

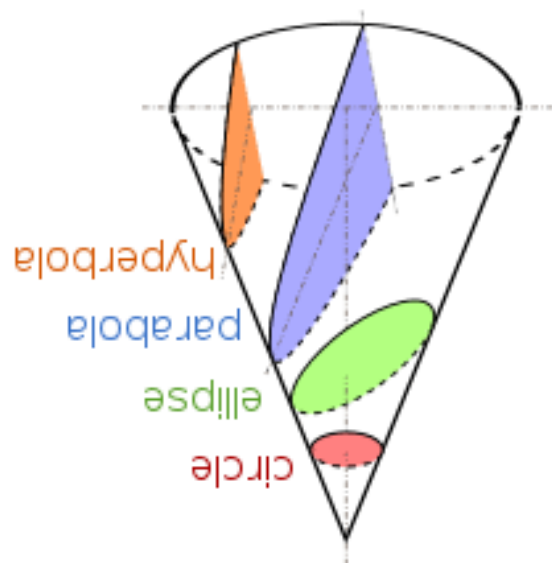
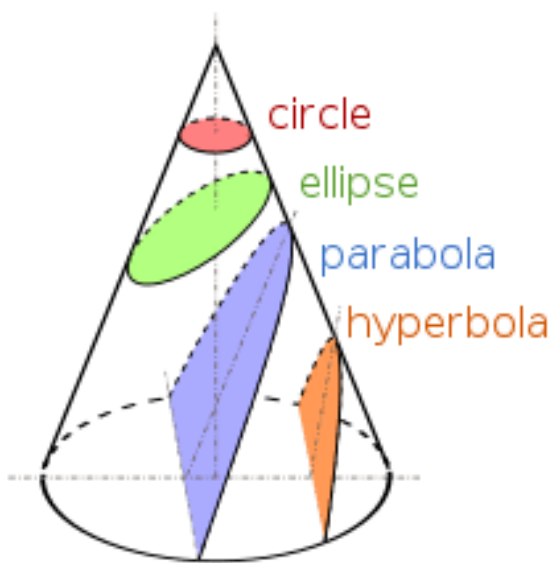
Isaac Newton Academy

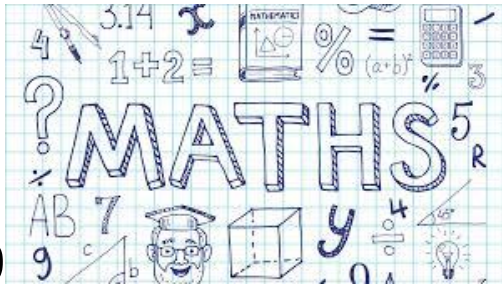
Year 9 Maths

Summer Learning 2020

Full Name

Y9 Maths Class





Y9

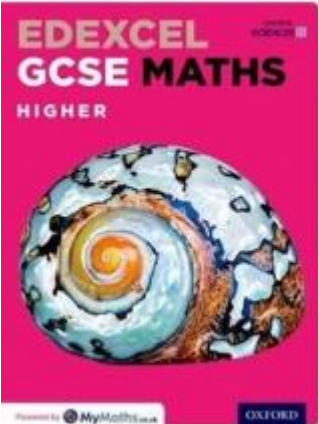
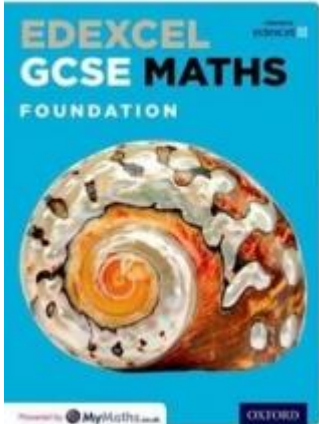
Summer Learning 2020

Summer Learning	Activity	Instructions to Students
<p>Task 1:</p> <p>Mistakes are encouraged!</p> <p>Due: 7th September 2020 (first lesson back)</p>	<p><u>Peaches Problem</u></p> <p><i>Key questions</i> <i>How will you record your work efficiently so that you can keep track of what is happening?</i></p> <p><u>Extension: Ben's Game</u></p>	<p>A good mathematician is observant. He/she looks for patterns, explores different methods, makes mistakes and then tries again. This is exactly what we want to do with the 'Peaches Problem'. If you feel you are ready for a further challenge, have a go at 'Ben's Game'.</p> <p>Answers on paper, showing your full working (and mistakes).</p>
<p>Task 2:</p> <p>MATHSWATCH Summer Learning</p> <p>Start: 13.07.20 Due: 31.08.20</p>	<p><u>Modules set on MathsWatch:</u></p> <ol style="list-style-type: none"> 1) Statistics Summer Learning YR9 2) Ratio, Fractions and Percentages Summer Learning YR9 3) Algebra Summer Learning YR9 4) Number Summer Learning YR9 5) Geometry Summer Learning YR9 	<p>This Summer Learning will provide students with a recap and revision of year 9 learning in preparation for year 10. Please aim to complete one MathsWatch task per week.</p> <ol style="list-style-type: none"> 1) Watch the videos and take notes in your orange book. 2) You must aim for minimum 80% correct in each task. 3) Any questions write them in your orange books in order to ask your teacher at the start of year 10. 4) Aim to complete one task per week. You can re-do the tasks as many times as you need to.
<p>Task 3:</p> <p>Papers</p> <p>Due: 7th September 2020 (first lesson back)</p>	<p>Complete:</p> <p><u>Paper 1 (Non-Calculator)</u> - max 2 hours</p> <p><u>Paper 2 (Calculator)</u> - max 2 hours</p>	<p>Use the videos from https://corbettmaths.com/contents/ to support you.</p> <p>Don't be tempted to search for the answers on the internet. All we ask is you try your best at answering all the questions in full. Remember to show all your working out.</p>

GCSE Maths Textbook

Here is the student book you need to purchase for Year 10. Please ensure you have your textbook ready for your first Y10 lesson in September. You can purchase the book through wise pay (cheaper) and you will receive the book when you meet your new Y10 maths teacher.

Please note the book does not determine which tier exam you will be sitting this will be based on your progression and will be decided in Y11 after the autumn term. But you must purchase the right book for your maths class.

<p>Higher:</p>  <p>For Y9 classes Alk, Ber, Cur, Des, Euc ISBN: 978-0-19-835151-1</p>	<p>Foundation:</p>  <p>For Y9 classes Fib, Max ISBN: 978-0-19-835150-4</p>
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Instructions for wise pay:

1. access wise pay through the school website and login:
<https://www.wisepay.co.uk/store/generic/template.asp?mID=46483&ACT=nav>
2. select 'shop'
3. select 'books'
4. locate the GCSE maths book:

School Shop with Categories

MATHS TEXT BOOK - EDEXCEL GCSE MATHS - FOUNDATION OR HIGHER £ 25.00

Available Quantity : 57

[View Details](#)

5. make one payment of £25 (your teacher will give you the right tier book).

A little monkey had 60 peaches.

On the first day, he kept $\frac{3}{4}$ of his peaches, gave the rest away, then ate one.

On the second day, he kept $\frac{7}{11}$ of his peaches, gave the rest away, then ate one.

On the third day, he kept $\frac{5}{9}$ of his peaches, gave the rest away, then ate one.

On the fourth day, he kept $\frac{2}{7}$ of his peaches, gave the rest away, then ate one.

On the fifth day, he kept $\frac{2}{3}$ of his peaches, gave the rest away, then ate one.

How many peaches did he have left?



A little monkey had 75 peaches.

Each day, he kept a fraction of his peaches, gave the rest away, and then ate one.

These are the fractions he decided to keep:

$$\frac{1}{2}$$

$$\frac{1}{4}$$

$$\frac{3}{4}$$

$$\frac{3}{5}$$

$$\frac{5}{6}$$

$$\frac{11}{15}$$

In which order did he use the fractions so that he was left with just one peach at the end?



The monkey always keeps a fraction of his peaches each day, gives the rest away, and then eats one.

Each fraction must be in its simplest form and must be less than 1, and the denominator is never the same as the number of peaches left.

Starting with fewer than 100, what is the longest you can make the peaches last?

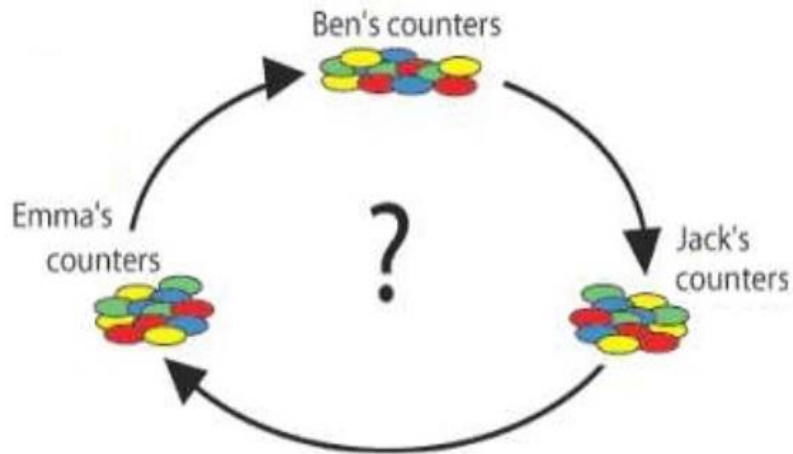


Ben's Game

Age 11 to 16 ★★★

Ben, Jack and Emma were playing a game with a box of 40 counters - they were not using all of them.

They each had a small pile of counters in front of them.



All at the same time, Ben passed a third of his counters to Jack, Jack passed a quarter of his counters to Emma, and Emma passed a fifth of her counters to Ben.

They all passed on more than one counter.

After this they all had the same number of counters.

How many could each of them have started with?

Checklist

Task	Studied all the videos?	Key Notes from videos complete	Task Score: Attempt 1 %	Task Score: Attempt 2 %	Questions for my Y10 teacher
1) Statistics Summer Learning YR9					
2) Ratio, Fractions and Percentages Summer Learning YR9					
3) Algebra Summer Learning YR9					
4) Number Summer Learning YR9					
5) Geometry Summer Learning YR9					

Year 9 Maths

Summer Learning 2020

Paper 1

Non-Calculator

Full Name: _____

Instructions:

Have a go at this exam paper use videos from <https://corbettmaths.com/contents/> to support you. Don't be tempted to look up answers on Google.

All we ask is have a good try! :)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 Find 10% of £320

£.....

(Total for Question 1 is 1 mark)

2 Write 0.8 as a percentage.

..... %

(Total for Question 2 is 1 mark)

3 (a) Work out $84 \div 3$

.....
(1)

(b) Work out 0.17×6000

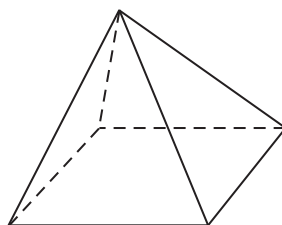
.....
(1)

(c) Work out $(-2)^3$

.....
(1)

(Total for Question 3 is 3 marks)

4 Here is a square-based pyramid.



(i) How many faces does the pyramid have?

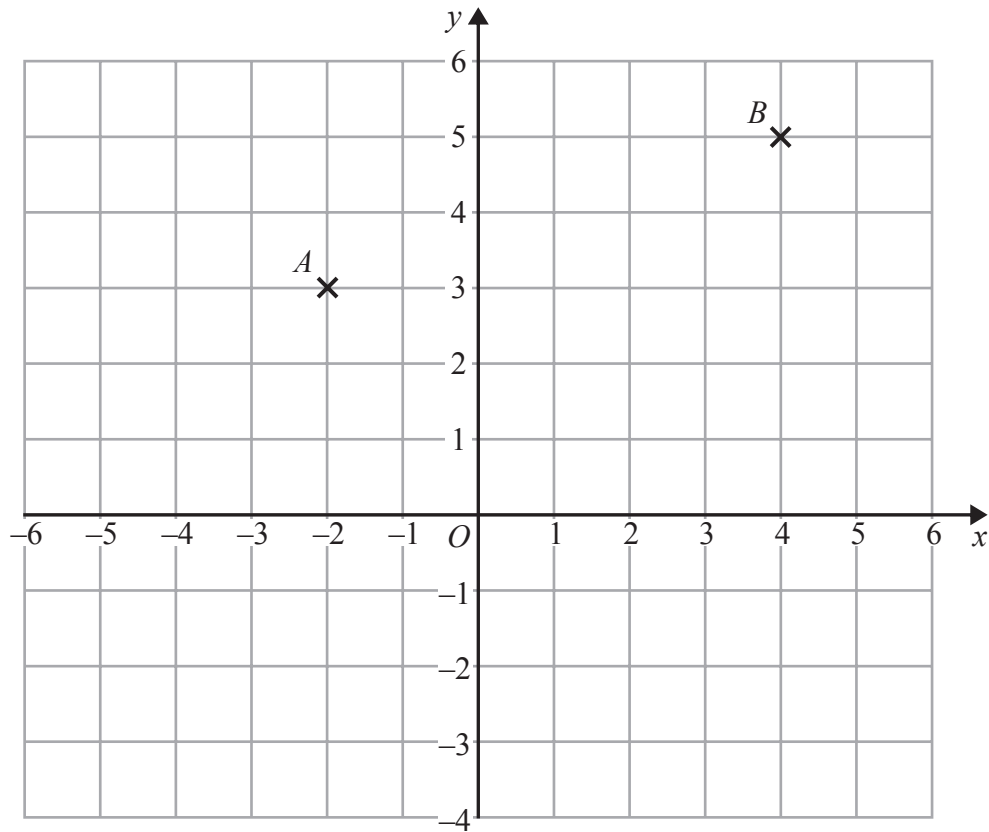
.....

(ii) How many edges does the pyramid have?

.....

(Total for Question 4 is 2 marks)

5



(a) Write down the coordinates of point B .

(.....,)
(1)

(b) Find the coordinates of the midpoint of AB .

(.....,)
(1)

(c) On the grid, draw the line with equation $y = -3$

(1)

(Total for Question 5 is 3 marks)

6 Here are the instructions for making a drink.

Add 100 ml of juice
to 2 litres of water

Dev uses 5 litres of water to make the drink.

How much drink has he made?

(Total for Question 6 is 3 marks)

7 In a box there are three types of chocolates.

There are 6 plain chocolates,
8 milk chocolates
and 10 white chocolates.

Ben takes at random a chocolate from the box.

(a) Write down the probability that Ben takes a plain chocolate.

(2)

Deon takes 2 chocolates from the box.

(b) Write down all the possible combinations of types of chocolates that Deon can take.

(2)

(Total for Question 7 is 4 marks)

- 8 8 identical pens cost £12
Work out the cost of 10 of these pens.

£.....

(Total for Question 8 is 2 marks)

- 9 Here are five fractions.

$$\frac{2}{8} \quad \frac{10}{40} \quad \frac{12}{48} \quad \frac{5}{24} \quad \frac{20}{80}$$

One of these fractions is **not** equivalent to $\frac{1}{4}$

- (a) Write down this fraction.

.....
(1)

- (b) Work out $\frac{2}{7} + \frac{1}{14}$

.....
(2)

- (c) Work out $\frac{4}{5} \div \frac{3}{10}$

Give your answer in its simplest form.

.....
(2)

(Total for Question 9 is 5 marks)

10 (a) Solve $3x + 7 = 1$

$$x = \dots\dots\dots (2)$$

(b) $f = 6$
 $g = 5$

Work out the value of $3f - 2g$

$$\dots\dots\dots (2)$$

(Total for Question 10 is 4 marks)

11 Write down three different multiples of 4 that add up to 40

$$\dots\dots\dots$$

(Total for Question 11 is 2 marks)

12 Helen has 80 books to sell.

Each book is Fiction or Non-fiction.

The ratio of the number of Fiction books to the number of Non-fiction books is 3:1

Each book has a normal price of £10

Helen reduces the price of all the Non-fiction books.

Non-fiction

All books
½ price

Helen sells all 80 books.

Work out the total amount of money Helen will receive.

£.....

(Total for Question 12 is 4 marks)

13 Ryan and Carl each get paid a basic pay of £60 per day.

One day, Ryan also gets a bonus of 25% of his basic pay.

Carl also gets £20 in tips from customers.

Work out the difference between the total amounts of money that Ryan and Carl each get.

(Total for Question 13 is 3 marks)

14 Some people were asked if they liked swimming or cycling or running.

The table shows the results for the males and the results for the females.

	Swimming	Cycling	Running
Male	2	6	4
Female	8	5	5

(a) On the grid, draw a bar chart to show this information.



(4)

(b) Work out the percentage of the 30 people that are female.

..... %

(2)

(Total for Question 14 is 6 marks)

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15 The table shows information about the ages of all the people at a party.

Age (years)	Frequency
11 – 20	6
21 – 30	16
31 – 40	10
41 – 50	8

(a) Work out the total number of these people who were aged 40 or less.

.....
(1)

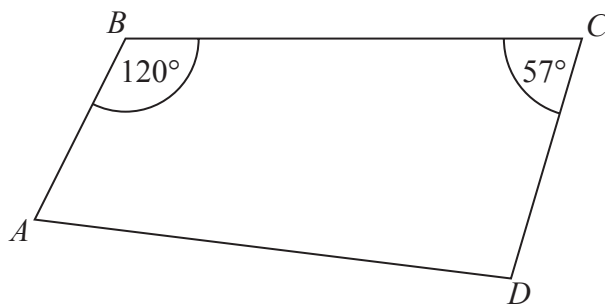
Andy says that the range of ages is 39 years because $50 - 11 = 39$

(b) The range may not be 39 years.
Explain why.

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

(Total for Question 15 is 2 marks)

16 The diagram shows a quadrilateral $ABCD$.



Is AB parallel to DC ?

You must give your reasoning.

(Total for Question 16 is 3 marks)

17 Irena sells ice creams.

One day she sells 80 ice creams.

The next day she sells 108 ice creams.

Work out the percentage increase in the number of ice creams she sells.

..... %

(Total for Question 17 is 3 marks)

18 Dimitar has 20 sweets.
Pip also has 20 sweets.

Dimitar gives Pip x sweets.

Dimitar then eats 5 of his sweets.
Pip then eats half of her sweets.

Write expressions for the number of sweets Dimitar and Pip now have.

Dimitar

Pip

(Total for Question 18 is 3 marks)

19 (a) Factorise $y^2 + 27y$

.....
(1)

(b) Simplify $(t^3)^2$

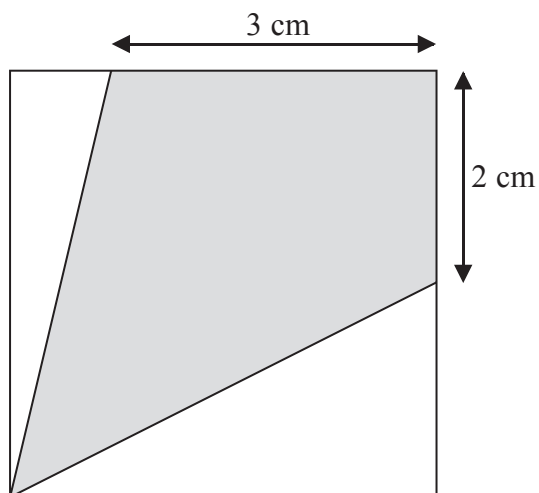
.....
(1)

(c) Simplify $\frac{w^9}{w^4}$

.....
(1)

(Total for Question 19 is 3 marks)

20 The diagram shows a square with perimeter 16 cm.



Work out the proportion of the area inside the square that is shaded.

(Total for Question 20 is 5 marks)

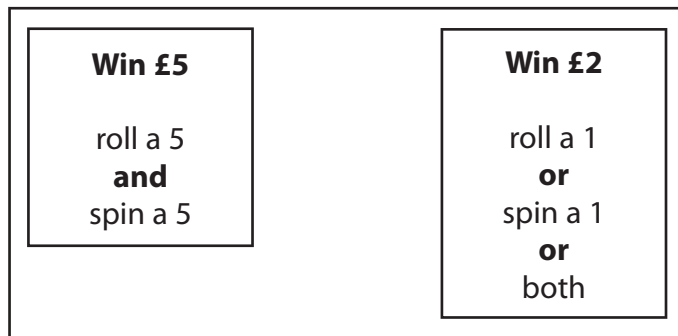
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21 David has designed a game.
 He uses a fair 6-sided dice and a fair 5-sided spinner.
 The dice is numbered 1 to 6
 The spinner is numbered 1 to 5

Each player rolls the dice once and spins the spinner once.
 A player can win £5 or win £2



David expects 30 people will play his game.
 Each person will pay David £1 to play the game.

(a) Work out how much profit David can expect to make.

£.....
 (4)

(b) Give a reason why David's actual profit may be different to the profit he expects to make.

.....

 (1)

(Total for Question 21 is 5 marks)

22 Triangle ABC has perimeter 20 cm.

$$AB = 7 \text{ cm.}$$

$$BC = 4 \text{ cm.}$$

By calculation, deduce whether triangle ABC is a right-angled triangle.

(Total for Question 22 is 4 marks)

23 One sheet of A3 card has area $\frac{1}{8} \text{ m}^2$.

The card has a mass of 160 g per m^2 .

Work out the total mass of 25 sheets of A3 card.

(Total for Question 23 is 4 marks)

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24 Here are the first five terms of a sequence.

2 8 18 32 50

(a) Find the next term of this sequence.

.....
(1)

The n th term of a different sequence is $3n^2 - 10$

(b) Work out the 5th term of this sequence.

.....
(1)

(Total for Question 24 is 2 marks)

25 Write 504 as a product of powers of its prime factors.

.....
(1)

(Total for Question 25 is 3 marks)

TOTAL FOR PAPER IS 80 MARKS

Year 9 Maths

Summer Learning 2020

Paper 2

Calculator

Full Name: _____

Instructions:

Have a go at this exam paper use videos from <https://corbettmaths.com/contents/> to support you. Don't be tempted to look up answers on Google.

All we ask is have a good try! :)

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write 6819 to the nearest 1000

.....
(Total for Question 1 is 1 mark)

- 2 Write these temperatures in order.
Start with the lowest temperature.

7°C -2°C 10°C -5°C 3°C

.....
(Total for Question 2 is 1 mark)

- 3 Write 0.075 as a fraction.
Give your fraction in its simplest form.

.....
(Total for Question 3 is 2 marks)

- 4 Find the value of 5^4

.....
(Total for Question 4 is 1 mark)

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5

Living to 100 years old

1 in 3 babies born last year
are expected to live
to 100 years old

720 000 babies were born last year.

How many of these babies are expected to live to 100 years old?

.....
(Total for Question 5 is 2 marks)

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6 Here is part of a train timetable from Swindon to London.

Swindon to London							
Swindon	06 10	06 27	06 41	06 58	07 01	07 17	07 28
Didcot	06 27	06 45	06 58	–	07 18	–	07 45
Reading	06 41	06 59	07 13	07 28	07 33	07 43	08 00
London	07 16	07 32	07 44	08 02	08 07	08 14	08 33

(a) How long should the 06 58 train from Swindon take to get to London?

.....
(1)

Clare says,

“All these trains take more than one hour to get from Swindon to London.”

(b) Is Clare correct?

You must give a reason for your answer.

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

(Total for Question 6 is 2 marks)

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7 Tracy buys

2 coffees at	£1.10	each
3 teas at	95p	each
5 sandwiches at	£2.15	each

Tracy shares the total cost equally between 5 people.

How much does each person pay?

£.....

(Total for Question 7 is 4 marks)

- 8 Rachel carried out a survey of 10 people to find out the type of fruit they like best.

The table gives information about her results.

Type of fruit	Number of people
apple	2
banana	5
orange	3

- (a) Which type of fruit is the mode?

.....
(1)

In Rachel's survey, 2 out of 10 people like apples best.

- (b) Write 2 out of 10 as a percentage.

.....%
(1)

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Pete also carried out a survey to find out the type of fruit people like best. He asked 30 people which type of fruit they like best.

He drew this pie chart for his results.

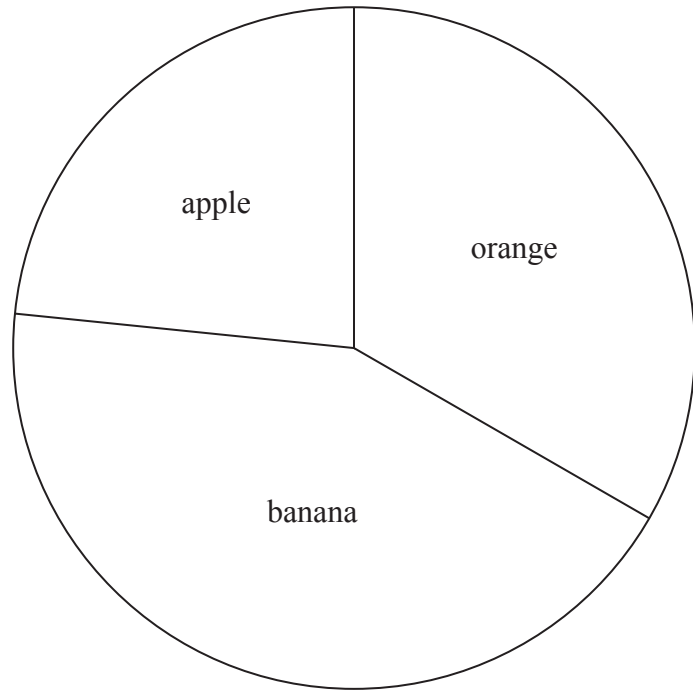


Diagram accurately drawn

A smaller proportion of people like bananas best in Pete's survey than in Rachel's survey.

(c) Explain how Pete's pie chart and Rachel's table show this.

.....

.....

.....

(2)

(Total for Question 8 is 4 marks)

- 9 The smallest angle of a triangle is 25°
The triangle is enlarged by scale factor 3

Ben says,

“The smallest angle of the enlarged triangle is 75° because $25 \times 3 = 75$ ”

Is Ben right?
Explain your answer.

(Total for Question 9 is 1 mark)

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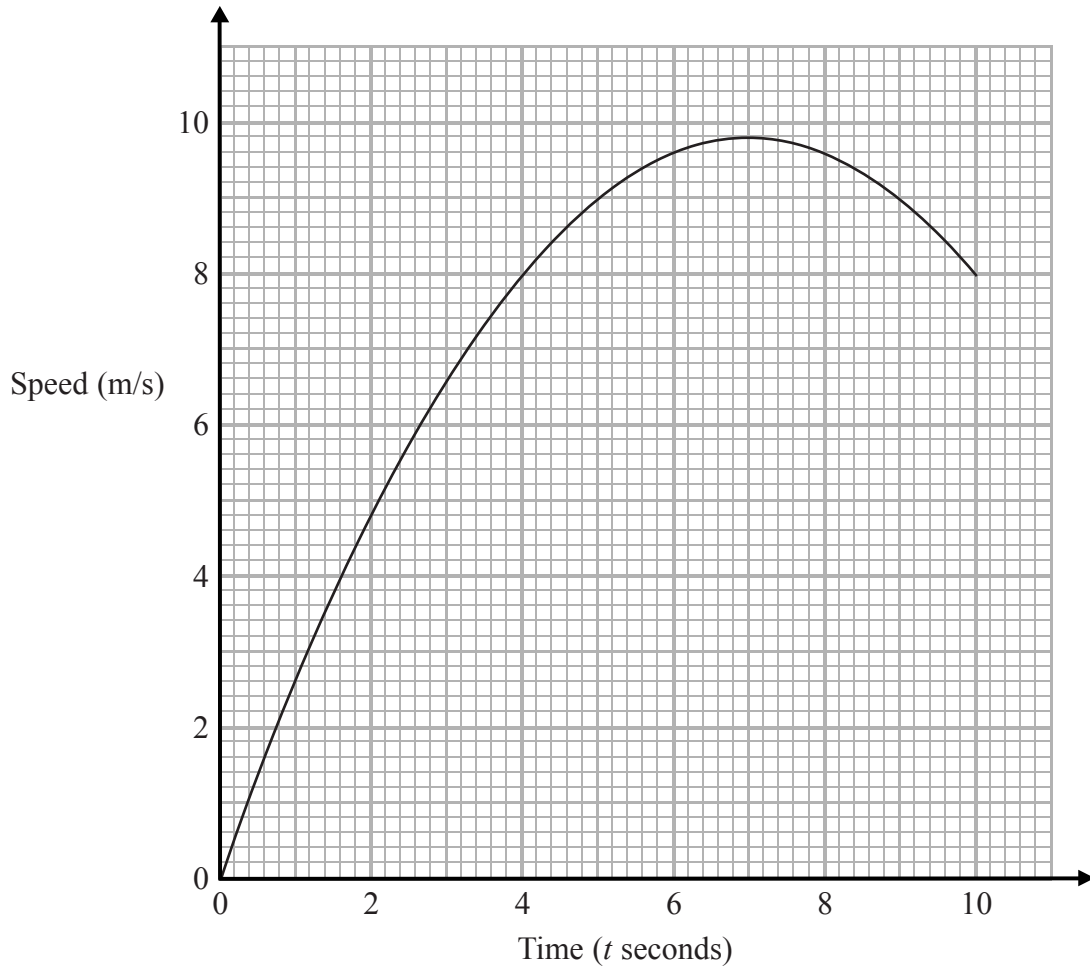
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10 Karol ran in a race.

The graph shows her speed, in metres per second, t seconds after the start of the race.



(a) Write down Karol's speed 3 seconds after the start of the race.

..... m/s
(1)

(b) Write down Karol's greatest speed.

..... m/s
(1)

There were two times when Karol's speed was 9 m/s.

(c) Write down these two times.

..... seconds
..... seconds
(1)

(Total for Question 10 is 3 marks)

11 The first three terms of a number pattern are 1 2 4

Hester says the first five terms of this number pattern are 1 2 4 8 16

(a) Write down the rule Hester could have used to get the 4th and 5th terms.

.....
(1)

(b) Write down the 6th term of Hester's number pattern.

.....
(1)

Jack uses a different rule.

He says the first six terms of the number pattern are 1 2 4 7 11 16

(c) Write down the 7th and 8th terms of Jack's number pattern.

..... ,,,,,
(1)

(Total for Question 11 is 3 marks)

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12 Martin has 8 pints of soup in a pan.
He also has 24 soup bowls.
He puts 0.3 pints of soup into each bowl.

How much soup has Martin left over?

.....pints

(Total for Question 12 is 3 marks)

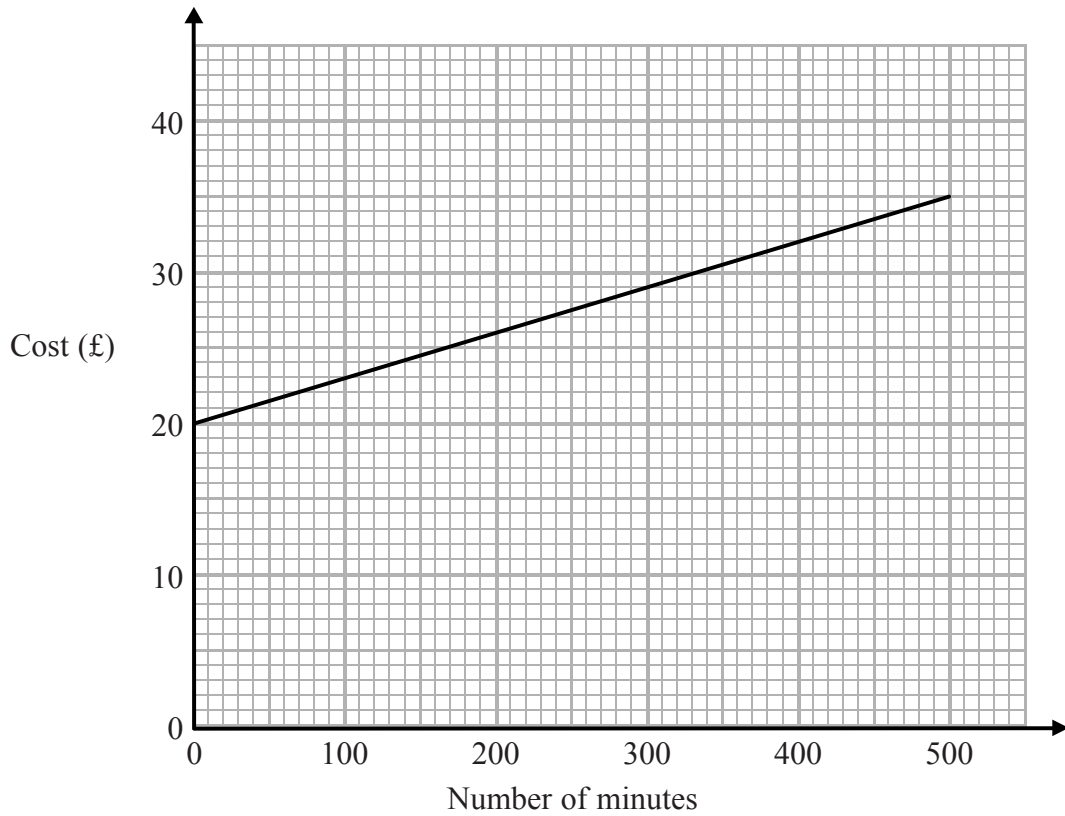
13 Abi invests £500 for 4 years in a bank account.
The account pays simple interest at a rate of 2.3% per year.

Work out the total amount of interest Abi has got at the end of 4 years.

£.....

(Total for Question 13 is 3 marks)

- 14 The graph shows the cost of using a mobile phone for one month for different numbers of minutes of calls made.



The cost includes a fixed rental charge of £20 and a charge for each minute of calls made.
Work out the charge for each minute of calls made.

(Total for Question 14 is 2 marks)

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15 Here is a list of ingredients for making chocolate mousse for 2 people.

<p style="text-align: center;">Chocolate mousse for 2 people</p> <p>40 grams sugar 110 grams dark chocolate 2 eggs $\frac{1}{4}$ teaspoon lemon juice</p>

Ellie has 250 grams of sugar and 550 grams of dark chocolate.
She assumes that she has plenty of lemon juice and plenty of eggs.

- (a) What is the greatest number of people Ellie can make chocolate mousse for?
You must justify your answer.

(3)

Ellie only has 6 eggs.

- (b) What effect would this have on the greatest number of people Ellie can make chocolate mousse for?

(1)

(Total for Question 15 is 4 marks)

16 A sprinter runs a distance of 200 metres in 25 seconds.

Work out the average speed of the sprinter.

.....m/s

(Total for Question 16 is 1 mark)

17 (a) Simplify $7x + 2y - 3x + 4y$

.....
(2)

(b) Factorise $10x - 15$

.....
(1)

(c) Solve $5p = 3p + 8$

$p =$
(2)

(Total for Question 17 is 5 marks)

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18 There are 64 cards in a pack.
Each card is either red or black.
The ratio of the number of red cards to the number of black cards is 1 : 1

8 red cards are removed from the pack.

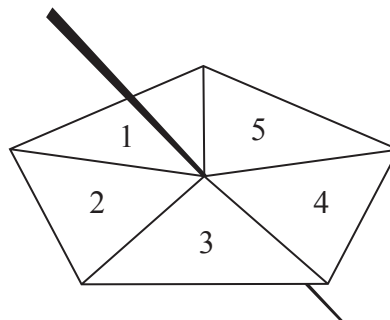
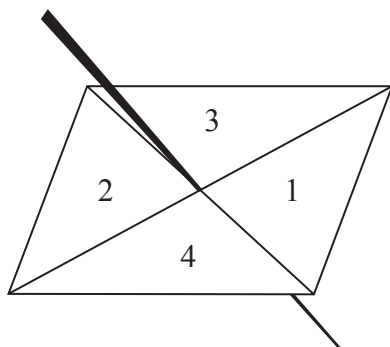
Find the ratio of the number of red cards now in the pack to the number of black cards now in the pack.

Give your answer in its simplest form.

.....
(Total for Question 18 is 3 marks)

19 Here are a 4-sided spinner and a 5-sided spinner.

The spinners are fair.



Jeff is going to spin each spinner once.

Each spinner will land on a number.

Jeff will get his score by adding these two numbers together.

(a) Complete the possibility space diagram for each possible score.

		5-sided spinner				
		1	2	3	4	5
4-sided spinner	1	2	3	4	5	6
	2	3				
	3	4				
	4	5				

(1)

Jeff spins each spinner once.

(b) Find the probability that Jeff gets

(i) a score of 3

(ii) a score of 5 or more.

.....
(2)

(Total for Question 19 is 3 marks)

20 Water flows through a pipe at a rate of 20 gallons per minute.

1 gallon = 4.55 litres.

Change 20 gallons per minute to litres per second.
Give your answer correct to 3 significant figures.

..... litres per second

(Total for Question 20 is 2 marks)

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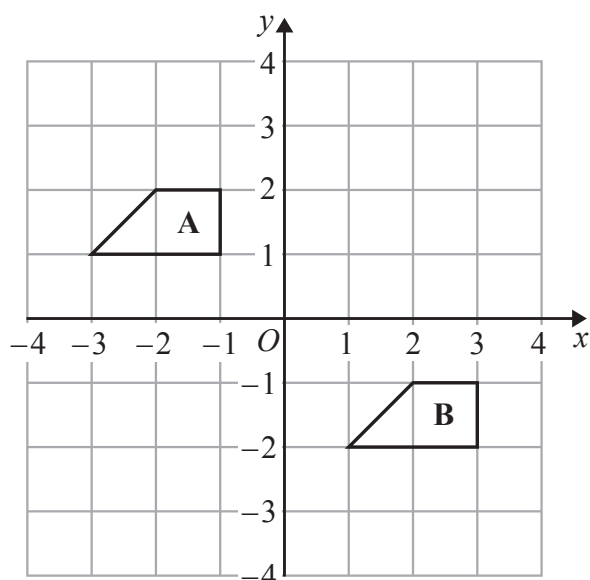
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21 Find the highest common factor (HCF) of 32, 48 and 72

(Total for Question 21 is 2 marks)

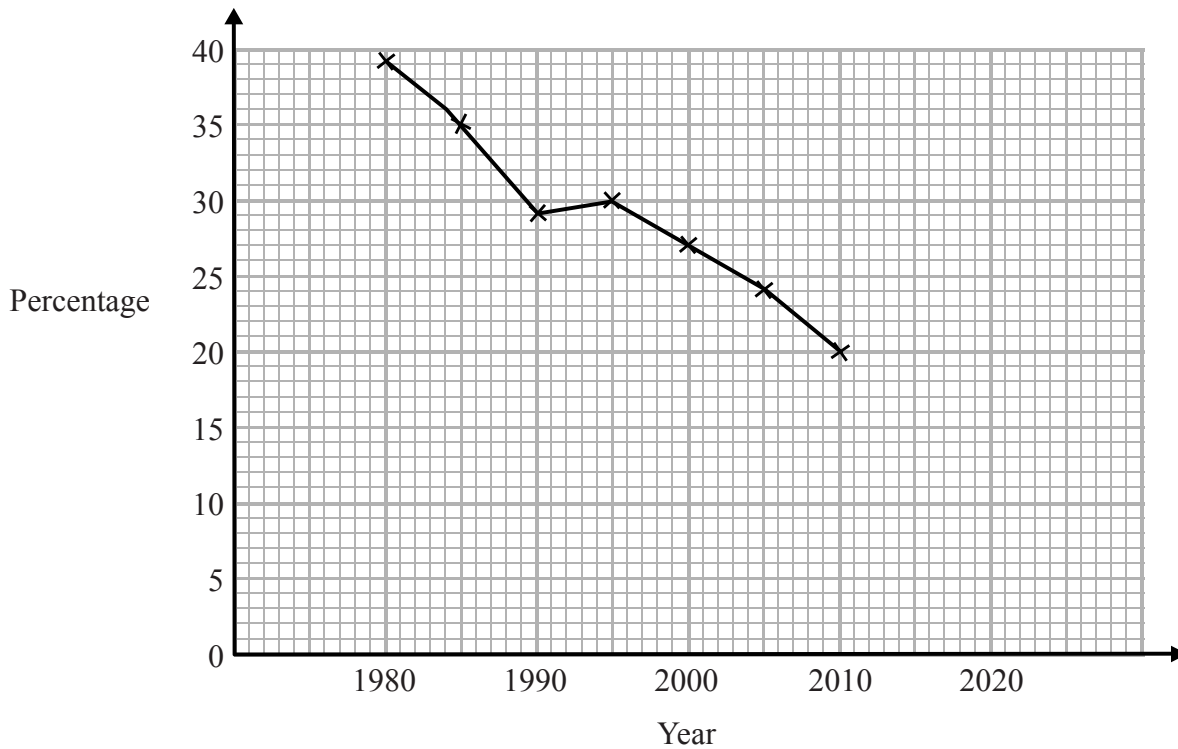
22



Describe the single transformation that maps shape A onto shape B.

(Total for Question 22 is 2 marks)

- 23 The time series graph shows information about the percentages of the people in a village that used the village shop for the years between 1980 and 2010



- (a) Describe the trend in the percentage of the people in the village who used the shop for this period.

(1)

- (b) (i) Use the graph to predict the percentage of the people in the village likely to use the shop in the year 2020

..... %

- (ii) Is your prediction reliable?
Explain your answer.

(3)

(Total for Question 23 is 4 marks)

24 (a) Expand and simplify $3(y - 2) + 5(2y + 1)$

.....
(2)

(b) Simplify $5u^2w^4 \times 7uw^3$

.....
(2)

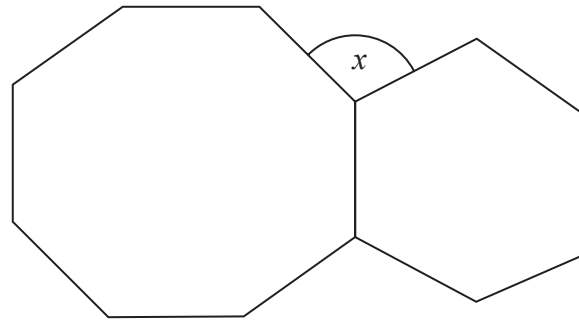
(Total for Question 24 is 4 marks)

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25



The diagram shows a regular octagon and a regular hexagon.

Find the size of the angle marked x
You must show all your working.

$x = \dots\dots\dots^\circ$

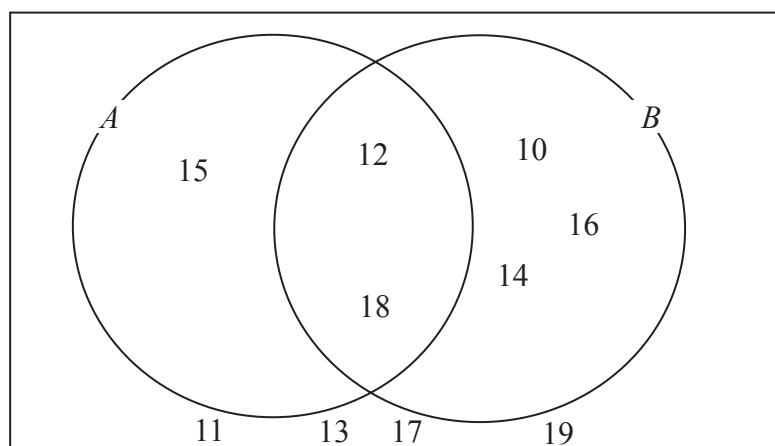
(Total for Question 25 is 3 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

26 Here is a Venn diagram.



(a) Write down the numbers that are in set

(i) $A \cup B$

.....

(ii) $A \cap B$

.....

(2)

One of the numbers in the diagram is chosen at random.

(b) Find the probability that the number is in set A'

.....

(2)

(Total for Question 26 is 4 marks)

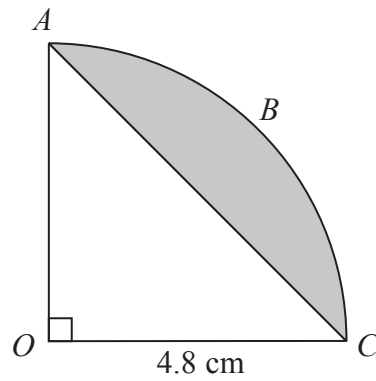
27 On a farm

the number of cows and the number of sheep are in the ratio 6 : 5
the number of sheep and the number of pigs are in the ratio 2 : 1

The total number of cows, sheep and pigs on the farm is 189

How many sheep are there on the farm?

.....
(Total for Question 27 is 3 marks)

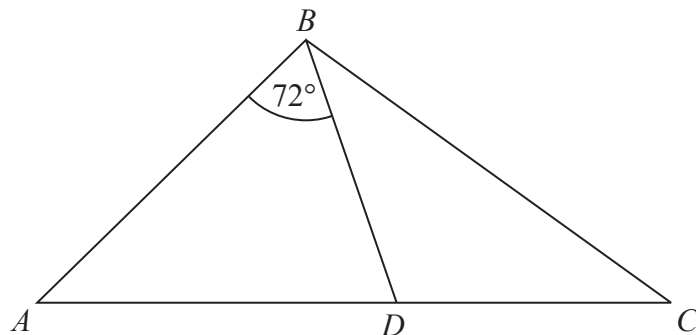


The arc ABC is a quarter of a circle with centre O and radius 4.8 cm.
 AC is a chord of the circle.

Work out the area of the shaded segment.
Give your answer correct to 3 significant figures.

.....cm²

(Total for Question 28 is 3 marks)



ABC is an isosceles triangle with $BA = BC$.

D lies on AC .

ABD is an isosceles triangle with $AB = AD$.

Angle $ABD = 72^\circ$

Show that the triangle BCD is isosceles.

You must give a reason for each stage of your working.

(Total for Question 29 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS