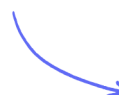


Percentages Toolkit

Basic Percentages / Percentage Increases & Decreases / Reverse Percentages

Easy (4 questions)	/10
Medium (12 questions)	/38
Hard (11 questions)	/29
Total Marks	/77

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Easy Questions

- 1 In 2018, Greta earned \$32 000.
She paid tax of 24% on these earnings.

Work out the amount she paid in tax in 2018.

\$

(2 marks)

- 2 Kristian receives \$72.

Kristian spends 45% of his \$72 on a computer game.

Calculate the price of the computer game.

\$

(2 marks)

3 Here is a list of ingredients to make 20 biscuits.

260 g of butter
500 g of sugar
650 g of flour
425 g of rice

Find the mass of rice as a percentage of the mass of sugar.

..... %

(2 marks)

4 Ria is going to buy a caravan.

The total cost of the caravan is £7000 **plus** VAT at 20%.

Ria pays a deposit of £3000

She pays the rest of the total cost in 6 equal monthly payments.

Work out the amount of each monthly payment.

(4 marks)

Medium Questions

- 1 In 2018, Greta earned \$32 000.
In 2019, Greta's earnings increased by 7%.

Work out her earnings in 2019.

\$

(3 marks)

- 2 In a sale the original prices are reduced by 15%.

Calculate the sale price of a book that has an original price of \$12.

\$

(3 marks)

- 3 The price of a bicycle is \$1020.
Club members receive a 15% discount on this price.

Find how much a club member pays for this bicycle.

\$

(3 marks)

- 4 A school has 240 students.
Next year, the number of students will increase by 15%.

Calculate the number of students next year.

(2 marks)

- 5 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.

(5 marks)

- 6 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?

(4 marks)

- 7 The table gives information about Ali's spending last month.

Item	Percentage of total spending
rent	30%
food	15%
transport	12%
other	43%

Ali's total spending last month was £800

Next month Ali's rent, in pounds, is going to rise by 20%.
His total spending will still be the same.

Express the amount of money Ali will spend on rent next month as a percentage of £800.

(3 marks)

8 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?

(5 marks)

9 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.

(4 marks)

- 10 The normal price of a television is reduced by 30% in a sale.

The sale price of the television is £350

Work out the normal price of the television.

(3 marks)

- 11 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?

(2 marks)

- 12 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 .

(1 mark)

Hard Questions

- 1 Ahmed increases 40 by 300%.

Select the correct calculation.

- A. 40×1.300
- B. 40×3
- C. 40×400
- D. 40×4
- E. 40×300

(1 mark)

- 2 Roberto buys a toy for \$5.00.
He then sells it for \$4.60.

Calculate his percentage loss.

..... %

(2 marks)

- 3 The number of passengers on a train increases from 63 to 77.

Calculate the percentage increase.

.....%

(3 marks)

4 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)

5 A shop has a sale.

Microwave ovens $\frac{1}{3}$ off normal price

Combination ovens 40% off normal price

A microwave oven has a sale price of £90

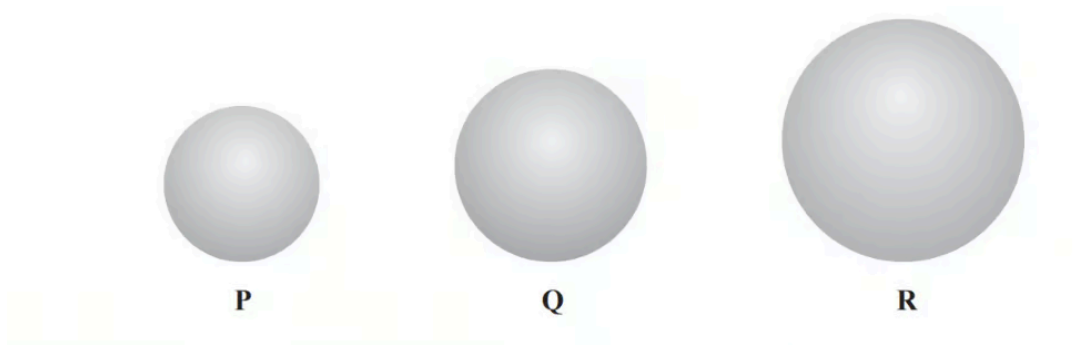
A combination oven has a sale price of £84

Which of these ovens has the greater normal price?

You must show all your working.

(4 marks)

6 Here are three spheres.



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)

7 A bag contains 54 red marbles and some blue marbles.

36% of the marbles in the bag are red.

Find the number of blue marbles in the bag.

(2 marks)

8 Apples cost Mohsin \$0.85 per kilogram to produce. He sells them at a profit of 60%.

Work out the selling price per kilogram of the apples.

\$

(2 marks)

- 9 The price of a book increases from \$2.50 to \$2.65 .

Calculate the percentage increase.

..... %

(3 marks)

- 10 The fares for the train journey are shown in the table below.

From London to Marseille	Standard fare	Premier fare
Adult	\$84	\$140
Child	\$60	\$96

For an **adult**, find the percentage increase in the cost of the standard fare to the premier fare.

..... %

(3 marks)

- 11 Since a school was opened, the number of students has increased by 60%.
There are now 240 students.

Calculate the number of students when the school was opened.

(3 marks)