

1.6

Percentages

Mr Faruk

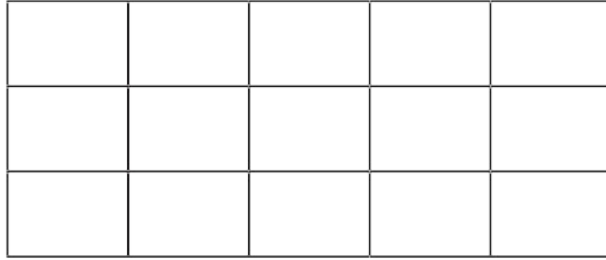
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1

(g) Shade 20% of this shape.



(1)

- 9 Sophie makes 160 cupcakes for a charity cake stall.

30% of the cupcakes are chocolate.

$\frac{3}{8}$ of the cupcakes are lemon.

The rest of the cupcakes are blueberry.

Work out the number of blueberry cupcakes Sophie makes.

(Total for Question 9 is 4 marks)

21 In India,

62 million mobile phones were sold from 1st October 2014 to 31st December 2014

14.5% fewer mobile phones were sold from 1st January 2015 to 31st March 2015

- (a) Work out the number of mobile phones sold in India from 1st January 2015 to 31st March 2015

..... million
(3)

The table shows information about the mean number of text messages sent by each adult in the UK in 2013 and in 2014

	Mean number of text messages sent by each adult
2013	1656
2014	1404

- (b) Work out the percentage decrease in the mean number of text messages sent by each adult in the UK from 2013 to 2014
Give your answer correct to 1 decimal place.

..... %
(3)

71% of the Earth's surface is covered with water.

(d) What percentage of the Earth's surface is not covered with water?

.....%
(1)

January 2018 2FR

15 In a sale, normal prices are reduced by 12%

The normal price of a shirt is \$36

(a) Work out the sale price of the shirt.

\$.....
(3)

180 items were sold in the sale.

81 of these items were shirts.

(b) Express the number of shirts sold as a percentage of the number of items sold in the sale.

.....%
(2)

June 2018 2F

- 17 Gopal is paid 20 000 rupees each month.
Jamuna is paid 19 200 rupees each month.

Gopal and Jamuna are both given an increase in their monthly pay.
After the increase, they are both paid the same amount each month.

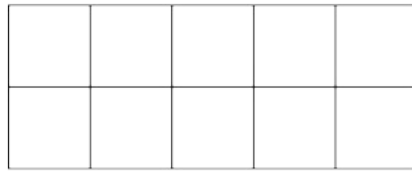
Gopal was given an increase of 8%

Work out the percentage increase that Jamuna was given.

.....%

3

Rectangle **B** is made from centimetre squares.



rectangle **B**

(b) Shade 40% of rectangle **B**.

(1)

- 15** There are 440 students at a school.
The number of male students is 40 more than the number of female students.
- 65% of the male students like art.
85% of the female students like art.

Work out the total number of students at the school who like art.

(Total for Question 15 is 4 marks)

27 A company makes cars.

In 2016, the company made 350 cars.

In the first 6 months of 2017, the company made 25 cars each month.

In the last 6 months of 2017, the company made 45 cars each month.

(a) Work out the percentage increase in the number of cars the company made from 2016 to 2017

..... %
(4)

The company's income in 2017 was \$500 000 more than the company's income in 2016

The company's income in 2017 was 8% more than the company's income in 2016

(b) Work out the company's income in 2016

\$
(3)

4 (a) Write 0.4 as a percentage.

..... %
(1)

(b) What is 42 out of 80 as a percentage?

..... %
(2)

(c) Work out 72% of 350 cm.

..... cm
(2)

18 Behnaz makes candles.

She has 6.3 kilograms of wax and uses it all to make candles.

Each candle Behnaz makes uses 210 grams of wax.

Behnaz sells $\frac{2}{5}$ of the candles for \$13 each.

She then reduces this price by 20% and sells the rest of the candles.

Work out the total amount of money Behnaz gets by selling all the candles she made.

\$.....

(Total for Question 18 is 4 marks)

14 The table gives information about the price of gold.

	1st February 2016	1st March 2016
Price of one ounce of gold (dollars)	1126.50	1236.50

- (a) Work out the percentage increase in the price of gold between 1st February 2016 and 1st March 2016
Give your answer correct to 3 significant figures.

(3) %

The price of one ounce of gold on 1st February 2016 was 1126.50 dollars.
The price of gold increased by 19% from 1st February 2016 to 1st July 2016

- (b) Work out the price of one ounce of gold on 1st July 2016
Give your answer correct to the nearest dollar.

(3) dollars

1

21% of the people on a train are asleep.

(e) What percentage of the people on the train are not asleep?

(1) %

Jan 2019 2F

14 Toy cars are made in a factory.

300 cars per hour are made in the factory.

Cars are made in the factory for $9\frac{1}{2}$ hours each day.

8% of the cars made in the factory are faulty.

The rest of the cars made in the factory are **not** faulty.

Work out how many of the cars made each day are **not** faulty.

- 7 Juan and Gabriella and their two children are going on a train journey from Madrid.

The cost of an adult ticket for this train journey is 53.50 euros.

The cost of a child ticket for this train journey is 60% of the cost of the adult ticket.

Juan buys 2 adult tickets and 2 child tickets.

He pays with two 100 euro notes.

How much change should he get?

euros

(Total for Question 7 is 4 marks)

January 2019 2FR

- 18 On Saturday, Jacob walked 10 800 steps.
On Sunday, he walked 7% more steps than on Saturday.

Work out how many steps Jacob walked on Sunday.

(Total for Question 18 is 3 marks)

24 Carlos, Flavia and Tazia shared £861 between themselves.

The amount of money Flavia got is 65% of the amount of money Carlos got.

The amount of money Tazia got is 22% **more** than the amount of money Carlos got.

Work out how much money Carlos got.

£

(Total for Question 24 is 3 marks)

The cost of the villa for their holiday is £3500

They have to pay a deposit of 12% of this cost.

The rest of the cost of the villa is to be paid in monthly instalments of £220

(b) How many monthly instalments must be paid?

(3)

16 Josh buys and sells books for a living.

He buys 120 books for £4 each.

He sells $\frac{1}{2}$ of the books for £5 each.

He sells 40% of the books for £7 each.

He sells the rest of the books for £8 each.

(a) Calculate Josh's percentage profit.

..... %
(5)

One book that Josh owns had a value of £15 on the 1st May 2019

The value of this book had increased by 20% in the last year.

(b) Find the value of the book on the 1st May 2018

£
(3)

3

(c) Work out 65% of 720

.....
(2)

19 Lorenzo increases all the prices on his restaurant menu by 8%

Before the increase, the price of a dessert was \$4.25

(a) Work out the price of the dessert after the increase.

\$
(3)

After the increase, the price of lasagne is \$9.45

(b) Work out the price of lasagne before the increase.

\$
(3)

January 2020 1F

12 Sam takes an English exam.

There are two papers in the exam.

Each paper has a maximum mark of 80

To pass the exam, Sam needs to get at least 60% of the total marks.

Sam gets 55% of the 80 marks in paper 1

Work out the least number of marks that Sam must get in paper 2 to pass the English exam.

(Total for Question 12 is 4 marks)

12 In 2018, Salman saved 120 riyals each month.

At the start of 2019, Salman increased 120 riyals by 7.5%
He then saved this new amount each month during 2019

Work out how much money Salman saved in total in 2019

..... riyals

(Total for Question 12 is 3 marks)

- 24 The table shows the cost, in euros, of Brigitte’s car insurance in each of the years 2016, 2017 and 2018

Year	2016	2017	2018
Cost of insurance (euros)	500	545	592

Brigitte says,

“The percentage increase in the cost of my car insurance from 2017 to 2018 is more than the percentage increase in the cost of my car insurance from 2016 to 2017”

- (a) Is Brigitte correct?

You must show how you get your answer.

(4)

Henri wants to insure his car.

He gets a discount of 15% off the normal price.

Henri pays 952 euros for his car insurance after the discount.

- (b) Work out the discount that Henri gets.

..... euros

(3)

January 2020 1FR

- 21 In a sale, the normal price of a hat is reduced by 15%
The sale price of the hat is 20.40 euros.

Work out the normal price of the hat.

..... euros

(Total for Question 21 is 3 marks)

13 Betsy was given \$75 for her birthday.

She saved some of the money and spent the rest on a T-shirt and a bag.

Betsy saved 40% of the \$75

She spent \$12 more on the bag than she spent on the T-shirt.

Work out how much Betsy spent on the bag.

S.....

(Total for Question 13 is 4 marks)

14

3 g of every 40 g helping of cereal is fat.

(c) Write 3 g as a percentage of 40 g.

.....%

(2)

12 Gavin bought 3 pairs of jeans in the USA.
He paid a **total** of \$72

Gavin sold the 3 pairs of jeans in England.
He sold each pair of jeans for £34.50

£1 = \$1.34

Work out Gavin's percentage profit.
Give your answer correct to the nearest whole number.

.....%

(Total for Question 12 is 4 marks)

June 2020 1F

22 In a sale, normal prices are reduced by 20%

A bag costs 1080 rupees in the sale.

Work out the normal price of the bag.

..... rupees

(Total for Question 22 is 3 marks)

June 2020 2F

11 Work out 23% of 450 millilitres.

..... millilitres

(Total for Question 11 is 2 marks)

- 20 Himari's annual salary is 3 130 000 Japanese Yen (JPY).
She gets a salary increase of 4%
- (a) Work out Himari's salary after this increase.

.....JPY
(3)

13 (a) Express 180 as a percentage of 750

.....%

(2)

Zaina has booked a singer for a show.
The singer will get 94% of the total money from the ticket sales.

The cost of each ticket for the show is 32.50 dirhams.
Zaina sells 180 tickets.

(b) Work out the amount of money the singer will get.

..... dirhams

(3)

17 Gladys buys a table for \$465 to sell in her shop.

She sells the table for \$520

- (a) Work out the percentage profit that Gladys makes from the sale of the table.
Give your answer correct to 3 significant figures.

.....%
(3)

Gladys has a sale in her shop.

She decreases all the normal prices by 12%

The normal price of an armchair was \$550

- (b) Work out the sale price of the armchair.

\$.....
(3)

10 Here is a list of ingredients needed to make 24 currant buns.

Ingredients for 24 currant buns	
100 grams	butter
70 grams	sugar
140 grams	flour
40 grams	currants
30 millilitres	milk
2	eggs

Hans wants to make 30 currant buns.

(b) Find the percentage increase in the weight of butter needed to make 30 currant buns rather than 24 currant buns.

.....%
(2)

Jan 2021 2FR

17 On Wednesday, the price of 1 litre of petrol was £1.26
The price of petrol on Wednesday was 5% more than the price of petrol on the previous Monday.

Calculate the price of 30 litres of petrol on the previous Monday.

£.....

(Total for Question 17 is 3 marks)

June 2021 1F

5

70% of a number is 252

(f) Work out the number.

.....
(2)

June 2021 2F

14 (a) Work out 39% of 450

.....
(2)

20 Mariana sells bags of bird food.

The bags that Mariana sold last week each contained 12 kg of seeds.

The bags that she is going to sell next week will each contain a mixture of nuts and seeds where for each bag

$$\text{weight of nuts : weight of seeds} = 4 : 5$$

The total weight of the nuts and the seeds in each bag will be 19.35 kg

The weight of seeds in each bag that Mariana sells next week will be less than the weight of seeds in each bag that Mariana sold last week.

Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.

Give your answer correct to one decimal place.

..... %

25 Chengbo sold a house for 180 000 yuan.

The amount for which he sold the house is 24% more than the amount he paid for the house.

- (a) Work out how much Chengbo paid for the house.
Give your answer correct to 3 significant figures.

..... yuan
(3)

November 2021 1F

20 In 2018, the population of Sydney was 5.48 million.
This was 22% of the total population of Australia.

Work out the total population of Australia in 2018
Give your answer correct to 3 significant figures.

..... million

(Total for Question 20 is 3 marks)

- 22** Victor buys 12 bottles of apple juice for a total cost of \$21
Victor sells all 12 bottles at \$2.45 each bottle.

Work out Victor's percentage profit.

.....%

(Total for Question 22 is 3 marks)

19 Sarah makes and sells mugs.

One day she makes 150 mugs.

Her total cost for making these mugs is £1140

Of these mugs

$\frac{2}{5}$ are small mugs

32% are medium mugs

and the rest are large mugs

Here is Sarah's price list for selling each mug.

MUGS	
Small	£8.50
Medium	£11.20
Large	£14.20

Sarah sells all 150 mugs.

Work out her percentage profit.

Give your answer correct to the nearest whole number.

.....%

(Total for Question 19 is 5 marks)

- 23 The table gives information about the average house price in England in 2018 and in 2019

Year	2017	2018	2019
Average house price (£)		228 314	231 776

- (a) Work out the percentage increase in the average house price from 2018 to 2019
Give your answer correct to one decimal place.

..... %
(2)

The average house price in 2019 was 7.7% greater than the average house price in 2017

- (b) Work out the average house price in 2017
Give your answer correct to 3 significant figures.

£
(3)

12 Maria is going to make some flapjacks.

Here are four of the ingredients that she will use.

175 g butter

175 g syrup

175 g sugar

330 g oats

What percentage of these four ingredients is oats?

Give your answer correct to 3 significant figures.

..... %

(Total for Question 12 is 3 marks)

19 Mary saves for a holiday each year.

In 2020 she saved a total of \$720

In 2021, each month she saved \$78

The total amount Mary saved in 2021 was $P\%$ more than the total she saved in 2020

(a) Work out the value of P

.....
(4)

Roberto is going to go on holiday.

He has two coupons that will save him money on his holiday.

Coupon A

18% off the cost of the accommodation

Coupon B

12.5% off the total cost of the accommodation **and** the flights

For Roberto's holiday

the cost of the accommodation is \$1600

the cost of the flights is \$800

Roberto can only use one of the coupons.

He wants to save as much money as he can.

(b) Which of the two coupons, **A** or **B**, should he use?

Show your working clearly.

14 In 2001, the total number of cars produced in the world was 39.8 million.

In 2006, the total number of cars produced in the world was 10.1 million greater than the total number produced in 2001

- (a) Express 10.1 million as a percentage of 39.8 million.
Give your answer correct to one decimal place.

..... %
(2)

In 2011, the total number of cars produced in the world was 59.9 million.

In 2016, the total number of cars produced in the world was 21% greater than the total number produced in 2011

In 2016, the total number of cars produced in the world was N million.

- (b) Work out the value of N .
Give your answer correct to the nearest whole number.

$N =$
(3)

21 Asha bought an apartment.

The table gives information about the value of apartments, in euros, and the annual service charge band.

Value (x euros)	Service charge band
$x \geq 700\,000$	A
$600\,000 \leq x < 700\,000$	B
$500\,000 \leq x < 600\,000$	C
$400\,000 \leq x < 500\,000$	D
$0 < x < 400\,000$	E

In 2021, the value of Asha's apartment was 634 400 euros.

The value of Asha's apartment had increased by 4% from its value in 2020

(a) Has the annual service charge band changed for Asha's apartment?

Show your working clearly.

(3)

6 Here are two special offers for buying dog food.

<p style="text-align: center;">Special offer A</p> <p>Normally \$1.40 a tin</p> <p>Special offer Buy 1 tin, get 1 tin half price</p>
--

<p style="text-align: center;">Special offer B</p> <p>Normally pack of 6 tins for \$7.20</p> <p>Special offer 20% off each pack of 6 tins</p>

Gaspar buys 24 tins of dog food using special offer **A**.

Anna buys 24 tins of dog food using special offer **B**.

Work out the difference between the amount that Gaspar pays and the amount that Anna pays.

S.....

(Total for Question 6 is 4 marks)

20 The language department of a college has 180 students.
Each student studies exactly one of French, German, Italian or Spanish.

15 students study French.

45% of the students study German.

Express the percentage of students studying Italian or Spanish as a percentage of those studying French or German.

.....%

(Total for Question 20 is 4 marks)

- 25** A cinema increased the cost of an adult ticket by 12%
After the increase, the cost of an adult ticket was £18.20
Work out the cost of an adult ticket before the increase.

£.....

(Total for Question 25 is 3 marks)

10 Orange squash is made from orange juice and water.

Sean has two different cartons of orange squash, carton **P** and carton **Q**.
The table gives information about the two cartons.

Carton P	Carton Q
Total volume of orange squash is 250 millilitres 30% of the total volume is orange juice and the remainder is water	Total volume of orange squash is 250 millilitres 160 millilitres of the total volume is water and the remainder is orange juice

Work out the difference in the volume of orange juice in carton **P** and the volume of orange juice in carton **Q**.

..... millilitres

(Total for Question 10 is 3 marks)

21 Shane bought a car.

The amount Shane paid for the car was \$32 000

Theresa also bought a car.

To pay for this car, Theresa paid a deposit of \$18 000 together with 14 monthly payments of \$1160

Theresa paid more for her car than Shane paid for his car.

(a) Work out how much more Theresa paid as a percentage of the amount Shane paid.

.....%

(4)

13 There are 380 students in a Sixth Form.

The students are either in the Upper Sixth or in the Lower Sixth.

The number of students in the Upper Sixth is 20 fewer than the number of students in the Lower Sixth.

$\frac{2}{5}$ of the Upper Sixth students study mathematics.

32% of the Lower Sixth students study mathematics.

Work out the total number of students in the Sixth Form who study mathematics.

(Total for Question 13 is 4 marks)

19 Divya and Yuan each pay for a holiday at a special offer price.

<p>Divya's holiday</p> <p>Normal price: \$1600</p> <p>Special offer: 16% off the normal price</p>
--

<p>Yuan's holiday</p> <p>Normal price: \$1400</p> <p>Special offer: $k\%$ off the normal price</p>
--

The amount that Divya pays is the same as the amount that Yuan pays.

Work out the value of k

$k = \dots\dots\dots$

(Total for Question 19 is 4 marks)

6 Vivienne makes bread.

The weight of yeast she uses is 1% of the weight of flour she uses.

Vivienne uses 750 g of flour.

(a) Work out the weight of yeast she uses.

..... 00
(2)

11 Pablo buys some tickets to go to the theatre.

3 of the tickets are for adults.

The remaining tickets are for children.

Each adult ticket costs 12 euros.

The children's tickets each cost 30% less than an adult ticket.

The total amount of money that Pablo pays for all the tickets is 94.80 euros.

Find the number of children's tickets Pablo buys.

.....
(Total for Question 11 is 4 marks)

18 Nanette buys 60 notebooks for a total cost of 780 dirhams.

Nanette sells 70% of the notebooks for 22 dirhams each.
She sells the remaining notebooks for 19 dirhams each.

Work out Nanette's percentage profit.
Give your answer correct to 3 significant figures.

.....%

- 13 One week, an online company carried out a total of 175 deals.
49 of these deals were in yen.

Work out the percentage of deals carried out in yen.

.....%

(Total for Question 13 is 2 marks)

21 In his previous job, Pierre was paid 400 euros in total for working a 5-day week.

In his new job, Pierre is paid 14 euros per hour.

In his new job, Pierre works for 7 hours each day for a 5-day week.

(a) Work out the percentage increase in the amount that Pierre is paid for a 5-day week.

..... %
(4)

Marie changes her job.

Her salary decreases by 6%

Her new salary is 23 030 euros.

(b) Work out Marie's salary before she changes her job.

..... euros
(3)

17 Joshua buys a car for \$12 500

He sells the car to Nina.

Nina pays

- a deposit of \$1500
- followed by 36 monthly payments of \$450

Work out Joshua's percentage profit.

.....%

(Total for Question 17 is 4 marks)

20 Juan wants to buy a ticket to fly from Madrid to Berlin.

He finds two different types of ticket he can buy in a sale, ticket **A** and ticket **B**

ticket A $\frac{1}{6}$ off normal price

ticket B 20% off normal price

The sale price of ticket **A** is 140 euros.

The sale price of ticket **B** is 136 euros.

Work out the difference between the normal price of ticket **A** and the normal price of ticket **B**

..... euros

(Total for Question 20 is 4 marks)

13 Bella buys 150 football shirts for a total cost of 1800 dollars.

She gives 10% of the shirts to the local football team.

Bella sells the rest of the shirts for g dollars each.

She makes a total profit of 360 dollars.

Work out the value of g

$g = \dots\dots\dots$

(Total for Question 13 is 4 marks)