

## Non-Calculator

**Q1.**

There are 20 students.  
12 are boys.

What fraction are boys?  
Circle your answer.

$$\frac{2}{3}$$

$$\frac{2}{5}$$

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

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

(Total 1 mark)

**Q2.**

Which of these is smallest  
25 centimetres as a fraction of 2 metres  
or 30 grams as a fraction of 2 kilograms  
or 11 pence as a fraction of £1?

You **must** show your working.

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Answer \_\_\_\_\_

(Total 5 marks)

**Q3.**

Here are the instructions on a bottle of fruit squash.

To make fizzy juice  
mix 2 parts fruit squash  
with 7 parts lemonade



- (a) How much fruit squash is needed to make 450 ml of fizzy juice?

\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_ ml

(2)

- (b) Tom has 80 ml of fruit squash.  
He also has 210 ml of lemonade.

What is the **maximum** amount of fizzy juice he can make?

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\_\_\_\_\_

\_\_\_\_\_

Answer \_\_\_\_\_ ml

(3)

(Total 5 marks)

**Q4.**

Smith and Jones both play for a local football team.

	Goals scored	Games played
<b>Smith</b>	6	27
<b>Jones</b>	8	32

Which player has the higher proportion of goals scored per game played?  
You **must** show your working.

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Answer \_\_\_\_\_

(Total 3 marks)

**Q5.**

Divide 270 in the ratio 3 : 2 : 1

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Answer \_\_\_\_\_ : \_\_\_\_\_ : \_\_\_\_\_

(Total 3 marks)



**Q8.**

Here is a list of ingredients.

Serves 4 people	
Bacon	50 g
Minced beef	450 g
Chopped tomatoes	400 g
Button mushrooms	100 g
Beef stock	125 ml

Marco is making a meal for 14 people using these ingredients.

Work out the number of grams of minced beef he needs.

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Answer \_\_\_\_\_ g

(Total 3 marks)

**Q9.**

$$\frac{1}{2} : \frac{2}{3} = x : 1$$

Circle the value of  $x$ .

$\frac{1}{3}$

$\frac{3}{5}$

$\frac{3}{4}$

$\frac{4}{3}$

(Total 1 mark)

**Q10.**

A bag contains red counters and blue counters in the ratio 3 : 5

What fraction of the counters are red?

Circle your answer.

$\frac{1}{3}$

$\frac{3}{5}$

$\frac{3}{8}$

$\frac{5}{8}$

(Total 1 mark)

**Q11.**

Janet and Robin buy raffle tickets.  
The prize is £ 120.

Janet buys 5 tickets.  
Robin buys 1 ticket.

- (a) Who has the better chance of winning?  
Give a reason for your answer.

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(1)

- (b) In total, 300 tickets were sold.

What is the probability that Janet wins?  
Give your answer as a fraction in its simplest form.

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Answer \_\_\_\_\_

(2)

- (c) Janet wins the prize of £ 120.  
She shares it with Robin in the ratio 5 : 1

Robin gets the smaller share.

How much does he get?

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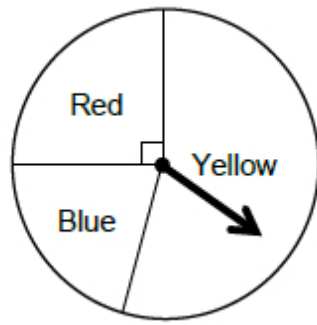
Answer £ \_\_\_\_\_

(2)

**(Total 5 marks)**

**Q12.**

In a game, a fair spinner has three sections.



Not drawn accurately

- (a) Joe uses this method to work out the probability of getting two reds from two spins.

He writes,

*There are three colours, so the probability of the spinner landing on red is  $\frac{1}{3}$   
 $\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$ , so the probability is  $\frac{2}{3}$*

Make **two** criticisms of Joe's method.

Criticism 1 .....

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Criticism 2 .....

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(2)

- (b) The probability of getting two blues from two spins is  $\frac{1}{25}$

Work out the angle of the blue sector.

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Answer \_\_\_\_\_ degrees

(3)

(Total 5 marks)

## Calculator

### Q13.

A train has 1 first-class carriage and 6 standard carriages.

The first-class carriage has 64 seats.

$\frac{3}{8}$  are being used.

Each standard carriage has 78 seats.

$\frac{7}{13}$  in each carriage are being used.

Are **more than** half the seats on the train being used?

You **must** show your working.

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Answer \_\_\_\_\_

(Total 5 marks)

### Q14.

A builder mixes sand and cement in the ratio 4 : 1

(a) Altogether he mixes 250 kg

How much sand and cement does he use?

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Sand \_\_\_\_\_ kg

Cement \_\_\_\_\_ kg

(2)



- (b) Cement is sold in 25 kg bags.

Work out the **maximum** amount of mix that the builder can make with 3 bags of cement.

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Answer \_\_\_\_\_ kg

(3)

(Total 5 marks)

**Q15.**

- (a) A shop sells red roses and white roses in the ratio 7 : 2  
One day 392 red roses are sold.

How many white roses are sold?

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Answer \_\_\_\_\_

(2)

- (b) A different shop sells red roses and white roses in the ratio 8 : 3

What is the probability that a rose, sold at random, is red?

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Answer \_\_\_\_\_

(1)

(Total 3 marks)

**Q16.**

- (a) Divide £720 in the ratio 5 : 1

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Answer £ \_\_\_\_\_ and £ \_\_\_\_\_

(2)

- (b) Sarah has £135  
Gemma has £70  
Beth has £35

Sarah gives some money to Gemma and Beth.

The ratio of the amount of money Sarah, Gemma and Beth have **now** is 3 : 2 : 1

How much money did Sarah give to Gemma?

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Answer £ \_\_\_\_\_

(4)

(Total 6 marks)

**Q17.**

At a concert the ratio of men to women is 5 : 3  
The ratio of women to children is 7 : 4

Show that more than half of the people at the concert are men.

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(Total 3 marks)

**Q18.**

A doctor claims that the probability of having regular illness is doubled if you have poor sleep rather than good sleep.

In a survey, 16% of people with poor sleep had regular illness.

Here are the results for people with good sleep.

**Good Sleep**

	Number of people
Regular illness	24
Not regular illness	276

Comment on the doctor's claim.  
You **must** show your working.

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(Total 3 marks)

**Q19.**

Concrete is made by mixing cement, sand and gravel in the ratio 1 : 2 : 4  
A builder mixes 455 kg of concrete.

How much gravel does he need?

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Answer \_\_\_\_\_ kg

(Total 3 marks)

**Q20.**

Before an election,  
23% said they would vote for A  
9% said they would vote for B  
20% said they would **not** vote.

These all voted as they said.  
The rest of the population actually voted for A and B in the ratio 1 : 2

- (a) Who got the most votes?  
You **must** show your working.

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Answer \_\_\_\_\_

(4)

- (b) 612 people did **not** vote.  
How many did vote?

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Answer \_\_\_\_\_

(2)

(Total 6 marks)

**Q21.**

120 adults complete a survey.  
45 are men.

Write the ratio      men : women      in its simplest form.

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q22.**

$a$ ,  $b$  and  $c$  are positive integers.  
 $a : b = 5 : 6$     and     $b : c = 8 : 11$

Work out the **smallest** possible value of     $a + b + c$

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Answer \_\_\_\_\_

**(Total 2 marks)**

**Q23.**

Oil is sold in two sizes.



Which size is better value for money?  
You **must** show your working.

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Answer \_\_\_\_\_

**(Total 4 marks)**

**Q24.**

1 mile = 5280 feet

1 foot = 12 inches

1 inch = 2.54 cm

Use the given conversions to show that 1 mile is approximately 1600 metres.

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(Total 3 marks)

**Q25.**

Dave goes Go-Kart racing with his friends.

These tables show information about his races on both dry and wet tracks.

**Dry track**

Number of races	Number of wins
64	16

**Wet track**

Number of races	Number of wins
40	12

On which type of track is he more successful?  
You **must** show your working.

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(Total 3 marks)

**Q26.**

2.5 kg of carrots cost £1.70

Work out the cost of 3.25 kg of carrots.

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Answer £ \_\_\_\_\_

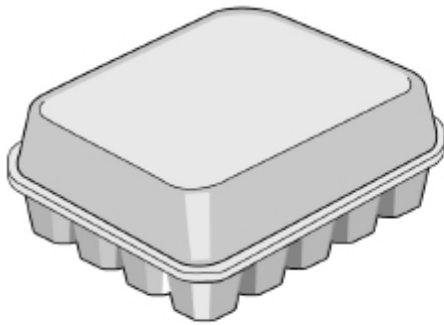
**(Total 3 marks)**



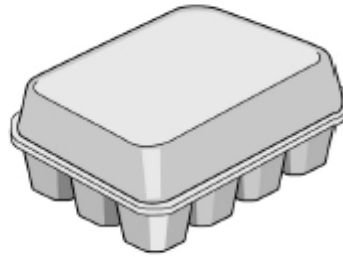
**Q27.**

A farmer has 580 eggs to put into boxes.

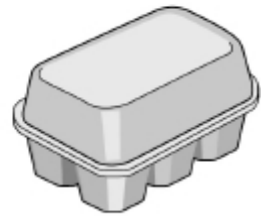
The boxes come in three sizes.



20 eggs



12 eggs



6 eggs

He wants

at least 10 boxes of 20 eggs

at least 15 boxes of 12 eggs

at least 25 boxes of 6 eggs.

The farmer fills 54 boxes with the 580 eggs.

Show how he does this.

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Answer \_\_\_\_\_ boxes of 20 eggs

\_\_\_\_\_ boxes of 12 eggs

\_\_\_\_\_ boxes of 6 eggs

**(Total 5 marks)**

**Q28.**

The average age of teachers at a school is 36 years.

Mr Smith's age is  $\frac{11}{9}$  of the average.

How old is Mr Smith?

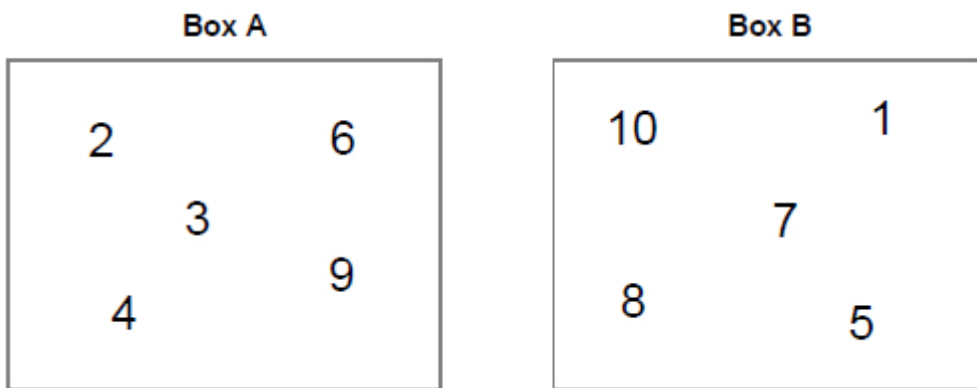
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Answer \_\_\_\_\_ years  
(Total 2 marks)

**Q29.**



**Two** of the numbers move from Box A to Box B.

The total of the numbers in Box B is now **four** times the total of the numbers in Box A.

Which **two** numbers move?

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Answer \_\_\_\_\_ and \_\_\_\_\_  
(Total 2 marks)

**Q30.**

John buys a phone.  
He looks at the cost of 60 applications (apps).

Cost of application	Number of applications
free (0p)	30
59p	16
99p	5
£1.29	2
£1.49	1
£1.99	6

- (a) John buys all the applications costing £1.99

How much does he pay?

\_\_\_\_\_

Answer £ \_\_\_\_\_

(2)

- (b) What fraction of the 60 applications are free?  
Give your answer in its simplest form.

\_\_\_\_\_

Answer \_\_\_\_\_

(2)

- (c) What percentage of the 60 applications cost £1.99?

\_\_\_\_\_

\_\_\_\_\_

Circle the correct answer.

6%      10%      16%      60%

(1)

- (d) John wants to know the make of phone used by people in his class.

Write down a suitable data collection method.

Answer \_\_\_\_\_

(1)

(Total 6 marks)

**Q31.**

Year 10 has 210 students.  
112 are boys.

Year 11 has 240 students.  
132 are boys.

Which year group has the greater proportion of boys?  
You **must** show your working.

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(Total 4 marks)

**Q32.**

Three cups, A, B and C, contain only salt and water.

The different mixtures are

**A** salt : water = 3 : 22

**B** salt =  $\frac{1}{8}$

**C** salt = 12.75%

Which cup has the greatest proportion of salt?

You **must** show your working.

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Answer \_\_\_\_\_

(Total 3 marks)

**Q33.**

At a school

number of boys : number of girls = 9 : 7

There are 116 **more** boys than girls.

Work out the total number of students at the school.

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Answer \_\_\_\_\_

**(Total 3 marks)**

**Q34.**

The ratio of the number of boys to girls at a party is 3 : 4

Six boys leave the party.

The ratio of the number of boys to girls at the party is now 5 : 8

Work out the number of girls at the party.

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Answer \_\_\_\_\_

**(Total 3 marks)**