Year 9 Maths Revision: Autumn Term

Your assessment could include any topics that you have been taught since the start of year 7, until the end of Autumn Term of year 9.

In addition to revision material given to you by your teacher, you should be using the mathswatch website to revise topics that you know you struggle with, especially from year 7 and 8.

Ask your teacher for your login details, and write them here:

> **vle.mathswatch.com**
>
> User:
>
> Password:

Choose topics below that you know you need to revise, and log onto mathswatch to watch the video clips and try the questions.

YEAR 9 TOPICS	MathsWatch Clip number
Coordinates, Midpoint	A1a,b
Straight Line Graphs: plotting, gradient, y=mx+c	A14a-c
Ratio and Proportion	R4, R5a-b, R8
Scales and Standard Form	R6, N45a,b
Sequences	A11a-c
Expanding brackets	A8, A18
Factorising expressions	A9
Substituting into formulae	A3, A10
Subject of the formulae	A13a,b
YEAR 8 TOPICS	**MathsWatch Clip number**
Prime numbers and factorisation	N30b, N31a and N31b
Calculating with fractions	N36, N41, N42a, N42b
Positive and Negative numbers	N18, N19a, N19b
Sequences, expressions and equations	A4, A11, A12
Constructing triangles and quadrilaterals	G31
Properties of parallel lines	G18
Length and area	G9, G20a, G20b, G20c and G20d
Percentage change	R9a, R9b
Ratio	R1a, R1b, R5a, R5b
Rate	R11a

Rounding and accuracy	N27a, N27b, N38
Circumference and area of a circle	G22a, G22b
3D shapes and nets	G12l, G12b, G12c
Surface area and volume	G21a, G21b, G25a, G25b
Statistics	S6, S7
YEAR 7 TOPICS	**MathsWatch Clip number**
Integer place value	N1a
Mental addition and subtraction	N3a and N4a
Written addition and subtraction of integers	N3b and N4b
Addition and subtraction of decimals	N13b and N14b
Multiplication and division of integers	N15a and N28a; N16 and N29a
Area	G9, G20a, G20b, G20c and G20d
Multiplication and division of decimals	N15b, N28b and N29b
Mean	S7
Time	N7b
Converting between units	N7a
Angles and angle properties of straight lines	G10b, G10c and G13
Properties of triangles	G16
Properties of quadrilaterals	G14
Symmetry and tessellation	G3
Equivalent fractions	N23b
Fractions of amounts	N33
Multiplying and dividing fractions	N42a and N42b
Order of Operations	N20
Algebra	A4, A6, A8, A9 and A10
Percentages	N24b

The rest of this booklet contains questions in the style that you will find in the assessment. Plan to do a page a day – or follow your teacher's instructions. If you find any questions difficult, look up the topic on mathswatch and ask your teacher for help.

If you are in set 1 (or doing well in set 2), ask your teacher for extension material as your assessment may also include harder questions.

Question 1
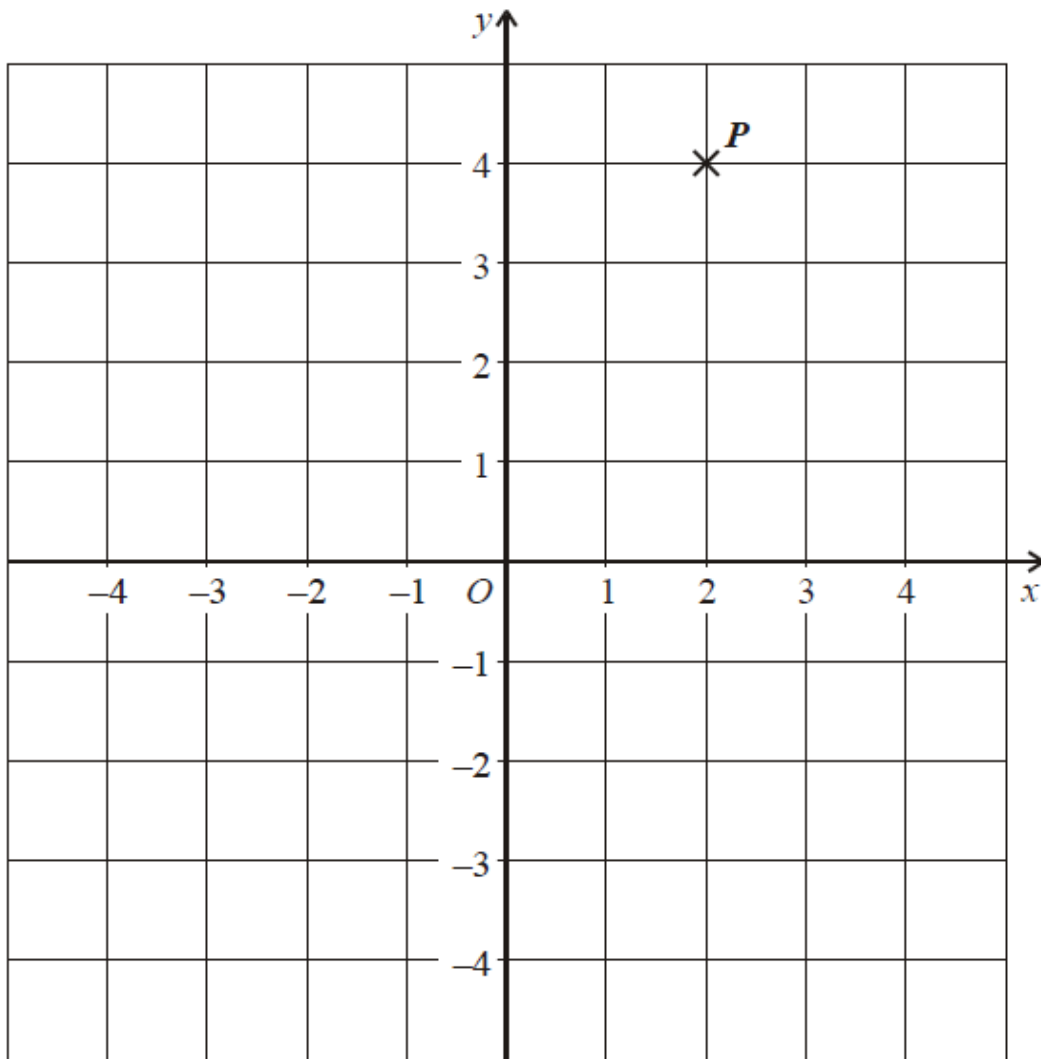
(a) Write down the coordinates of the point P

(......... , ...)

(1 mark)

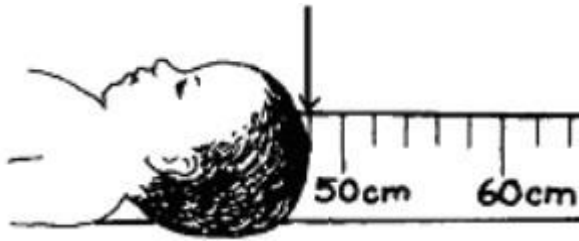(b) On the grid plot the point (-4, 2). Labe the point Q

(1 mark)

(c) The point M is the midpoint of PQ. Write down the coordinates of M

(......... , ...)

(2 mark)

Question 2

(a)   The scale shows how long Laura was when she was born.

How long was Laura?

.... cm

(1 mark)

(b)   Now Laura is older.
She is **1.03m** tall.
Write Laura's height in centimetres.

.... cm

(1 mark)

Question 3

A road map has a scale of 1 : 5000
The length of a road on the map is 8.5 cm.

Work out the length of the real road in kilometres.

(3 mark)

Question 4

The table shows the temperatures in 10 cities on a day in December.

City	Temperature in °C
Athens	18
Barcelona	16
Berlin	7
Brussels	8
Dublin	9
Geneva	6
Madrid	12
Moscow	2
Paris	6
Rome	19

(a)   Which temperature was the **mode**?

.... °C

(1 mark)

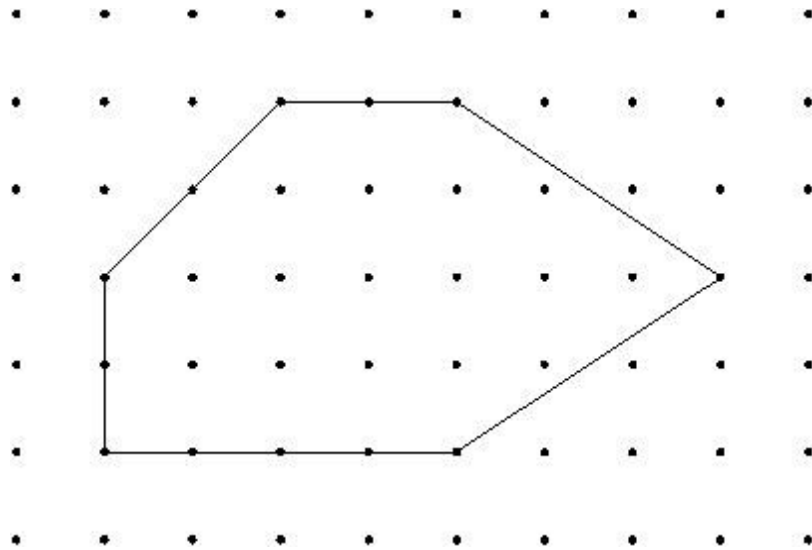(b)   In a different city, the temperature was **5°C lower** than in **Moscow**.

What was the temperature in this city?

.... °C

(2 mark)

Question 5

Here is a shape on a square grid.

Here are some statements about the shape. For each statement circle True or False, you must give reason for each answer

The shape has no right angles **True / False** because …………….....................................

………………………………………………………………………………………………………

………………………………………………………………………………………………………

The shape has four obtuse angles **True / False** because ………………………………….

………………………………………………………………………………………………………

………………………………………………………………………………………………………

The shape has no parallel sides **True / False** because ……………………………………..

………………………………………………………………………………………………………

………………………………………………………………………………………………………

(3 marks)

Question 6

The table below helps to change centimetres into inches.

Number of centimetres	2	4	6	8	10	12
Number of inches (approximately)	0.8	1.6	2.4	3.1	3.9	4.7

Using the table, approximately how many **inches** are there in **14 centimetres**?

.... inches

(2 mark)

Question 7

From the list of numbers

7   9   12   21   27   30   36   45

(a) Write down two multiples of 7

…..….… and ………….

(b) Write down a square number

…………………
.

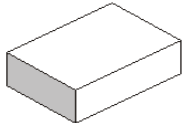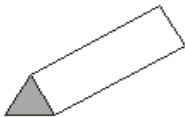(c) Write down a factor of 24

…………………
.

(d) Write down a cubed number

…………………
.

(4 marks)

Question 8

(a)   Write numbers to complete the table below.

	Number of faces that are **rectangles**	Number of faces that are **triangles**
cuboid		
triangular prism		

(2 marks)

(b)   A different shape has five faces.

Four of the faces are triangles. One face is a square.

Write the name of this shape.

....

Question 9

Carmen makes patterns from matchsticks:
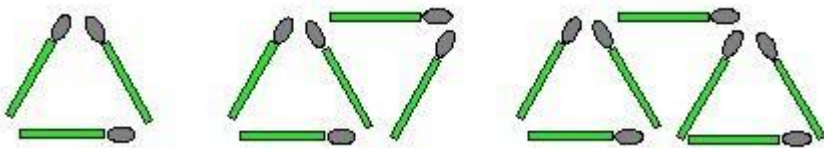
(a) Draw the 4th term of the sequence.

(1 mark)

(b) How many matchsticks will the 5th pattern need?

(1 mark)

(c) Find the rule for the nth term of the number of matches in each pattern.

(2 marks)

d) How many matchsticks will the 20th pattern need?

Question 1

Write **88** as a product of its prime factors. Leave your answer in index form

88 = ...
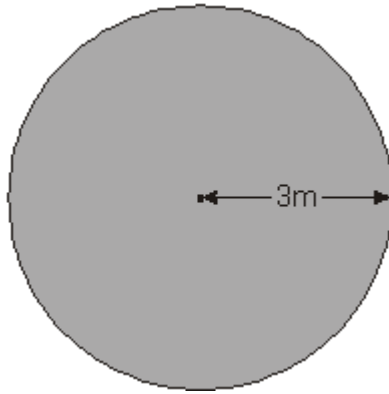
(3 marks)

Question 2

Estimate the answer to:

$$\frac{37.9 \times 50.2}{2.1 + 2.98}$$

....

(3 mark)

Question 3

The diagram on the next page shows a plan of Luke's new lawn.
The lawn is a circle with radius 3m.

Work out the area of the lawn giving your answer in terms of π. You must give units with your answer

....

(3 marks)

Question 4

Screenwash is used to clean car windows.
To use Screenwash you mix it with water.

Winter mixture	**Summer mixture**
Mix **1** part Screenwash with **4** parts water.	Mix **1** part Screenwash with **9** parts water.

(a)   In **winter,** how much water should I mix with **150ml of Screenwash**?

.... ml

(1 mark)

(b)   In **summer,** how much Screenwash should I mix with **450ml of water**?

.... ml

(1 mark)

(c)   Is this statement correct?

25% of **winter** mixture is **Screenwash**.

Tick (✔) Yes or No.

True ☐   Fals ☐

Explain your answer.

....
...

……
….

……
…

(1 mark)

Question 5

You can use this rule to work out the number minutes it takes to cook a turkey:

Multiply the turkey's weight, in kg, by 55 and then add 20.

a) Ginny has a turkey that weighs 4 kg. How long will she need to cook it for?

.... minutes
(2 mark)

b) Thomas has a turkey that weighs $n \, kg$. Write an expression to show how long he will need to cook it for.

…………………………….
(2 marks)

Question 6

$2y - 5x = 9$ is the equation of a straight line.

(a) Rearrange this to be in the form $y = mx + c$. You must show all steps of your working clearly

y = ...

(3 marks)

(b) What is the gradient of the straight line?

....

(1 mark)

Question 7

In a survey, 25 men and 25 women named their favourite colour. Some of the results are shown in the composite bar chart below.

Favourite colour
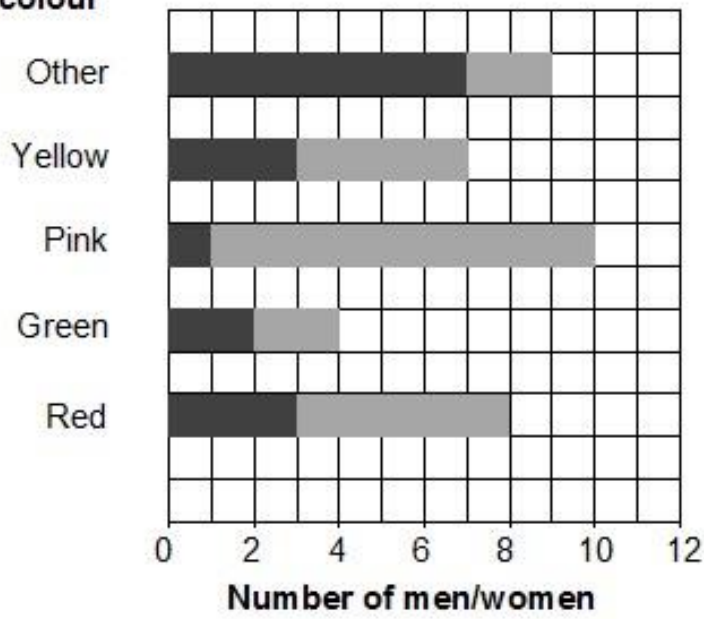
(a) Of those who liked red the most, what is the ratio of men to women?

.... *(1 mark)*

(b) What percentage of the men liked green?

.... *(2 marks)*

Question 8

Jo is planting a small orchard. She plants **cherry** trees, **plum** trees, **apple** trees and **pear** trees.

n stands for the number of **cherry** trees Jo plants.

(a)   Jo plants the **same** number of **plum** trees as **cherry** trees.
How many **plum** trees does she plant?

……………..
(1 mark)

(b)   Jo plants **twice** as many **apple** trees as **cherry** trees.
How many **apple** trees does she plant?

……………..
(1 mark)

(c)   Jo plants **7 more pear** trees than **cherry** trees.
How many **pear** trees does she plant?

……………..
(1 mark)

(d)   How many trees does Jo plant **altogether**?
Write your answer as simply as possible.

……………...
(2 marks)

Question 9

(a) Which of these statements is true? Put a tick (✔) by the correct one.

4×10^3 is a larger number than 4^3 ....

4×10^3 is the same size as 4^3 ....

4×10^3 is a smaller number than 4^3 ....

Explain your answer.

....

....

(1 mark)

(b) One of the numbers below has the same value as **3.6×10^4**

Put a tick (✔) under the correct number.

36^3	36^4	$(3.6 \times 10)^4$	0.36×10^3	0.36×10^5
....	....	....	....	....

Give a reason for your answer

....

....

(1 mark)

(c) One of the numbers below has the same value as **2.5×10^{-3}**

Put a tick (✔) under the correct number.

25×10^{-4}	2.5×10^3	-2.5×10^3	0.00025	2500
....	....	....	....	....

Give a reason for your answer

....

....

(1 mark)

(d) $(2 \times 10^2) \times (2 \times 10^2)$ can be written simply as 4×10^4

Write these values as simply as possible:
$$(3 \times 10^2) \times (2 \times 10^{-2})$$

....
(1 mark)

$$\frac{6 \times 10^8}{2 \times 10^4}$$

....
(1 mark)

Question 10

A shop has this special offer.

Reduction of 10% when your bill is between £50 and £100
Reduction of 20% when your bill is more than £100

Before the reductions, Marie's bill is **£96** and Richard's bill is **£108. After** the reductions, who paid more?
You **must** show working to explain your answer

....
(3 marks)

Question 11

(a)   Look at these three number cards.

| 8 | | 5 | | 8 |

Show that the **mean** is 7

(2 mark)

(b)   Now look at these number cards.
You cannot see the number on one of the cards.

| 6 | | 5 | | 4 | | ? |

The **mean** is **6**
What is the missing number?

....
(2 marks)

Question 12

(a) Complete the table of values for $y = 2x + 1$

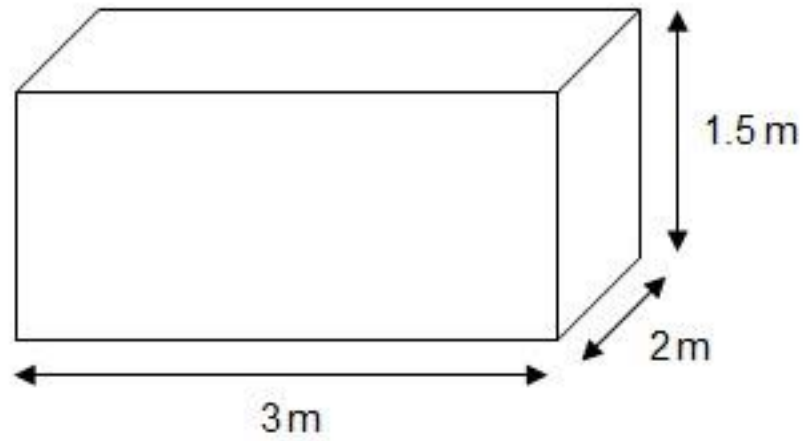| x	−2	−1	0	1	2
y	−3		1	3	

(2 mark)

(b) On the grid below, draw the graph of y = 2x + 1 from x=-2 to x=2
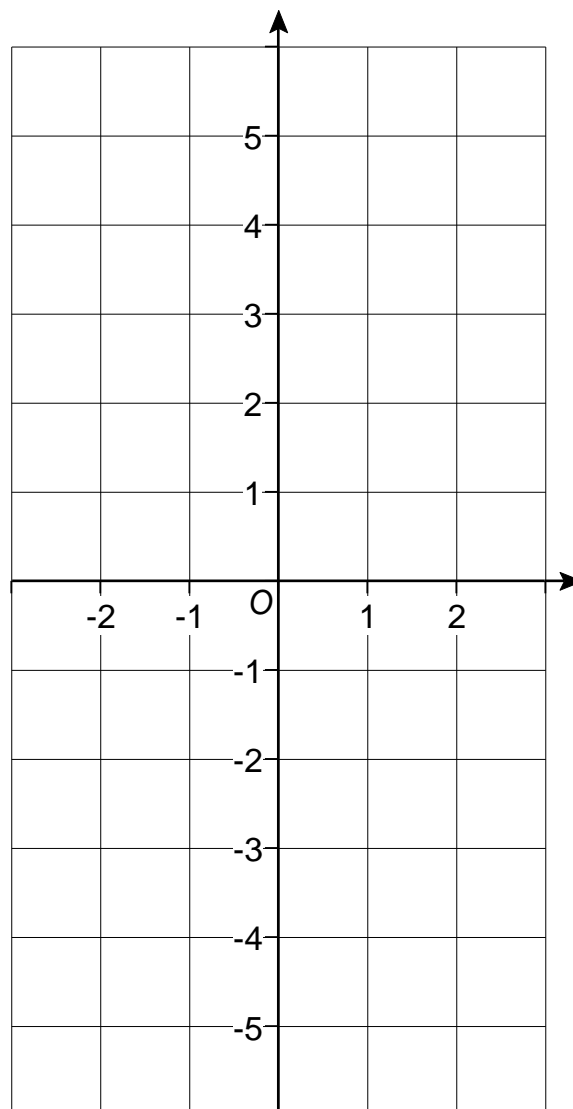
(2 marks)

Question 13

A farmer buys a water tank that is a cuboid.

The farmer thinks that the tank will hold over 8000 litres of water.

$1m^3 = 1000$ litres.

Is he correct? You must show your working.

....

Question 14

(a) Expand $2d(d-5)$

.... *(2 marks)*

(b) Expand and simplify $3(f+2)+2(f-6)$

.... *(2 marks)*

(c) Expand and simplify $(h-4)(h+1)$

.... *(2 marks)*

(d) Factorise 4g + 8 by filling in the gaps:

(1 mark)

$$4g + 8 = 4\,(\,...\,+\,...\,)$$

(e) Fully factorise $8b + 24b^3$

.... *(1 mark)*