



Percentage Increase and Decrease

Calculators Allowed

Prior Knowledge:

Before attempting this sheet, students should be able to calculate a percentage increase/decrease by calculating the percentage and then adding to / subtracting from the original amount.

Percentage Multipliers

Percentage multipliers can be used to find percentages of an amount.

For example:

Find 7% of 30.

7% as a decimal is $7 \div 100 = 0.07$

This is the multiplier we use to find 7% of 30.

$$0.07 \times 30 = 2.1$$

Percentage Increase and Decrease

To increase or decrease by a percentage, begin by either adding or subtracting the relevant percentage from 100%, then find the multiplier.

Example 1

Increase 50 by 20%.

Since we are increasing, we want to add 20% to 100%.

$$100 + 20 = 120\%$$

We need to find 120% of 50.

$$120 \div 100 = 1.2$$

This is the multiplier we use to find 120% of 50.

$$1.2 \times 50 = 60$$

Example 2

A video game usually costs £40. It is reduced by 6% in the sale. Work out the sale price of the game.

This time, we are decreasing the amount so we want to subtract 6% from 100%.

$$100 - 6 = 94\%$$

We need to find 94% of £40.

$$94 \div 100 = 0.94$$

This is the multiplier we use to find 94% of 40.

$$0.94 \times 40 = \text{£}37.60$$

Note that, when we are working with money, we give our answers correct to 2 decimal places.



Your Turn

1. Write down the percentage multipliers for:

a. a 10% increase

c. a 10% decrease

e. a 2.5% increase

b. a 17% increase

d. a 32% decrease

f. a 1.2% decrease

2.

a. Increase 210 by 5%

c. Increase 19 by 25%

e. Increase 97 by 50%

b. Decrease 74 by 10%

d. Decrease 86 by 2.1%

f. Decrease 130 by 99%

3. The price of a car service is £320. It increases by 15%. Work out the new price of a car service.

5. I invest £800 in a bank account which pays 1.25% per annum.

a. Work out how much money I will have in the account after one year.

4. A pair of jeans cost £32. They are reduced in a sale by 12%. Work out the sale price of the jeans.

b. Work out how much money I will have in the account after two years. Hint: use the amount after year 1 as the original.

Challenge

Grace sees a special offer in a shop.

Special Offer

Games Console £280

Game £50

6% discount if bought together

Work out how much money she will save if she buys the items together instead of separately.
