# Percentages

## Question Paper

| Course | Edexcel IGCSE Maths |
|---|---|
| Section | 1. Numbers & the Number System |
| Topic | Percentages |
| Difficulty | Hard |

**Time allowed:** 90

**Score:** /75

**Percentage:** /100

## Question 1

In 2003, Jerry bought a house.

In 2007, Jerry sold the house to Mia.
He made a profit of 20%

In 2012, Mia sold the house for £162 000.
She made a loss of 10%

Work out how much Jerry paid for the house in 2003.

**[3 marks]**

## Question 2a

Ibrar bought a house for $£145\,000$

The value of the house depreciated by $4\%$ in the first year.
The value of the house depreciated by $2.5\%$ in the second year.

Ibrar says,

"$4 + 2.5 = 6.5$ so in two years the value of my house depreciated by $6.5\%$"

Is Ibrar right?
You must give a reason for your answer.

**[2 marks]**

## Question 2b

The value of Ibrar's house increases by $x\%$ in the third year.
At the end of the third year the value of Ibrar's house is $£140\,000$.

Work out the value of $x$.
Give your answer correct to $3$ significant figures.

## Question 3

In a sale normal prices are reduced by 20%.

A washing machine has a sale price of £464

By how much money is the normal price of the washing machine reduced?

[3 marks]

## Question 4

A shop has a sale.

| Microwave ovens | Combination ovens |
|---|---|
| $\frac{1}{3}$ off normal price | 40% off normal price |

A microwave oven has a sale price of £90
A combination oven has a sale price of £84

Which of these ovens has the greater normal price?
You must show all your working.

[4 marks]

## Question 5

Here are three spheres.



P          Q          R

The volume of sphere **Q** is 50% more than the volume of sphere **P.**
The volume of sphere **R** is 50% more than the volume of sphere **Q.**

Find the volume of sphere **P** as a fraction of the volume of sphere **R.**

**[3 marks]**

## Question 6

Marie invests £8000 in an account for one year.
At the end of the year, interest is added to her account.

Marie pays tax on this interest at a rate of 20%
She pays £28.80 tax.

Work out the percentage interest rate for the account.

[3 marks]

## Question 7

Simon bought a house at the beginning of 2018
The value of Simon's house had decreased by 15% by the end of 2018.

The house increased in value during both 2019 and 2020
The percentage increases in the value of the house during 2019 and 2020 were the same.

The value of Simon's house at the end of 2020 was 2.85% greater than the amount he paid for his house at the beginning of 2018.

Calculate the percentage increase in the value of the house during 2019.

[4 marks]

**Question 8**

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.

**[3 marks]**

**Question 9**

During last season the cost of a ticket to watch Seapron United increased by 15% and then decreased by 8%.

Work out the overall percentage change in the cost of a ticket to watch Seapron United during last season.

**[2 marks]**

## Question 10

Mariana sells bags of bird food.

The bags that Mariana sold last week each contained 12kg 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

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.

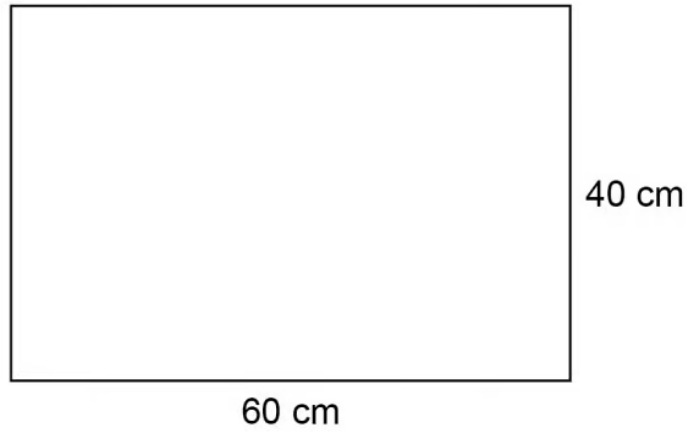Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.
Give your answer correct to one decimal place.

........................................................ %

**[4 marks]**

## Question 11

A rectangle has length 60 cm and width 40 cm

Not drawn
accurately

40 cm

60 cm

The length decreases by 15%
The width decreases by 10%

Sue says,

"The perimeter decreases by 25% because 15% + 10% is 25%"

Is she must correct?

You **must** show calculations to support your answer.

[4 marks]

## Question 12a

Show that $a\%$ of $b = b\%$ of $a$

1 mark]

## Question 12b

Rosie says,

"160% of 40 = 140% of 60 because $a\%$ of $b$ = $b\%$ of $a$"

Is she correct?
Tick a box.

☐ Yes ☐ No

Give a reason for your answer.

**[1 mark]**


## Question 13

When you earn money you pay income tax.
The amount you pay depends on how much you earn that year.
You pay

0% on the first £12 500 you earn

20% on the next £37 500 you earn

40% on the next £112 500 you earn.

One year, Kim paid £9260 income tax.

Work out how much she earned that year.

£...........................

**[4 marks]**

## Question 14

Hanif makes green paint by mixing blue paint and yellow paint in the ratio

blue : yellow = 7 : 3

He buys blue paint in 50-litre containers, each costing £225
He buys yellow paint in 20-litre containers, each costing £80

He wants to

sell the green paint in 5-litre tins
make 40% profit on each tin.

How much should he sell each tin for?

£.......................................

**[5 marks]**

## Question 15

Lily buys and sells microwaves.

She buys each one for £32 and sells it for £60.
She also pays £7 for the delivery of each microwave she sells.

If she sells a microwave that is faulty then Lily must pay for its repair and redelivery.
This costs her another £25 for each faulty microwave.

Last month, 6 out of the 80 microwaves Lily sold were faulty.

This month she has orders for 133 microwaves.

Calculate her expected percentage profit on this month's order.
Showing your working in the boxes below may help you present your work.

| Expected number of faulty microwaves: | Expected costs: |
|---|---|
| Income from sales: | Expected percentage profit: |

...........................%

**[6 marks]**

## Question 16

Paintings are sold in an art gallery.
The cost of a painting has $k\%$ commission added to it.
Tax of 15% is then added to the total cost to give the price to pay.

Layla correctly calculates the price to pay by multiplying the cost of the painting by 1.403.

Work out the value of $k$.

$k =$ ................................

**[3 marks]**

## Question 17

Amrit's income is 32% more than Bethan's income.
Amrit and Bethan's combined income is £54868.

Calculate Amrit's income.

£ ........................................................

**[5 marks]**

## Question 18

In 2017, the value of a house increased by 4%.
In 2018, the value of the house then decreased by 3%.

Teresa says

Over the two years the value of the house increased by exactly 1% because 4 – 3 = 1.

Show that Teresa is wrong.

[6 marks]

## Question 19

In a village the ratio of males to females is 2:1.

40% of the people in the village are right-handed males.
25% of the people in the village are right-handed females.

Show that the proportion of females who are right-handed is greater than the proportion of males who are right-handed.

[6 marks]