Chhetri Academy

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GCSE MATHS

Ratio, proportion and rates of change

Edexcel 1MA1 | Subtopic collection Topic 32

Percentages and reverse percentages

Foundation tier

Past paper question booklet

199	2010-2025	Foundation
question groups	available papers	tier

Before you begin

1. Show working and use units where appropriate.
2. Use extra paper if you need more space.
3. Print at actual size (100%) for measurement questions.

Name _____ **Date** _____

Whole questions are retained for context; some parts cover other points. Legacy sources are labelled.

***11** Mr and Mrs Jones are planning a holiday to the Majestic Hotel in the Cape Verde Islands.

The table gives information about the prices of holidays to the Majestic Hotel.

MAJESTIC HOTEL, Cape Verde Islands		
Departures	**Price per adult**	
	7 nights	**14 nights**
1 Jan – 8 Jan	£ 694	£ 825
9 Jan – 28 Jan	£ 679	£ 804
29 Jan – 5 Feb	£ 687	£ 815
6 Feb – 18 Feb	£ 769	£ 835
19 Feb – 8 Mar	£ 714	£ 817
9 Mar – 31 Mar	£ 685	£ 805
1 April – 9 April	£ 788	£ 862
10 April – 30 April	£ 748	£ 802
Price per child: 95% of adult price for 7 nights or 85% of adult price for 14 nights.		

Mr and Mrs Jones are thinking about going on holiday

on 20 February for 7 nights
or on 10 April for 14 nights.

Mr and Mrs Jones have 2 children.

Compare the costs of these two holidays for the Jones family.

(Total for Question 11 is 5 marks)

15 Last year, Jora spent

30% of his salary on rent

$\frac{2}{5}$ of his salary on entertainment

$\frac{1}{4}$ of his salary on living expenses.

He saved the rest of his salary.

Jora spent £3600 on living expenses.

Work out how much money he saved.

£ .....

(Total for Question 15 is 5 marks)

7 There are 200 people in a cinema.

25% of the people are men.

$\frac{1}{5}$ of the people are women.

The rest of the people are children.

Work out how many children are in the cinema.

.....

(Total for Question 7 is 3 marks)

9 (a) Write $\frac{1}{4}$ as a decimal.

.....

(1)

(b) Write 0.8 as a percentage.

..... %

(1)

(c) Write the ratio 2 : 6 in its simplest form.

.....

(1)

(Total for Question 9 is 3 marks)

9 There are 240 students at Walbridge school.
15% of these students are left-handed.

(a) Work out how many students are left-handed.

.....

(2)

$\frac{1}{3}$ of the 240 students are female.

(b) How many of the students are female?

.....

(1)

80 of the students walk to school.
60 of the students cycle to school.

(c) Write the ratio of the number of students who walk to school to the number of students who cycle to school.
Give your ratio in its simplest form.

.....

(2)

(Total for Question 9 is 5 marks)

***13** Debra and Mark are planning to go on a cruise.
They can travel with one of two companies, Caribbean Calypso or Royal European.

The table shows the cost per person to travel with each company.

		Type of cabin			
		Inside	Outside	Balcony	Suite
Cost per person	Caribbean Calypso	£1136	£1319	£1529	£2329
	Royal European	£1043	£1263	£1484	£2147

Caribbean Calypso has a discount of 10% if you book online.
Royal European has a discount of 5% if you book online.

Debra and Mark are going to book a suite for their cruise.
They are going to book online.

Debra and Mark want to pay the lowest possible cost.
Which company should they choose?
You must show all your working.

(Total for Question 13 is 5 marks)

***17** Debbie, Salma and Wendy did a Maths test.
The total for the test was 40 marks.

Debbie got 16 out of 40
Salma got 35% of the 40 marks.
Wendy got $\frac{3}{8}$ of the 40 marks.

Who got the highest mark?
You must show all your working.

(Total for Question 17 is 4 marks)

20 Rani has 250 DVDs.

42% of her DVDs are thrillers.

$\frac{2}{5}$ of her DVDs are comedies.

The rest of her DVDs are science fiction.

How many science fiction DVDs does Rani have?

.....

(Total for Question 20 is 4 marks)

Question 09

7 What is 10% of £50?

£ .....

(Total for Question 7 is 1 mark)

20 A cooker costs £650 plus 20% VAT.

(a) Calculate the total cost of the cooker.

£ .....

(3)

A washing machine has a price of £260
In a sale its price is reduced by £39

(b) Write the reduction as a percentage of the price.

..... %

(2)

3 kitchen chairs cost a total of £44.79

(c) Work out the total cost of 8 of these chairs.

£ .....

(2)

(Total for Question 20 is 7 marks)

3 (a) Work out 50% of 86

.....

(1)

(b) Work out $3 + 5 \times 2$

.....

(1)

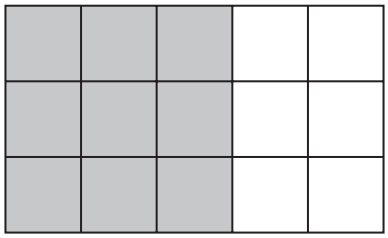
(c) Write down an estimate for $\sqrt{60}$

.....

(1)

(Total for Question 3 is 3 marks)

7 (a) Write down the fraction of this shape that is shaded.
Give your fraction in its simplest form.



.....

(2)

(b) Write $\frac{9}{10}$ as a decimal.

.....

(1)

(c) Tania says that 75% is greater than 0.8

Is she right?
Explain your answer.

.....

.....

.....

(1)

(Total for Question 7 is 4 marks)

Question 13

***5** Jim's pay is £180 each week.

Jim asks his boss for an increase of £20 a week.

Jim's boss offers him a 10% increase.

Is the offer from Jim's boss more than Jim asked for?

You must show your working.

(Total for Question 5 is 3 marks)

*16 Ashley wants to buy some tins of paint.

He finds out the costs of paint at two shops.

Paint R Us

Normal price £2.19 a tin

Special Offer

Buy 2 tins at the normal price and get the 3rd tin free

Deco Mart

Normal price £1.80 a tin

Special Offer

10% off the normal price

Ashley needs 9 tins of paint.
Ashley wants to get all the tins of paint from the same shop.
He wants to pay the cheapest possible total price.

Which of the two shops should Ashley buy the paint from?

(Total for Question 16 is 6 marks)

*19 Joan is planning a skiing holiday in Hinterglemm for herself and her two children.
They are going skiing for 6 days.

The table shows the costs of ski hire, of boot hire and of buying lift passes in two shops in Hinterglemm.
All prices are in Euros.

Shop A

		Ski hire	Boot hire	Lift pass
Adult	**6 days**	111	53	236
	13 days	168	90	314
Child	**6 days**	78	52	165
	13 days	122	87	210

Shop B

		Ski hire	Boot hire	Lift pass
Adult	**6 days**	108	54	242
	13 days	170	89	324
Child	**6 days**	68	48	160
	13 days	118	85	205

Joan will use her own skis and her own boots.

For 6 days she will need

to hire skis for each of her two children
to hire boots for each of her two children
and to buy lift passes for herself and each of her two children.

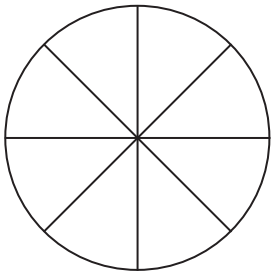
Shop A gives 5% off the total cost.
Shop B gives 3% off the total cost.

Joan wants to hire the skis and boots and buy the lift passes from the same shop.
She wants to get everything from the cheaper shop.

Which shop is cheaper for Joan?
You must show all your working.

(Total for Question 19 is 5 marks)

6 (a) Shade $\frac{3}{8}$ of this shape.



(1)

(b) Change 0.6 into a percentage.

.....%

(1)

(c) Work out $-3 + 7$

.....

(1)

(d) Work out $\frac{3}{8}$ of £40

£ .....

(2)

(e) Write down **one** prime number from the list of numbers below.

9 13 17 21 25

.....

(1)

(Total for Question 6 is 6 marks)

***15** Gordon owns a shop.

Here are the prices of three items in Gordon's shop and in a Supermarket.

Gordon's Shop	
400 g loaf of bread	£1.22
1 litre of milk	£0.96
40 tea bags	£2.42

Supermarket	
400 g loaf of bread	£1.15
1 litre of milk	£0.86
40 tea bags	£2.28

Gordon reduces his prices by 5%.
Will the total cost of these three items be cheaper in Gordon's shop than in the Supermarket?

(Total for Question 15 is 3 marks)

*17 Sam is going to paint his garden shed.

The paint is sold in two different shops.

Paint For You



£8.35 plus VAT at 20%

Paul's Paints



£3.15

Sam needs **7.5 litres** of paint.

Sam wants to buy the cheapest paint.
He is going to buy the paint from one of these shops.

Which shop should he buy the paint from?
You must show your working.

(Total for Question 17 is 4 marks)

3 (a) Write these numbers in order of size.
Start with the smallest number.

358 835 709 98 145

.....

(1)

(b) Write these numbers in order of size.
Start with the smallest number.

4 –5 7 –1 –8

.....

(1)

(c) Write these numbers in order of size.
Start with the smallest number.

$\frac{1}{4}$ 0.2 40% $\frac{3}{4}$ 0.5

.....

(2)

(Total for Question 3 is 4 marks)

22 Greg sells car insurance and home insurance.

The table shows the cost of these insurances.

Insurance	car insurance	home insurance
Cost	£200	£350

Each month Greg earns

£530 basic pay
5% of the cost of all the car insurance he sells
and 10% of the cost of all the home insurance he sells

In May Greg sold

6 car insurances
and 4 home insurances

Work out the total amount of money Greg earned in May.

£ .....

(Total for Question 22 is 5 marks)

***15** Mr and Mrs Jennings are planning a holiday to Italy.

They will go on holiday with their 11 year old daughter.

The table below shows some information about the prices of flights.

Flight to Italy		Flight back from Italy	
Date	**Price per adult (£)**	**Date**	**Price per adult (£)**
28th October	282	4th November	305
29th October	283	5th November	303
30th October	282	6th November	285
31st October	272	7th November	283
Child fares			
0 to 2 years old	No charge		
Over 2 to 12 years old	75% of the adult fare		

Mr and Mrs Jennings and their daughter want to fly to Italy on 29th October.
They want to fly back from Italy on 6th November.

They have £1600 to spend on flights.
Do they have enough money for the flights?

You must show all your working.

(Total for Question 15 is 6 marks)

7 (a) Write 0.41 as a fraction.

.....

(1)

(b) Work out 20% of 80

.....

(2)

(Total for Question 7 is 3 marks)

***21** Zara is the manager of a shop.

The table gives information about the expenses the shop had last year.

Expense	Wages	Rent	Goods	Other expenses
Amount	£92 000	£10 800	£72 000	£7000

This year

the wages will increase by 7.5%,
the rent will be $\frac{7}{9}$ of the rent last year,
the other expenses will halve.

Zara wants to increase the amount of money she spends on goods.

She also wants the total expenses the shop has this year to be the same as last year.

Can Zara increase the amount of money she spends on goods?

(Total for Question 21 is 4 marks)

25 Mr Watkins needs to buy some oil for his central heating.

Mr Watkins can put up to 1500 litres of oil in his oil tank.
There are already 850 litres of oil in the tank.
Mr Watkins is going to fill the tank with oil.

The price of oil is 67.2p per litre.
Mr Watkins gets 5% off the price of the oil.

How much does Mr Watkins pay for the oil he needs to buy?

£.....

(Total for Question 25 is 5 marks)

27 Mr Mason asks 240 Year 11 students what they want to do next year.

15% of the students want to go to college.

$\frac{3}{4}$ of the students want to stay at school.

The rest of the students do not know.

Work out the number of students who do not know.

.....

(Total for Question 27 is 4 marks)

Question 26

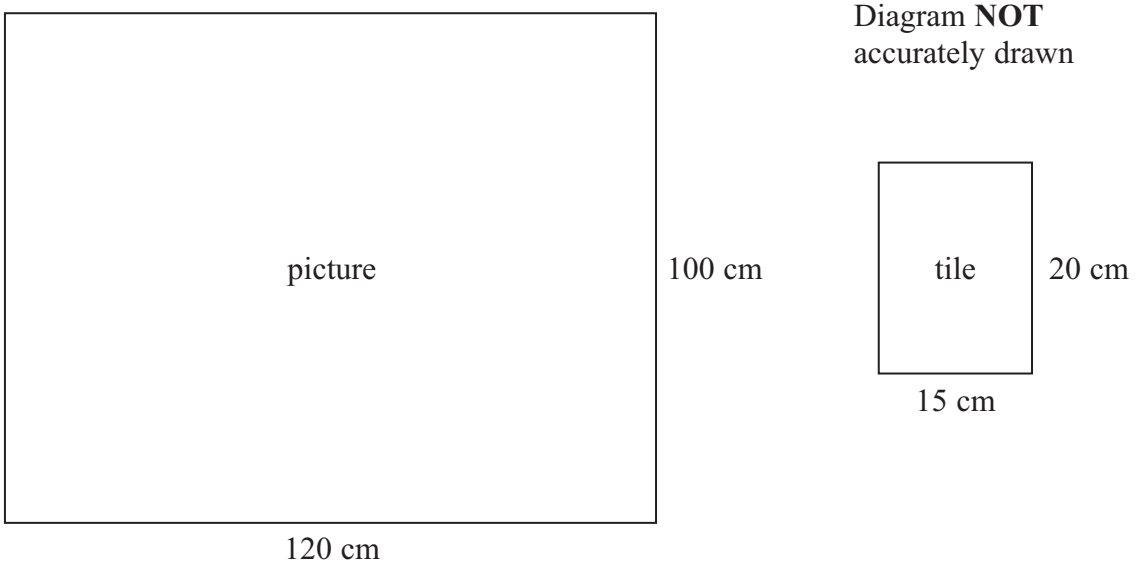
9 Work out the difference in value between $\frac{1}{4}$ and 30%.

.....

(Total for Question 9 is 2 marks)

19 A picture is made from tiles.

The diagram shows the picture in the shape of a rectangle, 120 cm by 100 cm.
It also shows a tile in the shape of a rectangle, 15 cm by 20 cm.



(a) Work out the number of these tiles needed to make the picture.

.....

(3)

The total cost of the tiles is £52 plus VAT.
The rate of VAT is 20%.

(b) Work out 20% of £52

£.....

(2)

(Total for Question 19 is 5 marks)

21 The table shows the prices of drinks at Ed's Cafe.

Ed's Cafe			
	Small	**Regular**	**Large**
Black coffee	£1.40	£1.80	£2.20
Cappuccino	£1.60	£2.10	£2.60
Latte	£1.60	£2.10	£2.60
Tea	£1.20	£1.50	£1.80
Cola	£1.50	£2.00	£2.40

Helen buys
2 small black coffees
1 regular cappuccino
1 large cola

Helen pays with a £10 note.

(a) Work out how much change Helen should get.

£.....
(3)

Ed reduces all the prices by 15%.

(b) Work out the reduced price of a large latte.

£.....
(3)

(Total for Question 21 is 6 marks)

9 (a) Write 0.7 as a fraction.

.....

(1)

(b) Write 0.3 as a percentage.

.....%

(1)

(c) Write $\frac{8}{12}$ in its simplest form.

.....

(1)

(Total for Question 9 is 3 marks)

13 There are 200 counters in a bag.
The counters are blue or red or yellow.

35% of the counters are blue.

$\frac{1}{5}$ of the counters are red.

Work out the number of yellow counters in the bag.

.....

(Total for Question 13 is 4 marks)

21 Petra booked a family holiday.
The total cost of the holiday was £3500 **plus** VAT at 20%.

Petra paid £900 of the total cost when she booked the holiday.
She paid the rest of the total cost in 6 equal monthly payments.

Work out the amount of each monthly payment.

£.....

(Total for Question 21 is 5 marks)

17 Write these numbers in order of size.
Start with the smallest number.

0.6 $\frac{2}{3}$ 65% 0.606

.....

(Total for Question 17 is 2 marks)

***24** The diagram shows the floor of a village hall.

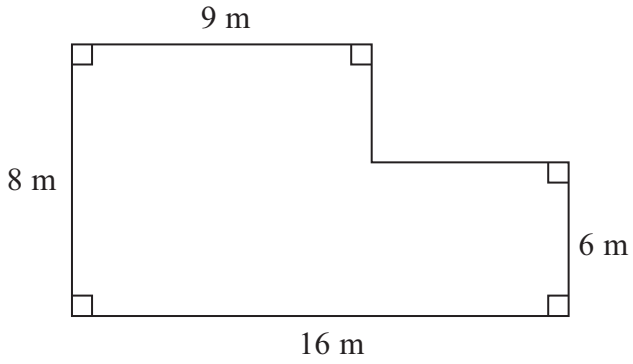


Diagram **NOT** accurately drawn

The caretaker needs to polish the floor.

One tin of polish normally costs £19
One tin of polish covers 12 m^2 of floor.

There is a discount of 30% off the cost of the polish.

The caretaker has £130

Has the caretaker got enough money to buy the polish for the floor?
You must show all your working.

(Total for Question 24 is 5 marks)

7

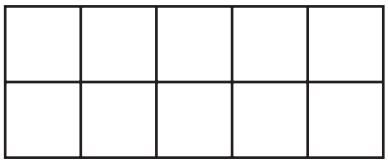


(a) Write down the fraction of this shape that is shaded.

.....

(1)

(b) Shade 30% of this shape.



(1)

(c) Work out $\frac{2}{3}$ of 120 kg.

..... kg

(2)

(Total for Question 7 is 4 marks)

25 The same type of computer is sold in two shops.

Computer World
Beta computer
Normal price : £359
15% off normal price

Logic
Beta computer
Pay £110 now and pay 12 instalments of £16.80 per month

What is the difference in the cost of a Beta computer in Computer World and the cost of a Beta computer in Logic?

You must show all your working.

£ .....

(Total for Question 25 is 5 marks)

*14 The Kumar family are going to go to New York.
They will go with Highway Airlines or Jetstream Airlines.
The tables show how much it costs for each adult and each child to go with these airlines.

Highway Airlines

Date	Adult	Child
4 – 10 July	£475	£280
11 – 17 July	£488	£282
18 – 24 July	£516	£304
25 – 31 July	£506	£297
1 – 7 August	£462	£251
8 – 14 August	£430	£238
15 – 21 August	£421	£235
22 – 28 August	£399	£221

Jetstream Airlines

Date	Adult	Child
4 – 10 July	£483	£286
11 – 17 July	£493	£296
18 – 24 July	£526	£315
25 – 31 July	£519	£303
1 – 7 August	£485	£218
8 – 14 August	£429	£245
15 – 21 August	£409	£232
22 – 28 August	£401	£222

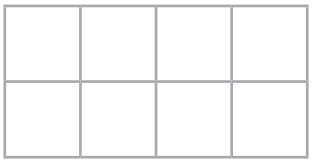
Highway Airlines give a discount of 5% of the total cost for booking online.
Jetstream Airlines give a discount of £25 per person for booking online.

The Kumar family are going to New York on 3 August.
They will buy 2 adult tickets and 1 child ticket.
They will book online.

The Kumar family want to pay the lower total cost.
Which airline should they choose?

(Total for Question 14 is 5 marks)

4



(a) Shade $\frac{3}{4}$ of this shape.

(1)

(b) Write 20% as a fraction.
Give your answer in its simplest form.

.....

(2)

(Total for Question 4 is 3 marks)

17 Here is a diagram of a small field.

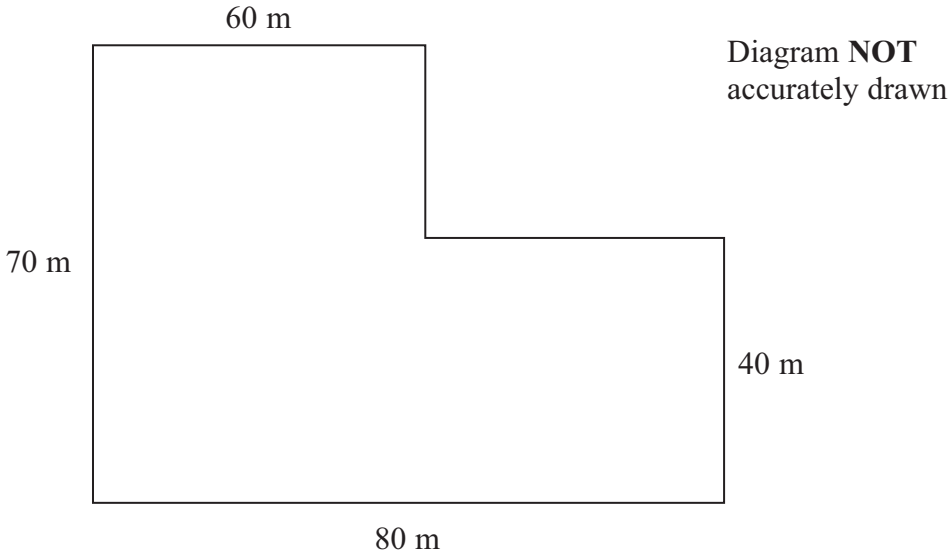


Diagram **NOT** accurately drawn

All the corners are right angles.
90% of the field is going to be used to grow wheat.

Work out the area of the field that is going to be used to grow wheat.

.....m^2

(Total for Question 17 is 5 marks)

14 There are 200 students in Year 11
75 of the students are girls.

(a) Write down the fraction of the students that are girls.

.....

(1)

There is a total of 1350 students in the school.
One day, 81 of the 1350 students are absent.

(b) Work out the percentage of the students who are absent.

.....%

(2)

(Total for Question 14 is 3 marks)

19 Mrs Evans is planning a trip to the zoo.

She finds out this information.

July

M	T	W	T	F	S	S
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

Off peak Peak

Ticket Prices

	Peak	Off peak
Adult	£20.50	£19.50
Child	£15.50	£15.00
Senior citizen	£19	£18

Family Offer

10% Discount	2 adults and 2 children or 1 adult and 3 children

Mrs Evans will go to the zoo on Friday 17th July.
She will need to buy tickets for 1 adult and 3 children.

Mrs Evans wants to buy the tickets as cheaply as possible.

Work out the total cost of the tickets.

£ .....

(Total for Question 19 is 4 marks)

21 One day a supermarket has 8420 customers.

65% of the customers pay with a debit card.

$\frac{1}{5}$ of the customers pay with a credit card.

The rest of the customers pay with cash.

Work out how many customers pay with cash.

.....

(Total for Question 21 is 4 marks)

21 Mr Brown and his 2 children are going to London by train.

An adult ticket costs £24
A child ticket costs £12

Mr Brown has a Family Railcard.

Family Railcard gives

$\frac{1}{3}$ off adult tickets

60% off child tickets

Work out the total cost of the tickets when Mr Brown uses his Family Railcard.

£.....

(Total for Question 21 is 4 marks)

11 The pie chart shows information about how the students in Year 11 get to school.

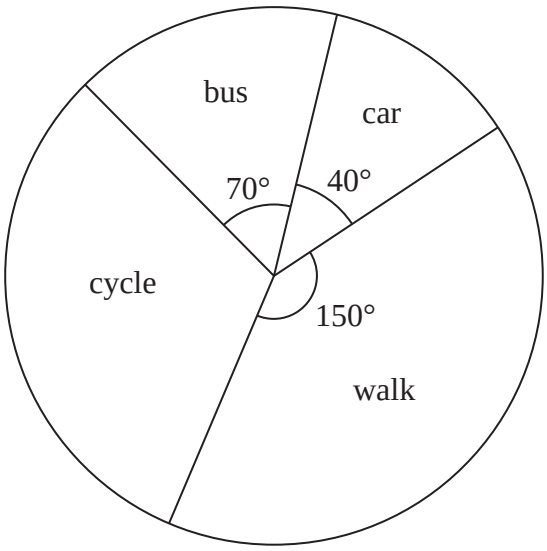


Diagram **NOT** accurately drawn

Mr Morley says, "Less than 10% of students in Year 11 get to school by car".

(a) Is Mr Morley correct?
You must explain your answer.

.....

.....

.....

(2)

50 students in Year 11 cycle to school.

(b) How many students in Year 11 walk to school?

.....

(3)

(Total for Question 11 is 5 marks)

11 (a) Write $\frac{2}{5}$ as a percentage.

.....%

(1)

(b) Work out an estimate for 113×185

.....

(2)

(Total for Question 11 is 3 marks)

Question 45

20 Glen buys four tickets for a concert.
Each ticket costs £54

Glen also has to pay a booking fee.
The booking fee is 5% of the total price of the tickets.

Work out the total amount Glen has to pay.

£.....

(Total for Question 20 is 3 marks)

11 Callum wins £300 in a raffle.

He gives 5% of the £300 to charity.

He saves $\frac{2}{5}$ of the £300

He uses the rest of the money to buy clothes.

Work out how much of the money Callum uses to buy clothes.

£.....

(Total for Question 11 is 3 marks)

Question 47

11 Work out 65% of 300

.....

(Total for Question 11 is 2 marks)

16 (a) Write 35 out of 65 as a fraction.
Give your fraction in its simplest form.

.....

(2)

(b) Work out £1.25 as a percentage of £8

.....%

(2)

(Total for Question 16 is 4 marks)

***19**

Nail Company
50 nails
£4.15 plus VAT at 20%

Hammer Company
25 nails
£2.95
Special offer Buy 100 get 25 free

Barak is going to buy 550 nails from one of these companies.

He wants to buy the nails at the cheaper cost.

Where should he buy the nails, from the Nail Company or from the Hammer Company?

(Total for Question 19 is 5 marks)

9 David is going to buy a cooker.
The cooker has a price of £320
David pays a deposit of 15% of the price of the cooker.

How much money does David pay as a deposit?

£.....

(Total for Question 9 is 2 marks)

3 (a) Write $\frac{7}{10}$ as a decimal.

.....

(1)

(b) Write 0.45 as a percentage.

.....%

(1)

(c) Write 30% as a fraction.
Give your fraction in its simplest form.

.....

(2)

(d) Write the number 2.738 correct to 2 decimal places.

.....

(1)

(Total for Question 3 is 5 marks)

***24** The table gives some information about student attendance at a school on Friday.

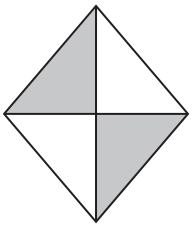
	Number of students		
Year	**Present**	**Absent**	**Total**
Year 7	192	16	208
Year 8	219	22	241
Year 9	234	28	262
Year 10	233	28	261
Year 11	214	24	238

The school has a target of 94% of students being present each day.

Did the school meet its target on Friday?

(Total for Question 24 is 3 marks)

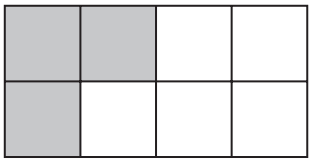
2 (a) Write down the percentage of this shape that is shaded.



..... %

(1)

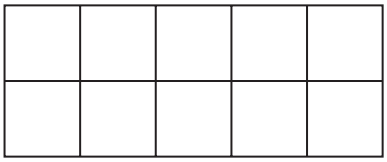
(b) Write down the fraction of this shape that is shaded.



.....

(1)

(c) Shade $\frac{1}{5}$ of this shape.



(1)

Here are some fractions.

$$\frac{3}{10} \qquad \frac{2}{8} \qquad \frac{4}{12} \qquad \frac{12}{40} \qquad \frac{5}{20}$$

Two of these fractions are equivalent to $\frac{1}{4}$

(d) Which two fractions?

..... and .....

(2)

(Total for Question 2 is 5 marks)

***24** Tom is going to buy 25 plants to make a hedge.

Here is information about the cost of buying the plants.

Kirsty's Plants	**Hedge World**
£2.39 each	Pack of 25 £52.50 plus VAT at 20%

Tom wants to buy the 25 plants as cheaply as possible.

Should Tom buy the plants from Kirsty's Plants or from Hedge World?
You must show all your working.

(Total for Question 24 is 5 marks)

***27** The diagram shows the floor plan of Mary's conservatory.

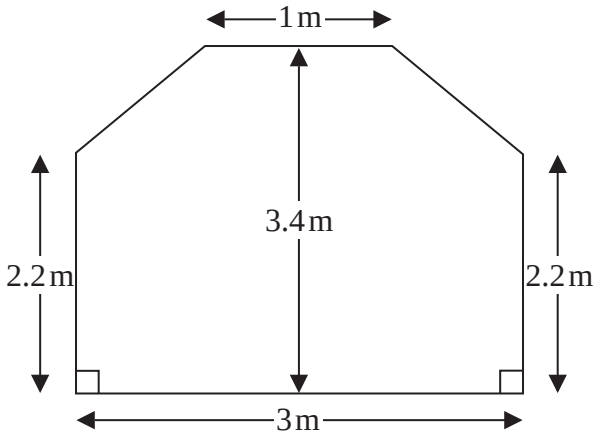


Diagram **NOT** accurately drawn

Mary is going to cover the floor with tiles.

The tiles are sold in packs.
One pack of tiles will cover $2\,m^2$
A pack of tiles normally costs £24.80
Mary gets a discount of 25% off the cost of the tiles.

Mary has £100

Does Mary have enough money to buy all the tiles she needs?
You must show all your working.

(Total for Question 27 is 5 marks)

Question 56

9 (a) Write $\frac{1}{8}$ as a percentage.

.....%

(1)

(b) Work out $\frac{5}{6}$ of 600

.....

(2)

(Total for Question 9 is 3 marks)

10 There are 105 cars in a college car park.

Teachers own 68 of the cars.
Students own 15 of the cars.

One of the cars in the car park is chosen at random.

(a) Write down the probability that this car is owned by a teacher.

.....

(1)

(b) Work out how many of the cars are **not** owned by either a teacher or by a student.

.....

(2)

(c) Work out what percentage of the cars in the car park are owned by students.
Give your answer correct to 1 decimal place.

..... %

(2)

(Total for Question 10 is 5 marks)

20 Jay is paid £2000 each month.

He saves 6% of the £2000 each month.

How many months will it take Jay to save £480?

..... months

(Total for Question 20 is 3 marks)

11 Kevin wants to get the ferry to Ireland.
He is going to drive from home to the ferry.

He has to get to the ferry at least three quarters of an hour before the ferry leaves.
The ferry leaves at 1 30 pm.

It will take Kevin 1 hour 50 minutes to drive to the ferry.

(a) What is the latest time he can leave home?

.....

(2)

A ferry crossing costs

£125 on Saturdays
£109 on Mondays

Kevin has a voucher for 15% off the cost of a ferry crossing on Mondays.

Kevin can go on Saturday without using the voucher or on Monday using the voucher.

(b) What is the difference in the cost of the ferry crossing if Kevin goes on Monday rather than on Saturday?

£.....

(3)

(Total for Question 11 is 5 marks)

11 (a) Work out 30% of 60

.....

(2)

(b) Work out $-15 \div -3$

.....

(1)

(c) Work out the value of $4 + 3 \times (9 - 2)$

.....

(1)

(Total for Question 11 is 4 marks)

17 Sean wants to go on holiday.
He is going to get a loan of £720 to help pay for the holiday.

Sean will have to pay back the £720 plus interest of 15%.
He will pay this back in 12 equal monthly installments.

How much money will Sean pay back each month?

£ .....

(Total for Question 17 is 4 marks)

8



(a) Write down the fraction of this shape that is shaded.

.....

(1)

(b) Shade 40% of this shape.



(1)

(c) Work out 0.75 of 200

.....

(2)

Michael says $\frac{5}{7} - \frac{3}{5} = \frac{2}{2}$

Michael is wrong.

*(d) Explain why.

(2)

(Total for Question 8 is 6 marks)

9 The table gives information about six energy companies.

Energy company	Gas price increase (%)	Electricity price increase (%)
E-top	9.4	7.7
TMF Energy	10.8	10.8
U Power	8.5	9.0
Plus Power	11.1	9.3
Local Gas	8.4	10.4
KLY	8.2	8.3

(a) Which energy company has the greatest percentage gas price increase?

.....

(1)

(b) Which energy company has the same percentage price increase for both gas and electricity?

.....

(1)

(c) Work out the range of the percentage gas price increases.

.....%

(2)

(Total for Question 9 is 4 marks)

24 Celina and Zoe both sing in a band.

One evening the band plays for 80 minutes.
Celina sings for 65% of the 80 minutes.

Zoe sings for $\frac{5}{8}$ of the 80 minutes.

Celina sings for more minutes than Zoe sings.

Work out for how many more minutes.
You must show all your working.

.....minutes

(Total for Question 24 is 4 marks)

15 Mr and Mrs Jones are planning a trip to Colwyn for a day.
There will be two adults and three children on the trip.

They are going from Crewe.
They must be back in Crewe by 7.30 pm.

They buy the cheapest possible tickets for the day trip.

A child ticket is 30% of the price of an adult ticket.

The tables show part of the train timetable between Crewe and Colwyn.
They also show the price of an adult ticket.

Crewe	0723	0823	0849	0923	0949	1023	1049
Colwyn	0850	0943	1016	1034	1104	1148	1200
Price per adult	£25.20	£25.20	£25.20	£25.20	£25.20	£24.00	£24.00

Colwyn	1527	1646	1737	1832	1853	1925	1951
Crewe	1654	1754	1918	1954	2018	2038	2129
Price per adult	£22.00	£22.00	£22.00	£22.00	£18.50	£18.50	£18.50

The family want to be in Colwyn for as long as possible.

*(a) Plan a schedule for the day trip.
You must show the times of both their train journeys.
Write down how long they can spend in Colwyn.

(4)

A child ticket is 30% of the price of an adult ticket.

(b) Calculate the total cost of the train tickets for the Jones family.

£.....

(3)

(Total for Question 15 is 7 marks)

9 (a) Write these numbers in order of size.
Start with the smallest number.

0.401 0.46 0.37 0.439

.....

(1)

(b) Write these numbers in order of size.
Start with the smallest number.

75% $\frac{7}{8}$ 0.25 $\frac{1}{2}$ $\frac{2}{3}$

.....

(2)

(Total for Question 9 is 3 marks)

20 Tom invested £1000 for 2 years with Bettabank.
He got 2.5% simple interest each year.

Jay invested £1000 for 2 years with Moneyplus.
She got a total of £60 interest for the 2 years.

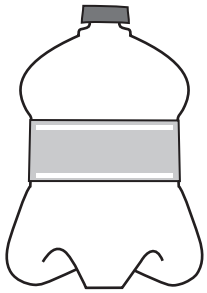
Show that Jay got the better investment.

(Total for Question 20 is 3 marks)

***22** A supermarket has two special offers on lemonade.

Bottles of lemonade

Special offer



15% off the normal price of each bottle

Cans of lemonade

Special offer



Buy 3 cans get 25p off the total cost

The normal price of a 2.5 litre bottle of lemonade is £1.60
The normal price of a 0.33 litre can of lemonade is 28p.

Jerry is going to buy 4 bottles of the lemonade on special offer or 30 cans of the lemonade on special offer.

Which special offer is the better value for money?

(Total for Question 22 is 5 marks)

2 (a) Write $\frac{1}{2}$ as a decimal.

.....

(1)

(b) Write 0.3 as a fraction.

.....

(1)

(c) Write 0.8 as a percentage.

.....%

(1)

(d) Work out 7.2×8

.....

(1)

(e) Work out $\frac{7}{12} - \frac{3}{12}$

Give your answer as a fraction in its simplest form.

.....

(2)

(Total for Question 2 is 6 marks)

16 The table gives some information about Charlie's spending last month.

Item	Percentage of total spending
rent	
food	15%
transport	12%
other	43%

(a) Work out what percentage of his total spending was on rent.

.....%

(1)

Charlie's total spending last month was £800

(b) How much did Charlie spend on food last month?

£.....

(2)

(Total for Question 16 is 3 marks)

23 The body mass index, B, for a person of mass m kg and height h metres is given by the formula

$$B = \frac{m}{h^2}$$

Usman has a mass of 50 kg.
He has a height of 1.57 m.

(a) Work out Usman's body mass index.
Give your answer correct to one decimal place.

.....

(2)

Tom's height is 1.80 m.
He wants his body mass index to be 21

(b) Work out the mass that will give Tom a body mass index of 21

..... kg

(2)

Tom is a ski jumper.

The maximum length of skis he can use is 145% of his height.
Tom's height is 1.80 m.

(c) Work out the maximum length of skis Tom can use.

..... m

(3)

(Total for Question 23 is 7 marks)

Question 72

10 There are 210 counters in a bag.

30% of these counters are red.

Work out the number of red counters in the bag.

.....

(Total for Question 10 is 2 marks)

Question 73

June 2016 | 5MB3F/01 | Original Q1 | Legacy

1 (a) Write $\frac{1}{4}$ as a decimal.

.....

(1)

(b) Write 0.7 as a fraction.

.....

(1)

(c) Write 42 out of 50 as a fraction.
Give your fraction in its simplest form.

.....

(2)

(d) Write 120 as a percentage of 240

..... %

(1)

(Total for Question 1 is 5 marks)

20 Bhavin buys a car in a sale.

Before the sale, the cost of the car was £6720
In the sale, the cost of every car is reduced by 20%.

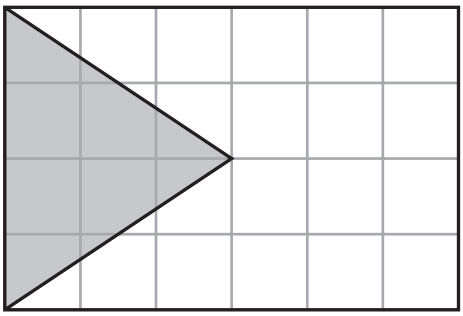
Bhavin pays a deposit of £1500
He will pay the rest of the cost in 24 equal monthly payments.

Work out the amount of each monthly payment.
You must show all your working.

£ .....

(Total for Question 20 is 5 marks)

12 The diagram shows a flag drawn on a grid of squares.



(a) Colin says that $\frac{1}{4}$ of the flag is shaded.

Colin is right.
Explain why.

.....

.....

.....

.....

(2)

(b) What percentage of the flag is **not** shaded?

..... %

(1)

(Total for Question 12 is 3 marks)

14 Write these numbers in order of size.
Start with the smallest number.

35% $\frac{3}{10}$ 0.32 $\frac{2}{5}$ 0.25

.....

(Total for Question 14 is 2 marks)

***24** Two shops, Mega Bathrooms and Bathroom Mart, each have a sale.

Mega Bathrooms	**Bathroom Mart**
Sale 60% off normal price **then** 15% off	Sale $\frac{2}{3}$ off normal price

Sally wants to buy some bathroom units.
The units have a normal price of £1500

Sally wants to buy the units as cheaply as possible.

Which shop should she buy the units from?
You must show all your working.

(Total for Question 24 is 4 marks)

19 The table shows information about the numbers of Year 10 students absent from Ellen's school last week.

	Monday	**Tuesday**	**Wednesday**	**Thursday**	**Friday**
Number of students	12	6	7	10	13

(a) Work out the mean number of Year 10 students absent each day.

.....

(2)

Ellen's school has a total of 240 Year 10 students.

(b) What percentage of Year 10 students were absent on Monday?

.....%

(2)

(Total for Question 19 is 4 marks)

26 There are 165 counters in a bag.

Each counter is either black or white.
There are twice as many black counters as white counters in the bag.

Martine takes 40% of the black counters from the bag.

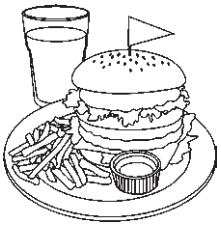
Work out the ratio of the number of black counters to the number of white counters now in the bag.
Give your ratio in its simplest form.

.....

(Total for Question 26 is 4 marks)

***16** Fraya is planning a chess competition.

Here are the costs.

Prizes	**Food and drink**	**Room**
First prize £50 Second prize £25 Third prize £15	 £225	£168 15% discount on Saturdays.

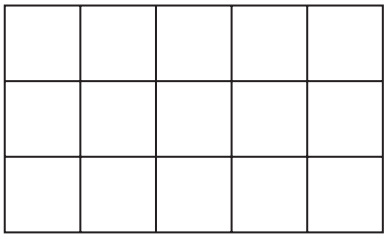
The competition will be on a Saturday.

There will be 48 players in the competition.
Each player will pay an entry fee of £9.50

Will Fraya get enough money from the entry fees to pay all the costs?
You must show your working.

(Total for Question 16 is 5 marks)

1 (a) Shade $\frac{3}{5}$ of this shape.



(1)

(b) Write 0.75 as a fraction.

.....

(1)

(c) Write 0.04 as a percentage.

.....%

(1)

(d) Write $\frac{9}{24}$ as a fraction in its simplest form.

.....

(1)

(Total for Question 1 is 4 marks)

17 A supermarket car park has 200 spaces.
10% of the spaces are for staff.

The other spaces are for disabled people, for parents and for other customers in the ratio 1 : 2 : 7

Paul is going to paint a sign for each of the spaces for staff, for disabled people and for parents.
He is **not** going to paint signs for the spaces for other customers.

Work out the total number of spaces Paul is going to paint a sign for.

.....

(Total for Question 17 is 4 marks)

***18** The normal price of a watch is £80 in two shops, Tymes and Sekonds.

Both shops have a sale.

In Tymes the normal price of the watch is reduced by £18
In Sekonds the normal price of the watch is reduced by 20%

Which shop is selling the watch for the cheaper price in the sale?
You must show your working.

(Total for Question 18 is 3 marks)

2 (a) Work out $\frac{1}{4}$ of £20

£.....
(1)

(b) Write 0.7 as a fraction.

.....
(1)

(c) Write 3% as a decimal.

.....
(1)

(d) Work out 20% of £80

£.....
(2)

(Total for Question 2 is 5 marks)

***19** Bill buys and sells laptops.

Last month Bill bought 50 laptops.
He paid £400 for each laptop.

He sold
40 of these laptops at a profit of 30% on each laptop
10 of these laptops at a profit of 15% on each laptop

Bill's target last month was to sell all 50 laptops for a total of at least £25 000

Did Bill reach this target?

(Total for Question 19 is 5 marks)

Question 86

20 Write these numbers in order of size.
Start with the smallest number.

$\frac{3}{7}$ 41% 0.45 $\frac{2}{5}$ 0.405

.....

(Total for Question 20 is 2 marks)

23 30% of the people at a concert are female.
1295 of the people at the concert are male.

Work out the number of people at the concert who are female.

.....

(Total for Question 23 is 3 marks)

26 George wants to watch all 23 games that a football team will play at home next season.

He can buy
a season ticket costing £425
or 23 separate tickets costing £24 each ticket.

What percentage of the total cost of 23 separate tickets does George save by buying a season ticket?

.....%

(Total for Question 26 is 3 marks)

Question 89

4 Write $\frac{4}{5}$ as a percentage.

.....%

(Total for Question 4 is 1 mark)

Question 90

June 2017 | 1MA1/1F | Original Q5

5 Work out 60% of 70

.....

(Total for Question 5 is 2 marks)

Question 91

20 Azmol is paid £1500 per month.
He is going to get a 3% increase in the amount of money he is paid.

Work out how much money Azmol will be paid per month after the increase.

£.....

(Total for Question 20 is 2 marks)

Question 92

18 On Saturday, some adults and some children were in a theatre.
The ratio of the number of adults to the number of children was 5 : 2

Each person had a seat in the Circle or had a seat in the Stalls.

$\frac{3}{4}$ of the children had seats in the Stalls.
117 children had seats in the Circle.

There are exactly 2600 seats in the theatre.

On this Saturday, were there people on more than 60% of the seats?
You must show how you get your answer.

(Total for Question 18 is 5 marks)

18 Daniel bakes 420 cakes.
He bakes only vanilla cakes, banana cakes, lemon cakes and chocolate cakes.

$\frac{2}{7}$ of the cakes are vanilla cakes.

35% of the cakes are banana cakes.

The ratio of the number of lemon cakes to the number of chocolate cakes is 4 : 5

Work out the number of lemon cakes Daniel bakes.

.....

(Total for Question 18 is 5 marks)

23 Harley's house has a value of £160 000 correct to 2 significant figures.

(a) (i) Write down the least possible value of the house.

£.....

(1)

(ii) Write down the greatest possible value of the house.

£.....

(1)

The value of Rita's house increased by 5%.
Her house then had a value of £210 000

(b) Work out the value of Rita's house before the increase.

£.....

(2)

(Total for Question 23 is 4 marks)

Question 95

November 2017 | 1MA1/1F | Original Q15

15 There are only red buttons, yellow buttons and orange buttons in a jar.
The number of red buttons, the number of yellow buttons and the number of orange buttons are in the ratio 7 : 4 : 9

Work out what percentage of the buttons in the jar are orange.

..... %

(Total for Question 15 is 2 marks)

16 Berenika wants to buy 35 T-shirts.

Each T-shirt costs £5.80
Berenika does the calculation $40 \times 6 = 240$ to estimate the cost of 35 T-shirts.

(a) Explain how Berenika's calculation shows the actual cost will be less than £240

.....

.....

(1)

There is a special offer.

T-shirts £5.80 each. Buy 30 or more T-shirts. Get 10% off the total cost.

(b) Work out the actual cost of buying 35 T-shirts using the special offer.

£.....

(4)

(Total for Question 16 is 5 marks)

Question 97

November 2017 | 1MA1/1F | Original Q30

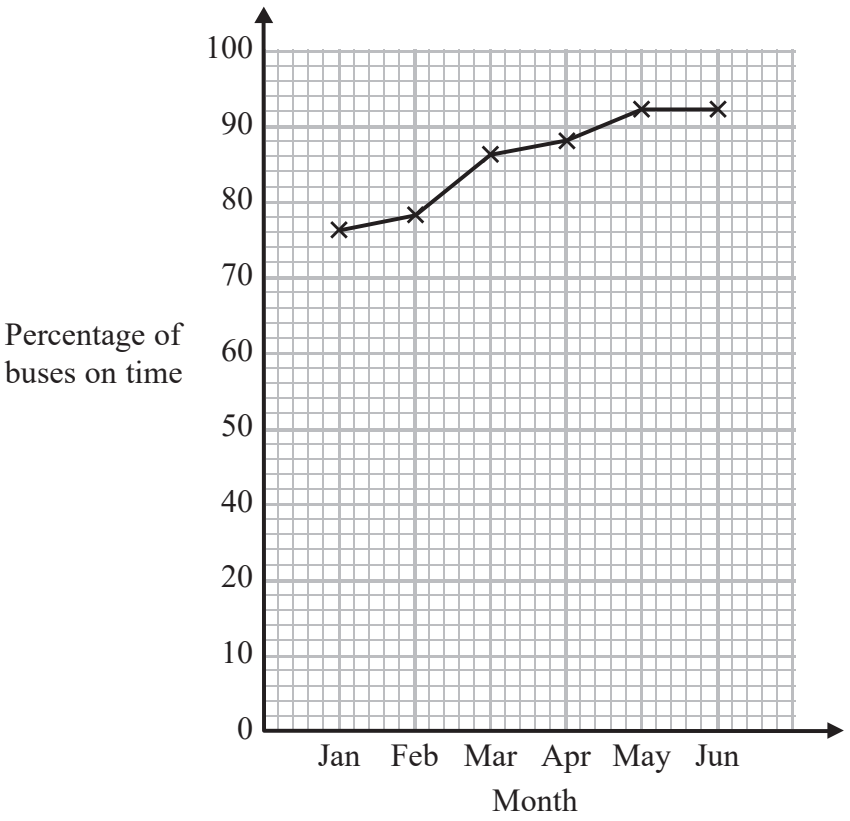
30 In a sale, the normal price of a book is reduced by 30%.
The sale price of the book is £2.80

Work out the normal price of the book.

£.....

(Total for Question 30 is 2 marks)

8 Chrissy drew this graph to show the percentage of buses that got to a bus stop on time for six months.



(a) Write down **one** thing that is wrong with the graph.

.....

.....

(1)

(b) Describe the trend in the percentage of buses that got to the bus stop on time.

.....

(1)

(Total for Question 8 is 2 marks)

Question 99

15 Mr Page uses oil to heat his home.

At the beginning of November there were 1000 litres of oil in his oil tank.

Mr Page bought enough oil to fill the tank completely.
He paid 50p per litre for this oil.
He paid a total amount of £750

At the end of February Mr Page had 600 litres of oil in the tank.
He bought enough oil to fill the tank completely.
The cost of oil had increased by 4%.

Work out the total amount Mr Page paid for the oil he bought in February.

£.....

(Total for Question 15 is 5 marks)

Question 100

17 Emily buys a pack of 12 bottles of water.
The pack costs £5.64

Emily sells all 12 bottles for 50p each.

Work out Emily's percentage profit.
Give your answer correct to 1 decimal place.

.....%

(Total for Question 17 is 3 marks)

11 Jack's driving school has two offers.

Offer 1	**Offer 2**
First driving lesson free All other driving lessons normal price	All driving lessons 5% off the normal price

The normal price of a driving lesson is £24

Douglas is going to have 12 driving lessons.

Which is the cheaper offer for 12 driving lessons, Offer 1 or Offer 2?
You must show how you get your answer.

(Total for Question 11 is 3 marks)

Question 102

June 2018 | 1MA1/1F | Original Q3

3 Write 20% as a fraction.

.....

(Total for Question 3 is 1 mark)

Question 103

June 2018 | 1MA1/1F | Original Q14

14 Gavin, Harry and Isabel each earn the same monthly salary.

Each month,

Gavin **saves** 28% of his salary and spends the rest of his salary

Harry spends $\frac{3}{4}$ of his salary and **saves** the rest of his salary

the amount of salary Isabel saves : the amount of salary she spends = 3 : 7

Work out who saves the most of their salary each month.
You must show how you get your answer.

(Total for Question 14 is 4 marks)

Question 104

June 2018 | 1MA1/1F | Original Q15

15 Work out 15% of 160 grams.

..... grams

(Total for Question 15 is 2 marks)

21 Renee buys 5 kg of sweets to sell.
She pays £10 for the sweets.

Renee puts all the sweets into bags.
She puts 250 g of sweets into each bag.
She sells each bag of sweets for 65p.

Renee sells all the bags of sweets.

Work out her percentage profit.

.....%

(Total for Question 21 is 4 marks)

Question 106

June 2018 | 1MA1/2F | Original Q1

1 Write $\frac{4}{50}$ as a percentage.

.....%

(Total for Question 1 is 1 mark)

23 Raya buys a van for £8500 plus VAT at 20%

Raya pays a deposit for the van.
She then pays the rest of the cost in 12 equal payments of £531.25 each month.

Find the ratio of the deposit Raya pays to the total of the 12 equal payments.
Give your answer in its simplest form.

.....

(Total for Question 23 is 5 marks)

25 A force of 70 newtons acts on an area of $20\,cm^2$

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

The force is increased by 10 newtons.
The area is increased by $10\,cm^2$

Helen says,

"The pressure decreases by less than 20%"

Is Helen correct?
You must show how you get your answer.

(Total for Question 25 is 3 marks)

Question 109

June 2018 | 1MA1/3F | Original Q2

2 Write 0.3 as a percentage.

.....%

(Total for Question 2 is 1 mark)

Question 110

2 Write 0.6 as a percentage.

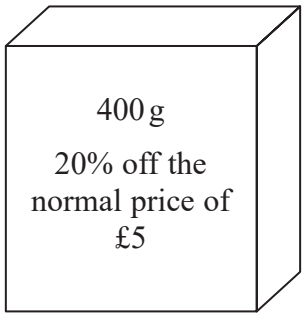
..... %

(Total for Question 2 is 1 mark)

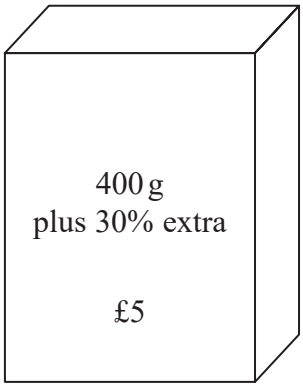
18 Food Mart and Jan's Store sell boxes of the same type of breakfast cereal.

Each shop has a special offer.

Food Mart



Jan's Store



Which box of cereal is the better value for money?
You must show your working.

(Total for Question 18 is 4 marks)

22 A bonus of £2100 is shared by 10 people who work for a company.
40% of the bonus is shared equally between 3 managers.
The rest of the bonus is shared equally between 7 salesmen.

One of the salesmen says,

"If the bonus is shared equally between all 10 people I will get 25% more money."

Is the salesman correct?
You must show how you get your answer.

(Total for Question 22 is 5 marks)

Question 113

11 Adam gets a bonus of 30% of £80
Katy gets a bonus of £28

Work out the difference between the bonus Adam gets and the bonus Katy gets.

£.....

(Total for Question 11 is 3 marks)

Question 114

November 2018 | 1MA1/2F | Original Q15

15 Remi invests £600 for 5 years in a savings account.
By the end of the 5 years he has received a total of £75 simple interest.

Work out the annual rate of simple interest.

.....%

(Total for Question 15 is 3 marks)

18 Bill wants to increase 150 by 3%
He writes down

$$150 \times 1.3 = 195$$

Bill's method is wrong.

(a) Explain why.

.....

.....

(1)

Sally wants to decrease 150 by 3%

(b) Complete this statement to show how Sally can decrease 150 by 3%

$150 \times$ ..... = ...

(1)

(Total for Question 18 is 2 marks)

Question 116

2 Write 3% as a fraction.

.....

(Total for Question 2 is 1 mark)

Question 117

November 2018 | 1MA1/3F | Original Q11

11 There are men and women at a meeting.

There are 28 women.
30% of the people at the meeting are men.

Work out the total number of people at the meeting.

.....

(Total for Question 11 is 3 marks)

18 Trevor buys a boat.
The cost of the boat is £14 200 plus VAT at 20%

Trevor pays a deposit of £5000
He pays the rest of the cost in 10 equal payments.

Work out the amount of each of the 10 payments.

£ .....

(Total for Question 18 is 4 marks)

Question 119

November 2018 | 1MA1/3F | Original Q21

21 Last year Jo paid £245 for her car insurance.
This year she has to pay £883 for her car insurance.

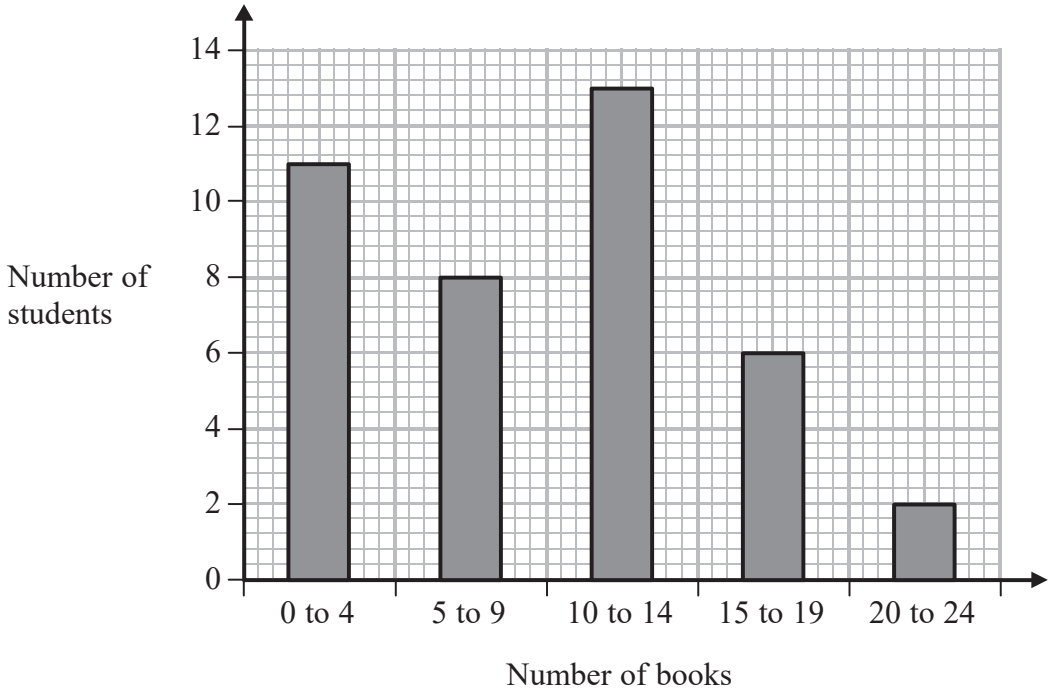
Work out the percentage increase in the cost of her car insurance.

.....%

(Total for Question 21 is 3 marks)

23 Fran asks each of 40 students how many books they bought last year.

The chart below shows information about the number of books bought by each of the 40 students.



(a) Work out the percentage of these students who bought 20 or more books.

.....%

(2)

(b) Show that an estimate for the mean number of books bought is 9.5
You must show all your working.

(4)

(Total for Question 23 is 6 marks)

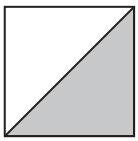
Question 121

2 Write 0.73 as a percentage.

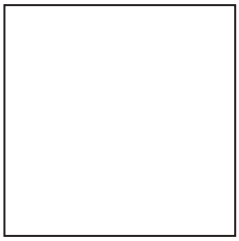
..... %

(Total for Question 2 is 1 mark)

20 Here are two squares, **A** and **B**.



A



B

The length of the side of square **A** is 50% of the length of the side of square **B**.

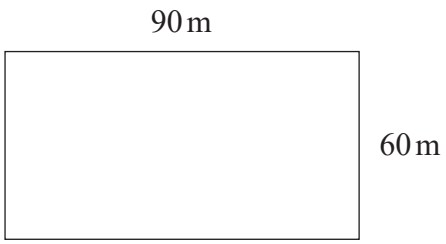
Express the area of the shaded region of square **A** as a percentage of the area of square **B**.

..... %

(Total for Question 20 is 3 marks)

Question 123

15 A garden is in the shape of a rectangle 90 m by 60 m.



Flowers are grown in 40% of the garden.
The rest of the garden is grass.

Work out the area of the garden that is grass.

.....m^2

(Total for Question 15 is 4 marks)

16 Four biased coins, A, B, C and D are thrown.

The probability that each coin will land on Heads is shown in the table.

Coin	Probability
A	0.33
B	0.033
C	$\frac{1}{3}$
D	30%

(a) (i) Which coin is least likely to land on Heads?

.....

(1)

(ii) Which coin is most likely to land on Heads?

.....

(1)

Julie says,

> "The probability that coin C will land on Heads is the same as the probability that coin C will land on Tails."

(b) Is she correct?
Give a reason for your answer.

.....

.....

.....

(1)

Coin B is going to be thrown 4000 times.

(c) Work out an estimate for the number of times coin B will land on Heads.

.....

(2)

(Total for Question 16 is 5 marks)

Question 125

5 Write 19% as a fraction.

.....

(Total for Question 5 is 1 mark)

Question 126

6 Work out 20% of 80

.....

(Total for Question 6 is 2 marks)

23 Costcorp sells packets of mints to shop owners.

On Monday three shop owners buy mints from Costcorp.
Each shop owner buys small packets, medium packets and large packets of mints.

Alan buys 400 packets of mints.
32 % are small packets.
40 % are large packets.

Beryl buys 500 packets of mints.

$\frac{3}{10}$ are small packets.

$\frac{1}{10}$ are large packets.

Charlie buys 150 small packets of mints so that

number of small packets : number of medium packets = 3 : 4

Work out the total number of medium packets of mints these shop owners buy.
You must show all your working.

.....

(Total for Question 23 is 5 marks)

Question 128

5 Write 15% as a decimal.

.....

(Total for Question 5 is 1 mark)

Question 129

3 Write 0.23 as a percentage.

..... %

(Total for Question 3 is 1 mark)

Question 130

November 2019 | 1MA1/2F | Original Q16

16 Maria invests £4500 in a savings account for 3 years.
The account pays simple interest at a rate of 1.8% per year.

Work out the total amount of interest Maria gets by the end of the 3 years.

£.....

(Total for Question 16 is 2 marks)

20 An estimate of the height, H metres, of a tall building can be found using the formula

$$H = 4f + 12$$

where the building is f floors high.

A tall building is 110 floors high.
The real height of the building is 442 m.

Seb uses the formula to find an estimate of the height of this building.
He then finds the difference between his estimate and the real height.

Show that this difference is less than 5% of the real height.

(Total for Question 20 is 4 marks)

15 There are 800 students at a school.
Each student has either a school dinner or a packed lunch.

31% of the students have packed lunches.

55% of the students are boys.
60% of the boys have school dinners.

How many girls have packed lunches?
You must show all your working.

.....

(Total for Question 15 is 4 marks)

Question 133

21 Franco buys a house for £146 500
He sells the house for £158 220

Calculate the percentage profit Franco makes.

..... %

(Total for Question 21 is 3 marks)

17 In a shop, a TV has a normal price of £500
The shop has a sale.

On Monday, the normal price of the TV is reduced by $\frac{1}{10}$ to give the sale price.

On Tuesday, the sale price of the TV is reduced by 20%

Chris wants to buy the TV.
He has £400 to spend on the TV.

Does Chris have enough money to buy the TV on Tuesday?
You must show how you get your answer.

(Total for Question 17 is 5 marks)

Question 135

November 2020 | 1MA1/1F | Original Q24

24 Sean pays £10 for 24 chocolate bars.

He sells all 24 chocolate bars for 50p each.

Work out Sean's percentage profit.

..... %

(Total for Question 24 is 3 marks)

Question 136

4 Write $\frac{1}{4}$ as a percentage.

.....%

(Total for Question 4 is 1 mark)

16 An exam has two papers, Paper 1 and Paper 2

Paper 1 has 60 marks.
Paper 2 has 90 marks.

The pass mark is $\frac{2}{3}$ of the total number of marks.

Danielle gets 70% of the marks for Paper 1

How many of the marks for Paper 2 must Danielle get in order to get the pass mark?

.....

(Total for Question 16 is 4 marks)

23 Carlo puts tins into small boxes and into large boxes.

He puts 6 tins into each small box.
He puts 20 tins into each large box.

Carlo puts a total of 3000 tins into the boxes so that

number of tins in small boxes : number of tins in large boxes = 2 : 3

Carlo says that less than 30% of the boxes filled with tins are large boxes.

Is Carlo correct?
You must show all your working.

(Total for Question 23 is 5 marks)

Question 139

November 2020 | 1MA1/3F | Original Q3

3 Write 40% as a fraction.

.....

(Total for Question 3 is 1 mark)

19 Here are the types of sandwiches sold in a cafe last week.

Sandwiches
Tuna
Cheese
Chicken
Egg

56 tuna sandwiches were sold.
This was 40% of the total number of sandwiches sold.

(a) Work out the total number of sandwiches sold.

.....

(2)

Of the 56 tuna sandwiches sold, 18 were sold on Friday.

(b) Write 18 as a percentage of 56
Give your answer correct to the nearest whole number.

..... %

(2)

(Total for Question 19 is 4 marks)

Question 141

1 Write $\frac{3}{10}$ as a percentage.

.....%

(Total for Question 1 is 1 mark)

Question 142

November 2021 | 1MA1/1F | Original Q19

19 Robin buys a watch for £80
He sells the watch for £56

Work out his percentage loss.

.....%

(Total for Question 19 is 3 marks)

23 At the end of 2017

the value of Tamara's house was £220 000
the value of Rahim's house was £160 000

At the end of 2019

the value of Tamara's house had decreased by 20%
the value of Rahim's house had increased by 30%

At the end of 2019, whose house had the greater value?
You must show how you get your answer.

(Total for Question 23 is 4 marks)

Question 144

1 Write 31% as a fraction.

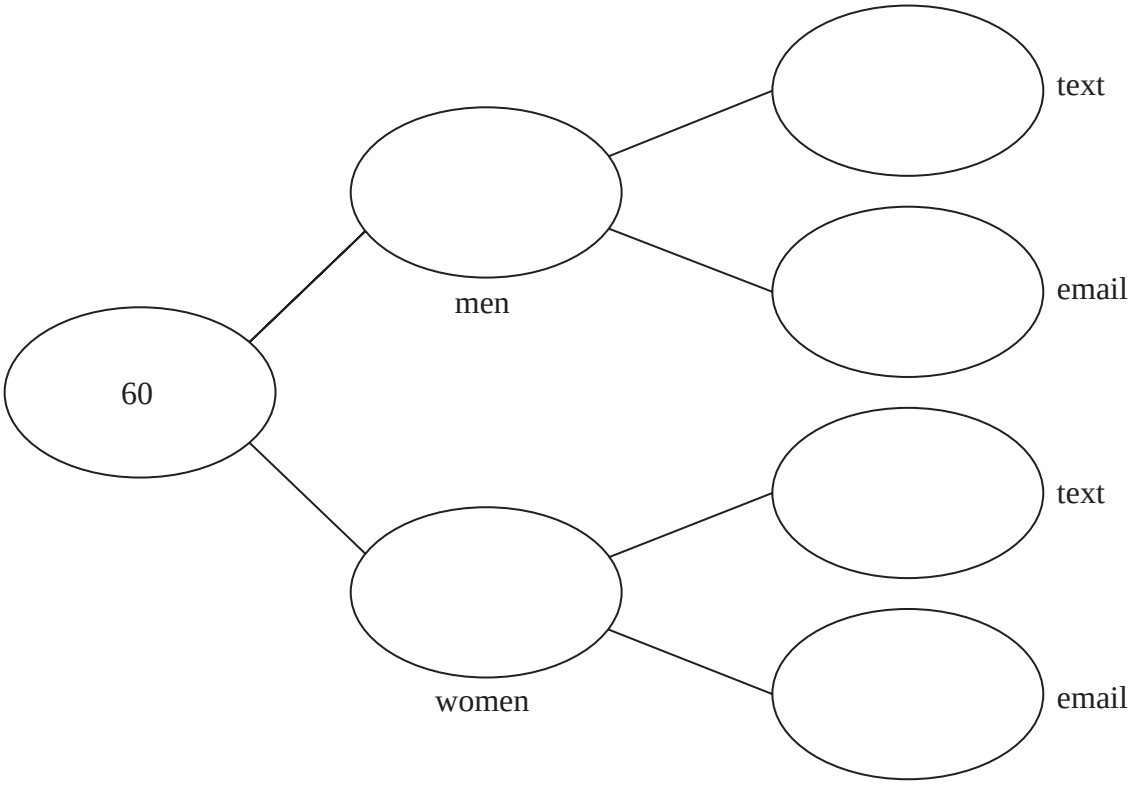
.....

(Total for Question 1 is 1 mark)

17 60 people are asked if they prefer to text or to email their friends.

38 of the people are women and the rest are men.
15 of the men prefer to email their friends.
60% of the people prefer to text their friends.

Complete the frequency tree for this information.



(Total for Question 17 is 5 marks)

Question 146

28 In a sale, the normal price of a boat is reduced by 15%
The sale price of the boat is £272 000

Work out the normal price of the boat.

£.....

(Total for Question 28 is 2 marks)

Question 147

1 Write 45% as a decimal.

.....

(Total for Question 1 is 1 mark)

13 In the Northern hemisphere the ratio of the area of land to the area of water is 2 : 3

(a) Work out what percentage of the area of the Northern hemisphere is land.

.....%

(2)

20% of the area of the Southern hemisphere is land.

(b) Work out the ratio of the area of land to the area of water in the Southern hemisphere.

.....

(2)

(Total for Question 13 is 4 marks)

Question 149

5 Write these numbers in order of size.
Start with the smallest number.

$\frac{1}{2}$ 0.55 45%

.....

(Total for Question 5 is 1 mark)

19 Increase 240 by 20%

.....

(Total for Question 19 is 3 marks)

25 A delivery company has a total of 160 cars and vans.

the number of cars : the number of vans = 3 : 7

Each car and each van uses electricity or diesel or petrol.

$\frac{1}{8}$ of the cars use electricity.
25% of the cars use diesel.
The rest of the cars use petrol.

Work out the number of cars that use petrol.
You must show all your working.

.....

(Total for Question 25 is 5 marks)

Question 152

June 2022 | 1MA1/2F | Original Q5

5 Write 0.4 as a percentage.

.....%

(Total for Question 5 is 1 mark)

19 Nimra buys a 3 kg box of sweets for £17.60

She puts the sweets into bags to sell.
Each bag contains 150 g of sweets.

Nimra fills as many bags as possible.
She will sell each bag for the same price.

Nimra wants to make a profit of at least 35%

Assuming she sells all the bags,
what is the lowest price Nimra should charge for each bag?

£.....

(Total for Question 19 is 5 marks)

Question 154

1 Write 35% as a fraction.

.....

(Total for Question 1 is 1 mark)

19 There are 400 counters in a box.
The counters are red or yellow or green.

$\frac{3}{8}$ of the counters are red.

82 of the counters are yellow.

What percentage of the counters are green?

.....%

(Total for Question 19 is 4 marks)

25 Jo is going to buy 15 rolls of wallpaper.

Here is some information about the cost of rolls of wallpaper from each of two shops.

Chic Decor
3 rolls for £36

Style Papers
Pack of 5 rolls normal price £70
12% off the normal price

Jo wants to buy the 15 rolls of wallpaper as cheaply as possible.

Should Jo buy the wallpaper from Chic Decor or from Style Papers?
You must show how you get your answer.

(Total for Question 25 is 4 marks)

Question 157

30 The value of Michelle's car has decreased by 15%
The car now has a value of £13 600

Work out the value of Michelle's car before the decrease.

£.....

(Total for Question 30 is 2 marks)

12 Elena spent 120 minutes at a sports centre.

She played badminton for 50 minutes.

She used the swimming pool for $\frac{1}{6}$ of the 120 minutes.

She used the gym for 20% of the 120 minutes.
She then spent the rest of the 120 minutes in the cafe.

(a) Work out the total time, in minutes, that Elena spent in the cafe.

..... minutes
(4)

Elena got to the sports centre at 1.30 pm.
She had asked her friend to meet her in the cafe at 3 pm.

(b) Did Elena get to the cafe by 3 pm?
Give a reason for your answer.

.....

.....

.....

(1)

(Total for Question 12 is 5 marks)

Question 159

November 2022 | 1MA1/1F | Original Q18

18 There are 240 cans of drink on a shelf.
Each can contains cola or lemonade or orange.

$$\text{the number of cans of cola} : \text{the number of cans of lemonade} : \text{the number of cans of orange} = 5:3:2$$

$\frac{1}{2}$ of the cans of lemonade and $\frac{1}{12}$ of the cans of orange are removed from the shelf.

Work out the number of cans of cola as a percentage of the total number of cans of drink remaining on the shelf.

.....%

(Total for Question 18 is 5 marks)

Question 160

2 Write 37% as a fraction.

.....

(Total for Question 2 is 1 mark)

Question 161

November 2022 | 1MA1/2F | Original Q11

11 214 people go on a school trip.
The people on the trip are either adults or children.

There are 14 adults on the trip.
35% of the children on the trip are wearing a hat.

Find the number of children on the trip who are **not** wearing a hat.

.....

(Total for Question 11 is 4 marks)

Question 162

November 2022 | 1MA1/2F | Original Q26

26 The population of a town increased by 9% between 2018 and 2019
The population in 2019 was 165 680

Calculate the population in 2018

.....

(Total for Question 26 is 2 marks)

Question 163

1 Write 38% as a decimal.

.....

(Total for Question 1 is 1 mark)

14 Last week, 73% of the tickets sold at a cinema were adult tickets.

(a) What percentage of the tickets sold were **not** adult tickets?

.....%

(1)

Some people watched a film at the cinema.

number of adults : number of children = 2 : 5

(b) What fraction of these people were adults?

.....

(1)

On Friday,

500 people watched a film at the cinema.
70% of these people were children.

On Saturday,

720 people watched the film at the cinema.
$\frac{5}{8}$ of these people were children.

Kasim thinks more children watched the film on Friday than on Saturday.

(c) Is Kasim correct?
You must show how you get your answer.

(3)

(Total for Question 14 is 5 marks)

Question 165

17 There are 200 counters in a bag.

38 counters are red.
52 counters are blue.

The rest of the counters are yellow or green.
There are the same number of yellow counters as green counters.

What percentage of the counters in the bag are yellow?

.....%

(Total for Question 17 is 4 marks)

26 The price of a holiday increases by 20%
This 20% increase adds £240 to the price of the holiday.

Work out the price of the holiday before the increase.

£.....

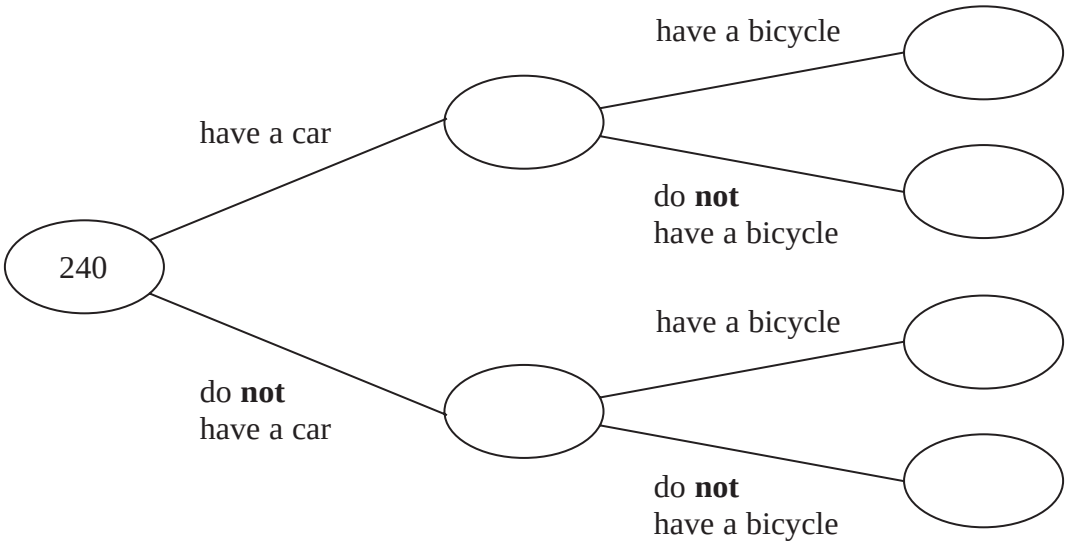
(Total for Question 26 is 2 marks)

19 240 people work at a factory.

Of these people

150 have a car
110 have a bicycle
65 of the people who have a bicycle do **not** have a car.

(a) Use this information to complete the frequency tree.



(3)

(b) What percentage of the 150 people who have a car also have a bicycle?

.....%

(2)

(Total for Question 19 is 5 marks)

25 Last year a family recycled 800 kg of household waste.
57% of this waste was paper and glass.

weight of paper recycled : weight of glass recycled = 12 : 7

Calculate the weight of glass the family recycled.

..... kg

(Total for Question 25 is 3 marks)

Question 169

2 Write $\frac{3}{10}$ as a percentage.

.....%

(Total for Question 2 is 1 mark)

19 Jenny invests £3000 for 6 years at y% simple interest per year.

At the end of the 6 years, Jenny has received a total of £450 in interest.

Work out the value of y.

$y =$ .....

(Total for Question 19 is 3 marks)

21 Jonny wants to know how much coffee he will need for 800 people at a meeting.

Each person who drinks coffee will drink 2 cups of coffee.
10.6 g of coffee is needed for each cup of coffee.

Jonny assumes 68% of the people will drink coffee.

(a) Using this assumption, work out the amount of coffee Jonny needs.
Give your answer correct to the nearest gram.

..... g
(4)

Jonny's assumption is wrong.
72% of the people will drink coffee.

(b) How does this affect your answer to part (a)?

.....

.....

.....

(1)

(Total for Question 21 is 5 marks)

Question 172

15 Steve is buying a car.
The car costs £12 000

Steve pays 25% of the cost as a deposit.
He pays the rest of the cost in 20 equal monthly payments.

How much is each monthly payment?

£.....

(Total for Question 15 is 4 marks)

16 Shah takes an exam.
The exam is out of 60 marks.

Shah needs to score at least 70% of the marks to pass the exam.
He scores 45 marks.

Show that Shah passes the exam.

(Total for Question 16 is 2 marks)

Question 174

5 Work out 50% of 240

.....

(Total for Question 5 is 1 mark)

15 Martha and Nabeel share £120

Martha gets 72% of the money.
She spends 30% of the money she gets.

How much money does Martha have left?

£.....

(Total for Question 15 is 3 marks)

23 Karen is organising a party for a charity.

She spends
£100 on food
£120 on a hall
£80 on a DJ.

Karen sells 54 tickets for the party.
Each ticket costs £7.50

Work out the percentage profit Karen makes for the charity.

.....%

(Total for Question 23 is 4 marks)

Question 177

1 Write 35% as a decimal.

.....

(Total for Question 1 is 1 mark)

Question 178

November 2023 | 1MA1/3F | Original Q14

14 Write the following numbers in order of size.
Start with the smallest number.

$\frac{7}{12}$ 0.56 57% $\frac{6}{11}$ 0.558

.....

(Total for Question 14 is 2 marks)

Question 179

2 Write 0.3 as a percentage.

.....%

(Total for Question 2 is 1 mark)

26 Kasim has some small jars, some medium jars and some large jars.
He has a total of 400 jars.

$\frac{3}{8}$ of the 400 jars are empty.

For the empty jars,

number of small jars : number of medium jars = 3 : 4
number of medium jars : number of large jars = 1 : 2

Work out the percentage of Kasim's jars that are empty small jars.

.....%

(Total for Question 26 is 5 marks)

Question 181

27 In a sale, normal prices are reduced by 30%

The sale price of a TV is £280

Work out the normal price of the TV.

£.....

(Total for Question 27 is 2 marks)

18 Mrs Simpson organised a school trip for 66 children.

The total cost of the trip was £1800
The school paid 56% of the total cost.
The rest of the total cost was divided equally between the 66 children.

Work out how much money each child paid.

£.....

(Total for Question 18 is 3 marks)

25 Andy, Luke and Tina share some sweets in the ratio $1:6:14$

Tina gives $\frac{3}{7}$ of her sweets to Andy.

Tina then gives $12\frac{1}{2}\%$ of the rest of her sweets to Luke.

Tina says,

"Now all three of us have the same number of sweets."

Is Tina correct?
You must show how you get your answer.

(Total for Question 25 is 4 marks)

Question 184

June 2024 | 1MA1/3F | Original Q1

1 Write 23% as a fraction.

.....

(Total for Question 1 is 1 mark)

Question 185

15 Which is greater

15% of 88 **or** 20% of 62?

You must show all your working.

(Total for Question 15 is 3 marks)

Question 186

1 Write 25% as a decimal.

.....

(Total for Question 1 is 1 mark)

Question 187

1 Write 17% as a fraction.

.....

(Total for Question 1 is 1 mark)

12 180 tickets are sold for a concert.

60% of the tickets are child tickets.
The rest of the tickets are adult tickets.

The total cost of the 180 tickets is £1944
Each child ticket costs £8

Work out the cost of each adult ticket.

£.....

(Total for Question 12 is 4 marks)

17 Last year Emma's car insurance cost £285

This year her car insurance costs 7% less.

(a) Work out the cost of Emma's car insurance this year.

£.....

(3)

Peter sells bikes.

Each month he is paid £1700 plus a bonus.
The bonus is 5% of the total value of the bikes he sells that month.

Last month Peter was paid £2100

(b) Work out the total value of the bikes he sold last month.

£.....

(3)

(Total for Question 17 is 6 marks)

25 The cost of a first class stamp increased from 76p to 85p.
The cost of a second class stamp increased from 65p to 66p.

Filip says,

> "The percentage increase in the cost of a first class stamp is more than 7 times the percentage increase in the cost of a second class stamp."

Is Filip correct?
You must show all your working.

(Total for Question 25 is 4 marks)

9 There are 200 people at a party.

$\frac{2}{5}$ of the people are children.
The rest of the people are adults.

35% of the children are vegetarian.
45% of the adults are vegetarian.

How many of the people are **not** vegetarian?

.....

(Total for Question 9 is 5 marks)

21 Robyn buys a total of 240 pens and pencils, where

$$\text{number of pens} : \text{number of pencils} = 3 : 5$$

Robyn pays 9p for each pen.
She sells each pen for 11p.

Robyn pays 6p for each pencil.
She sells each pencil for 10p.

Robyn sells all of the pens and pencils.

Work out Robyn's percentage profit.
Give your answer correct to 1 decimal place.
You must show all your working.

.....%

(Total for Question 21 is 5 marks)

Question 193

June 2025 | 1MA1/2F | Original Q3

3 Write 0.7 as a percentage.

.....%

(Total for Question 3 is 1 mark)

Question 194

June 2025 | 1MA1/2F | Original Q10

10 20% of cars sold last year were electric cars.

Write down the ratio of

the number of electric cars sold last year to the number of non-electric cars sold last year.

Give your ratio in its simplest form.

.....

(Total for Question 10 is 2 marks)

Question 195

17 A village hall needs a new heating system.
The cost of the heating system is £9000

A community grant will pay 85% of this cost.
The village council will pay the rest of the cost.

Work out how much the village council will pay.

£.....

(Total for Question 17 is 3 marks)

3 Write 19% as a fraction.

.....

(Total for Question 3 is 1 mark)

15 There are 200 counters in a bag.

87 of the counters are green.
24 of the counters are yellow.

(a) What fraction of the counters are green?

.....

(1)

(b) What percentage of the counters are yellow?

.....%

(1)

(Total for Question 15 is 2 marks)

18 Amy buys a car.
The car costs £12 000

Amy pays a deposit of 20% of the cost.
She pays the rest of the cost in 24 equal monthly payments.

Amy says that each monthly payment is less than £450

Is Amy correct?
You must show how you get your answer.

(Total for Question 18 is 3 marks)

24 Mia pays £25 for 200 oranges.

Mia puts the oranges into bags.
She puts 5 oranges into each bag.

Mia sells all the bags of oranges for £1 each bag.

Work out Mia's percentage profit.

.....%

(Total for Question 24 is 3 marks)