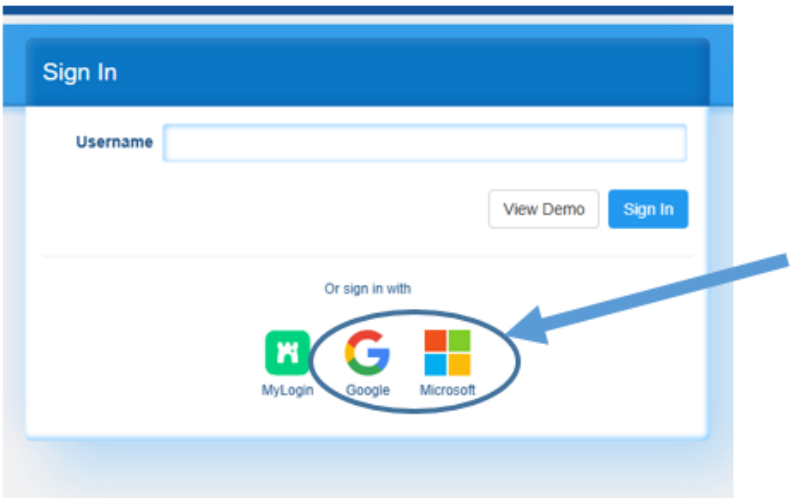
Then Hayley walked from the shop to her friends house.
It took Hayley 22 minutes to walk to her friends house.

What time did Hayley arrive at her friends house?

Homework 14:

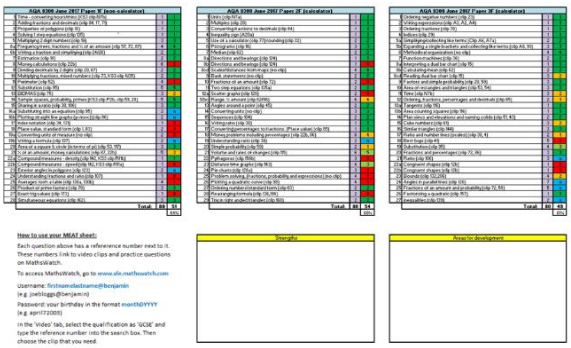
For this week's homework, your teacher will set you a task to complete on the website Mathswatch. The task will be based on the content you have learnt over the past half term in your maths lessons. You can use the space on the next page to do any working out if you need to.

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: BlueCat123 (example)



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.



AQA 8300 June 2017 Paper 3F (non-calculator)

1	Time - converting hours/mins (KS3 clip 87b)	1		
2	Adding surface and volume (clip 18 TT7)	1		
3	Properties of polygons (clip 87)	1		
4	Rounding to nearest 10 (clip 2)	1		
5	Multiplying 2 digit numbers (clip 9b)	1		
6a	Prepare/simplify fractions and % of an amount (clip 9F, 9G, 89)	4		
6b	Writing a fraction and simplifying (clip 9G&H)	2		
7	Estimation (clip 9b)	1		
8	Money calculations (clip 10Ka)	2		
9	Multiplying decimals by 2 digits (clip 10L 6H)	2		
10	Ordering decimals/standard numbers (clip 7G 9J&N clip 9J9N)	2		
11	Parallelogram (clip 87b)	1		
12	Substitution (clip 8B)	1		
13	GEOMATRIX (clip 7K)	1		
14	Sample spaces, probability, pathways (KS3 clip 87b, clip 89, 8b)	3		
15	Probability of 2 events (clip 8L)	1		
16	Scatter graphs and relationships (clip 8K)	2		
17a	Plotting straight line graphs (gr+nm) (clip 9K)	1		
17b	Gradient notation (clip 9L, 9J)	1		
18	Place value, standard form (clip 1, 6S)	2		
19a	Converting units of measure (inc clip)	1		
19b	Writing a formula (clip 9J)	1		
20	Solving inequalities (clip 9L, 9J, 9N)	2		
21	Cost or amount, money calculations (clip 5T, 10Ka)	2		
22	Compound measures - density (clip 9Q, 9S2 clip 9N9a)	2		
23a	Compound measures - speed (clip 9Q, 9S2 clip 9N9a)	2		
23	Exterior angles in polygons (clip 87c)	1		
24	Understanding fractions and ratio (clip 9J5)	1		
25	Prime factors, HCF, LCM (clip 1, 9Ka)	2		
26	Rounding to 1 sf (clip 2, 9Kb)	1		
27	Expanding brackets (clip 9Ta)	1		
28	Simultaneous equations (clip 9Lc)	1		
	Total	49		
	%			

AQA 8300 June 2017 Paper 3F (calculator)

1	Units (clip 9Ka)	1		
2	Multiples (clip 3G)	1		
3	Converting a fraction to decimals (clip 9H)	1		
4	Rounding (clip 2)	1		
5	Use of a calculator (clip 1 TJ/rounding (clip 1))	1		
6	Prime (clip 1)	1		
7	Median (clip 9J)	1		
8a	Directions and bearings (clip 12N)	1		
8b	Directions and bearings (clip 12N)	1		
9a	Scale drawings (inc clip 12 inc clip)	1		
9b	Scale drawings (inc clip)	1		
10	Fractions of an amount (clip 12)	1		
11	Two step equations (clip 10Ka)	1		
12a	Quadratic graphs (clip 10S)	1		
12b	Plotting x, y amount (clip 10Nb)	1		
13	Cubic graphs and plotting (clip 9J)	1		
14	Cumulative frequency (clip 9J)	1		
15	Sequences (clip 10N)	1		
16	Ordering data (clip 9J)	1		
17	Converting percentages to fractions, (Place value) (clip 9H)	1		
18	Money problems including percentages (clip 10L, 9N)	1		
19	Understanding ratio (clip 9J)	1		
20	Sketching cubic graphs (clip 10S)	1		
21	Volume and area of changes (clip 9P)	1		
22	Pythagoras (clip 9Nbc)	1		
23	Distance time graphs (clip 9K1)	1		
24	Pie charts (clip 9Ma)	1		
25	Problem solving, (Fractions, probability and expressions) (inc clip)	1		
26	Ordering a set of decimals (clip 9J)	1		
27	Distance and speed (clip 9Q)	1		
28	Reversing formulas (clip 9L, 9N)	1		
29	Trial & improvement (clip 9Nb)	1		
	Total	49		
	%			

AQA 8300 June 2017 Paper 3F (calculator)

1	Ordering negative numbers (clip 7J)	1		
2	Writing expressions (clip A1, A2, A4)	1		
3	Ordering fractions (clip 7K)	1		
4	Factorising (clip 9Ta)	1		
5a	Simplifying/collecting like terms (Clip A4, A1a)	1		
5b	Expanding a single brackets and collecting like terms (clip A4, 9b)	1		
6	Methods of organisations (inc clip)	1		
7	Function machines (clip 9L)	1		
8a	Interpreting a bar line chart (clip 9K)	1		
8b	Interpreting a pie chart (clip 9L)	1		
9a	Rounding to 1 sf (clip 2)	1		
9b	Rounding to 2 sf (clip 2)	1		
10	Fractions and simple probability (clip 7K 9N)	1		
11	Area of rectangles and triangles (clip 87, 9M)	1		
12	Time (clip 87b)	1		
13	Ordering, fractions, percentages and decimals (clip 9H)	1		
14a	Area of a circle (clip 9Mc)	1		
14b	Area of a circle (clip 9Mc)	1		
15	Plan views and elevations and naming solids (clip 87, 87)	1		
16	Cube numbers (clip 9a)	1		
17	Similar triangles (clip 9M)	1		
18	Ratio and number lines (derivatives) (clip 9L 4)	1		
19	Bar charts (clip 9K)	1		
20	Ratio (clip 9J5)	1		
21	Fractions and percentages (clip 7J, 9K)	1		
22	Ratio (clip 9J5)	1		
23a	Congruent shapes (clip 12N)	1		
23b	Congruent shapes (clip 12N)	1		
24	Rounding (clip 2, 9Ka)	1		
25	Angles in parallel lines (clip 9L)	1		
26	Probability on a tree diagram (probability) (clip 7K 9N)	1		
27	Factorising a quadratic (clip 9L)	1		
28	Inequalities (clip 10N)	1		
	Total	49		
	%			

How to use your MEAT sheet:

Each question above has a reference number next to it. These numbers link to video clips and practice questions on MathsWatch.

To access MathsWatch, go to www.ofe.mathswatch.com

Username: firstnameplustsurname@benjamin
(e.g. joebloggs@benjamin)

Password: your birthday in the format monthDYYYY
(e.g. april172005)

In the 'Video' tab, select the qualification as 'GCSE' and type the reference number into the search box. Then choose the clip that you need.

Strengths	Areas for development

HW 14

EXTRA SUPPORT

*If you need help with completing your homework, please use Mathswatch and watch the video clips for the topic. 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