

Compound Interest

KS3 Maths · Follows the national curriculum

Name _____ Class _____ Date _____

1. Worked example

£500 is saved at 4% simple interest for 3 years. How much interest is earned?

Step 1 · Interest for one year

$$4\% \text{ of } £500 = 0.04 \times 500 = £20$$

Step 2 · Simple interest is the same every year

$$3 \times £20 = £60$$

Step 3 · Total in the account

$$£500 + £60 = £560$$

Answer: £60 interest (£560 altogether)

Check: $500 \times 0.04 \times 3 = 60$ ✓

2. Now try one with the steps

£500 is saved at 4% compound interest for 3 years. How much is in the account?

Step 1 · Multiplier for a 4% increase

Step 2 · Apply it once for each year

Step 3 · Calculate and round to the nearest penny

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. £200 is saved for 1 year at 5% simple interest. How much interest is earned? [1]

2. Write down the multiplier for an increase of 6% each year. [1]

3. £800 is saved for 4 years at 3% simple interest. How much interest is earned altogether? [1]

4. Write down the multiplier for a decrease of 15% each year. [1]
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5. £1000 is invested at 10% compound interest for 2 years. How much is it worth then? [2]
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6. £400 is invested at 5% compound interest for 2 years. How much is it worth then? [2]
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7. £2500 is saved at 2% simple interest for 5 years. How much is in the account at the end? [2]
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8. £2500 is saved at 2% compound interest for 5 years. How much is in the account at the end, to the nearest penny? [2]
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9. A laptop bought for £900 loses 20% of its value each year. What is it worth after 3 years? [2]
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10. A phone costing £600 loses 30% of its value in the first year and 20% of its new value in the second year. What is it worth after 2 years? [2]
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11. A town's population of 12,000 grows by 3% each year. Estimate the population after 4 years, to the nearest whole number. [2]
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12. 50 bacteria double in number every hour. How many are there after 6 hours? [2]
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13. A value is increased by 5% three years running. What is the overall percentage increase, to 1 decimal place? [2]
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14. £5000 is invested at 3% compound interest. After how many whole years is it first worth more than £5500? [3]

15. For £1000 over 3 years, which is better: 4% compound interest or 4.2% simple interest? [3]

4. Before you hand it in

Working out compound interest interest: £500 at 4% for 3 years = £560

With compound interest, interest is earned on the interest too. Multiply by 1.04 three times: £562.43.

Using 1.5 multiplier for a 5% increase

5% = 0.05, so the multiplier is 1.05. A multiplier of 1.5 is a 50% increase.

Working out 4% compound for 3 years as $£500 \times 1.04 \times 3$

The multiplier is applied once for each year: 500×1.04^3 , not $500 \times 1.04 \times 3$ (which gives £1560).

Using 1.12 for a 12% depreciation

Depreciation means the value goes DOWN: the multiplier is $1 - 0.12 = 0.88$.