Your notes

GCSE Maths: revision notes

Percentage change, interest and depreciation

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Percentage change

- **Percentage change** = change ÷ original amount × 100. Always divide by the original amount, not the new one.
- A shop buys a jacket for £40 and sells it for £50. The **profit** is £10, so the percentage **profit** is 10 ÷ 40 × 100 = 25%.
- A price falls from £80 to £68. The decrease is £12, and 12 ÷ 80 × 100 = 15%.

Simple interest

- **Simple interest** is the same amount every year, worked out on the original amount only.
- £400 at 5% **simple interest** for 3 years earns 400 × 0.05 × 3 = £60.

Compound interest

- **Compound interest** is added to the total each year, so the next year's interest is worked out on a bigger amount.
- Amount = original × multiplier^{n}, where n is the number of years. £400 at 5% **compound interest** for 3 years: 400 × 1.05^{3} = £463.05.
- Over the same time, **compound interest** earns more than **simple interest**: £63.05 compared with £60.

Depreciation and repeated changes

- **Depreciation** is a **loss** in value. A £15 000 car that depreciates by 20% a year is worth 15 000 × 0.8^{2} = £9600 after 2 years.
- Repeated **percentage changes** multiply: a 10% increase then a 10% decrease is 1.1 × 0.9 = 0.99, which is a 1% decrease overall.

Worked examples

A price rises from £40 to £46. Find the percentage increase.

Find the change. **46 − 40 = 6**

Divide by the original amount. **6 ÷ 40 = 0.15**

Multiply by 100. **0.15 × 100 = 15**

Answer: 15% increase

After a 20% reduction, a coat costs £64. What was the original price?

After 20% off, you pay 80% of the original price. **80% = £64**

Find 1%. **64 ÷ 80 = 0.8**

Find 100%. **0.8 × 100 = 80**

Answer: £80

Key terms

Percentage change	Change ÷ original amount × 100.
Profit	The amount gained when something is sold for more than it cost.
Loss	The amount lost when something is sold for less than it cost.
Simple interest	Interest that is the same amount each year, based on the original amount.
Compound interest	Interest added to the total each year, so interest is also earned on interest.
Depreciation	A decrease in value over time.
Per annum	Per year.

Quick questions

Cover the answers and test yourself: remembering is what makes it stick.

1. A price rises from £40 to £50. What is the percentage increase?
2. A price falls from £80 to £68. What is the percentage decrease?
3. To find a percentage change, what do you divide the change by?
4. What is the simple interest on £400 at 5% per year for 3 years?
5. £400 is invested at 5% compound interest per year. What is it worth after 3 years?
6. Which calculation finds the value of £300 after 4 years at 2% compound interest?
7. A car worth £15 000 depreciates by 20% a year. What is it worth after 2 years?

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8. A price increases by 10% and then decreases by 10%. What is the overall change?

Answers

1. 25%
2. 15%
3. The original amount
4. £60
5. £463.05
6. 300×1.02^4
7. £9600
8. A 1% decrease

What to do next

Practise 12 questions on this topic

Try 7 exam questions, with mark schemes

Read the lesson, one step at a time

Free revision for GCSE and KS3 at lycolearn.co.uk. Some notes are for one exam board only, and say so in brackets.

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