Sparx	Effort		
Number	R	A	G
Algebra	R	A	G
Ratio	R	A	G
Geometry	R	A	G
Statistics	R	A	G
Probability	R	A	G

Maths Department
Year 11 Preparation

Name: _____

Revision Help Sheet

Mathematics is a skills-based subject so the most useful way to prepare is to practise, practise, practise. Please see the formulae sheet for some knowledge-based elements, formulae and facts you need to remember.

Be Organised - Whether you are someone who is naturally organised or chaotic, it is worth putting in place a structure to help you keep on top of what you are doing, for example:

- Lists of topics that you can tick off for showing you have learned/reviewed/are confident in. Colour coding can work well.
- A record of which past papers you have already done, how you did and what specific things you need to improve.

Maths is a skill in applying logic and problem-solving. The best way to improve is to practise, and practise regularly, the table below will support you in your revision.

Exam-style questions	It is important to be aware of how questions are likely to look in an exam so that it isn't too confusing when you open your paper.
Puzzles and activities	In lessons you are likely to have come across a mixture of activities to develop understanding of different topics. Consider using these in your own revision. You might want to make something yourself, ask a teacher or find something from a website.
What else?	Ask yourself what else a question could ask. If there was an extra part, what might it ask? If you were writing this exam paper, how might you make this question harder? This will allow you to get even more out of every question.
Spot the 'tricks'	Examiners don't set out to trick you but exam questions will include elements that are likely to trip up candidates. Spend time reading through questions and thinking about what might be the thing that would catch out candidates. Spotting what makes a question harder is a great way of planning how to get around the difficulty.
Calculators	Being familiar with your calculator is very important (whether it is your personal one or a school one). Take it to all your lessons and make sure you can use it efficiently and effectively. Always question your calculator; if your calculator suggests a door is 30 m tall, it may be worth double checking. There is a risk that you trust your calculator more than your common sense – the calculator will give you the correct answer to what you input but it is easy to make mistakes in the process. Your method is still very important so write down any calculations you do with your calculator, not just the answer.
Non-calculator questions	Don't be tempted to use a calculator when practising a non-calculator question. It is easy to decide to save time by bypassing the time-consuming process of carrying out written calculations, especially if a calculator is sitting right there. Calculation errors and silly mistakes are very common. By focusing on and practising calculations, even when they seem easy, you are more likely to spot mistakes and reduce errors. Marks will be awarded for method, so you should get used to showing clearly what you are doing.
Check your answers	Don't reach for the answer booklet too soon. Try putting in some self-checking processes and seeing if you can find any mistakes yourself.

Q1 Calculate $1\frac{1}{9} \times \frac{2}{5}$

Give your answer in its simplest form.

Answer: .....

Q2 What is $\frac{6}{7} \div 2\frac{2}{5}$

Give your answer in its simplest form.

Answer: .....

Q3 Work out $2\frac{1}{8} - 1\frac{7}{12}$

Give your answer in its simplest form.

Answer: .....

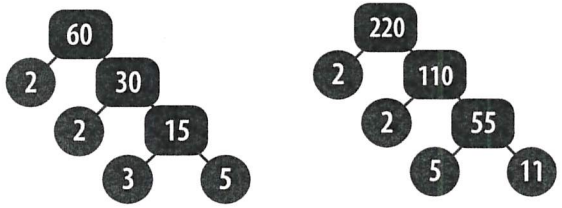
Q1 By drawing a prime factor tree, find the prime decomposition of 132 in index form.

Answer: .....

Q2 The prime factor trees for 60 and 220 are given below.

a) Work out the highest common factor (HCF) of 60 and 220

b) Work out the lowest common multiple (LCM) of 60 and 220



Answer: a) .....

Answer: b) .....

Q1 A number, r, rounded to the nearest integer is 28

Complete the inequality to show the error interval for r.

$\square \leq r < \square$

Q2 A number, p, rounded to 1 decimal place is 13.2

Write down the error interval for p.

Answer: .....

Q3 A number, t, rounded to the nearest integer is 60

Write down the error interval for t.

Answer: .....

Q4 A number, x, rounded to 2 significant figures is 4700

Write down the error interval for x.

Answer: .....

Index laws

Introduce

Q1 Fully simplify

a) $c^4 \times c^3$

Answer: .....

b) $d^8 \div d^2$

Answer: .....

c) $(f^3)^8$

Answer: .....

Q2 Fully simplify $5n^3p^4 \times n^5p$

Answer: .....

Q3 Fully simplify $10u^8 \div 2u^4$

Answer: .....

Q4 Fully simplify $(7a^9b^{-5})^2$

Answer: .....

Q5 Fully simplify $\frac{2k^5 \times 12k^7}{4k^3}$

Answer: .....

Linear simultaneous equations

Introduce

Q1 Solve the simultaneous equations below.

$7x - 3y = 15$

$2x + 3y = 12$

Answer: $x =$ ..... $y =$ .....

Q2 Solve the simultaneous equations below.

$2a + 3b = 22$

$6a + 7b = 54$

Answer: $a =$ ..... $b =$ .....

Q4 What is the y-intercept of the straight line with a gradient of 2 that passes through the point (7, 15)?

Answer: .....

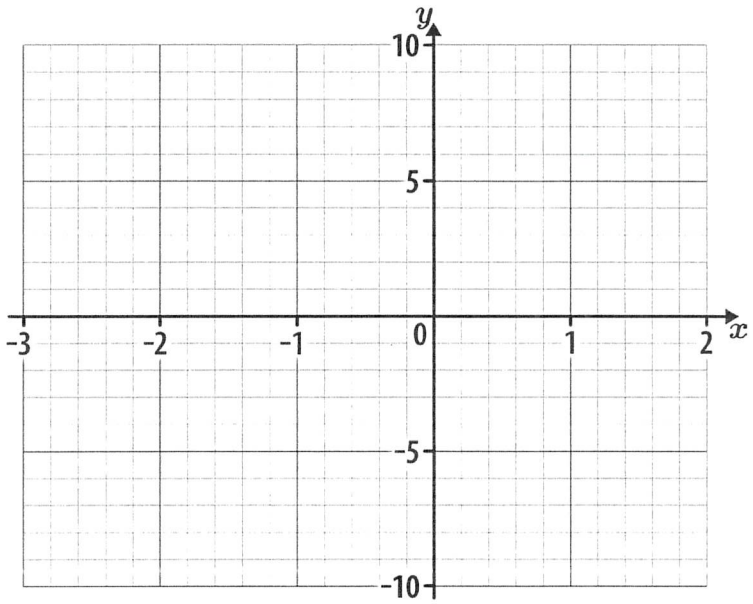
Q5 Work out the gradient of the straight line that passes through (5, 4) and (9, 18).

Answer: .....

Q1 a) Complete the table of values for $y = x^2 + 3x - 2$

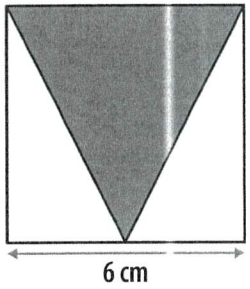
x	-3	-2	-1	0	1	2
y		-4	-4			8

b) On the grid, draw the graph of $y = x^2 + 3x - 2$ for $x = -3$ to $x = 2$



Q1 The diagram below shows a shaded triangle inside a square.

What is the area of the shaded triangle?

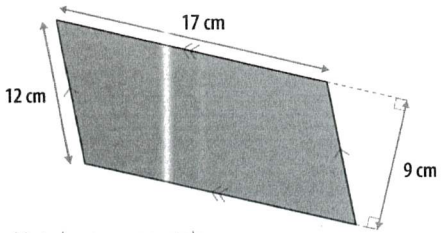


Not drawn accurately

Answer: ..... cm^2

Q2 The diagram shows a lawn in the shape of a parallelogram.
A packet of grass seed provides enough seeds to cover an area of 10 m^2.

How many packets of grass seed need to be bought to cover the entire lawn?

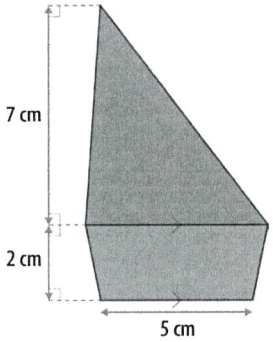


Not drawn accurately

Answer: .....

Q3 The shape below is made of a triangle and a trapezium.
The area of the triangle is 21 cm^2.

Work out the area of the trapezium.

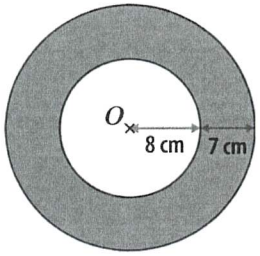


Not drawn accurately

Answer: ..... cm^2

Q4 The diagram shows a logo made from two circles.
Both circles have centre O.

Calculate the area of the shaded region.
Give your answer to 3 significant figures.

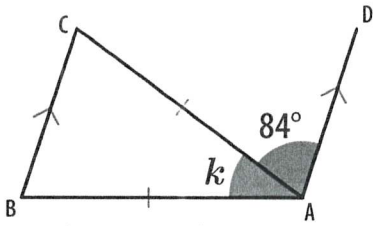


Not drawn accurately

Answer: ..... cm^2

Q1 Find the size of the angle marked k.

Give reasons for your answer.



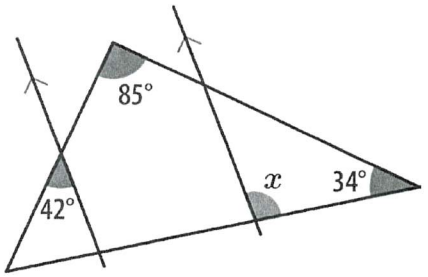
Not drawn accurately

Q2 A regular polygon has 24 sides.

What is the size of an interior angle of this polygon?

Answer: ..... °

Q3 Find the size of angle x.

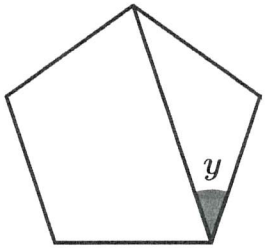


Not drawn accurately

Answer: ..... °

Q4 The shape shown is a regular pentagon.

Find the size of angle y.

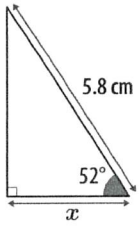


Not drawn accurately

Answer: ..... °

Q1 Work out the length x.

Give your answer to two decimal places.



Not drawn accurately

Answer: ..... cm

Q2 Work out the size of angle θ.

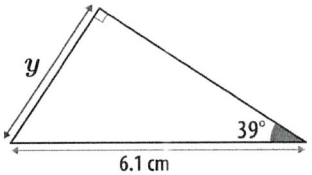
Give your answer to one decimal place.

Not drawn accurately

Answer: ..... °

Q3 Work out the length y.

Give your answer to one decimal place.

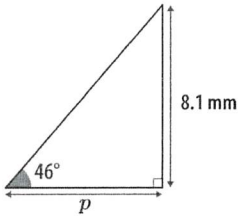


Not drawn accurately

Answer: ..... cm

Q4 Work out the length p.

Give your answer to one decimal place.

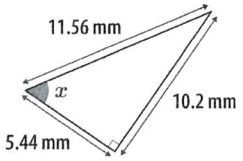


Not drawn accurately

Answer: ..... mm

Q5 Work out the size of angle x.

Give your answer to one decimal place.

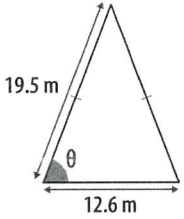


Not drawn accurately

Answer: ..... °

Q6 Work out the size of angle θ in the isosceles triangle below.

Give your answer to one decimal place.



Not drawn accurately

Answer: ..... °

Q1 The table below shows the probability that a letter chosen at random from a page of a book is a vowel.

What is the probability that a random letter is **not** a vowel?

Letter	A	E	I	O	U
Probability	12%	21%	18%	5%	3%

Answer: .....

Q2 A bag contains 5 red marbles, some green marbles and some blue marbles.

A marble is going to be taken at random from the bag.

The table shows the probability of taking a green marble and the probability of taking a blue marble.

Colour	Red	Green	Blue
Probability		0.3	0.45

a) Complete the table.

b) Work out the total number of marbles in the bag.

Answer: .....

Q3 A spinner has two coloured sections.

Amara and Harry spin the spinner a number of times.

They record how many times the spinner landed on each colour in the table below.

	Red	Purple
Amara	13	37
Harry	14	6

a) Whose results will give the best estimate for the probability of the spinner landing on red?

Justify your answer.

Answer: .....

.....

b) Use **all** the results in the table to work out an estimated probability for the spinner landing on red.

Answer: .....

Q4 A spinner has four sections labelled A, B, C and D.

The probability of it landing on A and the probability of it landing on B are shown in the table below.

Letter	A	B	C	D
Probability	0.05	0.25		

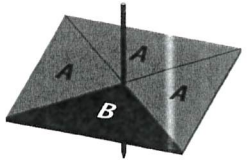
The probability of it landing on C is the same as the probability of it landing on D.

a) Complete the table.

b) What is the probability of the spinner landing on B or D?

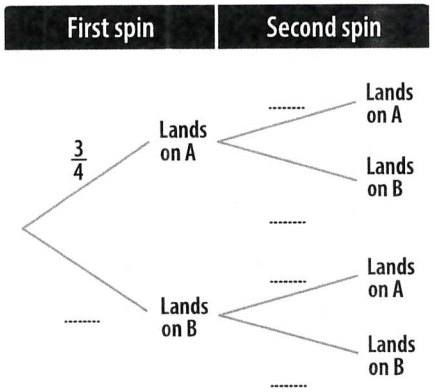
Answer: .....

Q1 The diagram shows a fair 4-sided spinner.



Abi spins the spinner twice.

a) Complete the probability tree diagram.

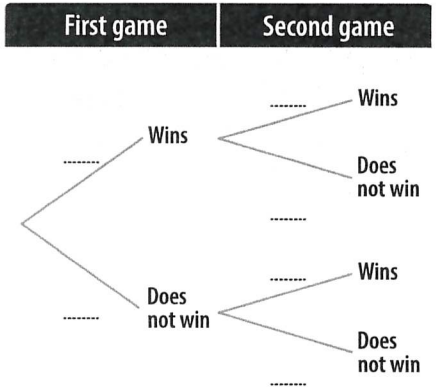


b) Work out the probability that the spinner lands on A on both spins.

Answer: .....

Q2 Yasmin plays a game twice.
Each time she plays, the probability that she wins is $\frac{5}{11}$

a) Complete the probability tree diagram.



b) Work out the probability that she wins exactly one of the games

Answer: .....

Q1 The side lengths of a triangle are in the ratio 2 : 3 : 4
The **longest** side has a length of 28 cm.

What is the **perimeter** of the triangle?

Answer: ..... cm

Q2 Nihal, Rosie and Isaac sold books at a car boot sale.
The ratio of the numbers of books that they each sold is 3 : 5 : 1
Rosie sold 32 more books than Isaac.

How many books did Nihal, Rosie and Isaac sell in total?

Answer: .....

Q3 15% of the fish in a pond are carp.

$\frac{3}{10}$ of the fish are trout and the rest of the fish are minnows.

Write the ratio of carp to trout to minnows in this pond in its simplest form.

Answer: .....

Q4 Raees has 80 coins in his piggy bank, all of which are £1 or 50p coins.
The ratio of £1 to 50p coins is 3 : 2

How much money does he have in total?

Answer: £ .....

Q5 The ratio of cows to sheep on a farm is 5 : 6, and there are 30 sheep.
Some more sheep arrive at the farm and the ratio of cows to sheep becomes 1 : 2

Work out how many new sheep arrived at the farm.

Answer: .....

Q6 A football club has three types of members: adults, juniors and children.
The ratio of juniors to children is 1 : 3
The ratio of children to adults is 5 : 3

What is the ratio of juniors to adults in its simplest form?

Answer: .....

Q3 Mohammed drove from Swansea to Chichester at an average speed of 60 mph for 3 hours and 30 minutes.

He then drove from Chichester to Dover at an average speed of 55 mph for 2 hours.

Work out how many miles Mohammed travelled in total.

Answer: ..... miles

Q4 A car is travelling at 48.6 km/h.
Convert this speed into m/s.

Answer: ..... m/s

Q1 2.5 m^3 of marble has a mass of 6775 kg.

a) Calculate the density of marble in kg/m^3.

Answer: ..... kg/m^3

b) Find the mass of 1.9 m^3 of marble in kg.

Answer: ..... kg

Q2 $\text{pressure} = \frac{\text{force}}{\text{area}}$

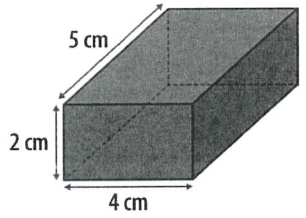
The pressure that a box exerts on a shelf is 200 newtons/m^2.
The force that the box exerts on the shelf is 140 newtons.

Work out the area of the base of the box.

Answer: ..... m^2

Q3 The cuboid below is made of silver and has a mass of 416 g.

Calculate its density, in g/cm^3.



Not drawn accurately

Answer: ..... g/cm^3

Q1 Four number cards are shown below.
The median is 8
The range is 10

What are the missing numbers?

Answer: ..... and .....

Q2 The mean of three numbers is 8
Two of the numbers are shown below.

What is the missing number?

Answer: .....

Q3 The median of the following list is 12

$2x$ $3x$ $5x$ $8x$

a) Find the value of x

Answer: $x =$ .....

b) Work out the value of the mean.

Answer: .....

Q4 Amelia asked 20 of her friends how old they were.
Her results are shown in the table below.

What was the median age?

Age (years)	Frequency
11	3
12	4
13	2
14	4
15	5
16	2

Answer: .....

