

1 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 1 is 3 marks)

2 At time $t = 0$ hours a tank is full of water.

Water leaks from the tank.

At the end of every hour there is 2% less water in the tank than at the start of the hour.

The volume of water, in litres, in the tank at time t hours is V_t

Given that

$$V_0 = 2000$$

$$V_{t+1} = kV_t$$

write down the value of k .

$$k = \dots\dots\dots$$

(Total for Question 2 is 1 mark)

3 Jules buys a washing machine.

20% VAT is added to the price of the washing machine.

Jules then has to pay a total of £600

What is the price of the washing machine with **no** VAT added?

£.....

(Total for Question 3 is 2 marks)

4 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 4 is 4 marks)

5 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 5 is 5 marks)

6 Jean invests £12 000 in an account paying compound interest for 2 years.

In the first year the rate of interest is $x\%$

At the end of the first year the value of Jean's investment is £12 336

In the second year the rate of interest is $\frac{x}{2}\%$

What is the value of Jean's investment at the end of 2 years?

£.....

(Total for Question 6 is 4 marks)

7 In 2003, Jerry bought a house.

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

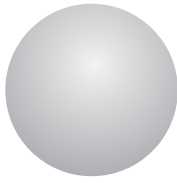
In 2012, Mia sold the house for £162 000
She made a loss of 10%

Work out how much Jerry paid for the house in 2003

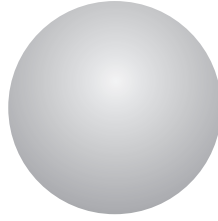
£.....

(Total for Question 7 is 3 marks)

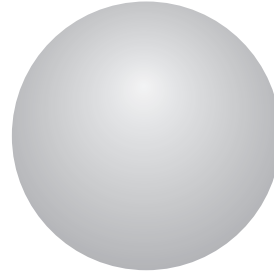
8 Here are three spheres.



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**.

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.....
(Total for Question 8 is 3 marks)

9 The circumference of circle **B** is 90% of the circumference of circle **A**.

(a) Find the ratio of the area of circle **A** to the area of circle **B**.

.....
(2)

Square **E** has sides of length e cm.

Square **F** has sides of length f cm.

The area of square **E** is 44% greater than the area of square **F**.

(b) Work out the ratio $e:f$

.....
(2)

(Total for Question 9 is 4 marks)

10 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.

..... %

(Total for Question 10 is 3 marks)

11 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 11 is 3 marks)

12 Tariq buys a laptop.

He gets a discount of 5% off the normal price.
Tariq pays £551 for the laptop.

(a) Work out the normal price of the laptop.

£.....

(2)

Joan invests £6000 in a savings account.

The savings account pays compound interest at a rate of

2.4% for the first year

1.7% for each extra year.

(b) Work out the value of Joan's investment at the end of 3 years.

£.....

(3)

(Total for Question 12 is 5 marks)

13 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 13 is 4 marks)

- 14** 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 14 is 5 marks)

15 Jack and Sadia work for a company that sells boxes of breakfast cereal.

The company wants to have a special offer.

Here is Jack's idea for the special offer.

Put 25% more cereal into each box and do **not** change the price.

Here is Sadia's idea.

Reduce the price and do **not** change the amount of cereal in each box.

Sadia wants her idea to give the same value for money as Jack's idea.

By what percentage does she need to reduce the price?

..... %

(Total for Question 15 is 3 marks)

16 Robert makes 50 litres of green paint by mixing litres of yellow paint and litres of blue paint in the ratio 2:3

Yellow paint is sold in 5 litre tins.
Each tin of yellow paint costs £26

Blue paint is sold in 10 litre tins.
Each tin of blue paint costs £48

Robert sells all the green paint he makes in 10 litre tins.
He sells each tin of green paint for £66.96

Work out Robert's percentage profit on each tin of green paint he sells.

.....%

(Total for Question 16 is 5 marks)

17 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 17 is 3 marks)

18 Chanda buys a necklace for £120
She sells the necklace for £135
Work out her percentage profit.

.....%

(Total for Question 18 is 3 marks)

19 Aaliyah bought a car.

In the first year after she bought the car, its value depreciated at a rate of 23% per annum.

In the second year after she bought the car, its value depreciated at a rate of 19% per annum.

At the end of the second year the car was worth £10914.75

What was the value of the car when Aaliyah bought it?

£.....

(Total for Question 19 is 3 marks)

- 20** A new phone cost £679
The value of the phone decreases at a rate of 4% per year.
Work out the value of the phone at the end of 3 years.

£.....

(Total for Question 20 is 3 marks)

21 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.

<p>Chic Decor</p> <p>3 rolls for £36</p>

<p>Style Papers</p> <p>Pack of 5 rolls normal price £70</p> <p>12% off the normal price</p>
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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 21 is 4 marks)

22 Jane bought a new car three years ago.

At the end of the first year the value of the car had decreased by 12.5%
The value of the car then decreased by 10% each year for the next two years.

At the end of the three years, the value of the car was £17010

Work out the value of the car when Jane bought it three years ago.

£.....

(Total for Question 22 is 3 marks)