



KS3.M-R10 Simple and Compound Interest

AQA KS3.M-R10 · Calculators not allowed · about 80 minutes

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Calculate the simple interest earned on a savings account that holds 500 pounds at 3% per year for 2 years. Give the interest only.

(2)

- 2** Work out 4% of 250 pounds. This represents the interest for one year. Give the interest only.

(1)

- 3** A loan of 1200 pounds is charged simple interest at 5% per year for 3 years. Calculate the total interest charged and the total amount to repay after 3 years.

(3)

- 4** A deposit of 400 pounds is left for 1 year at 10% compound interest. Work out the amount after 1 year.

(2)

- 5** Calculate the amount after 2 years when 600 pounds is invested at 5% compound interest per year. Give your answer to 2 decimal places.

(3)

- 6** An amount of 250 pounds is invested at 8% compound interest per year. Find the value after 3 years, correct to 2 decimal places.

(3)

- 7** A small musical instrument costs 180 pounds. It depreciates by 15% of its value in one year (simple depreciation used here). Work out its value after one year.

(2)

- 8** A laptop worth 1200 pounds loses 10% of its value each year compound. Find its value after 2 years.

(3)

- 9** If a multiplier is 1.06, state the annual percentage rate of increase.

(2)

- 10** An investment of 1000 pounds grows to 1210 pounds after 2 years with compound interest applied annually. Work out the annual interest rate.

(2)

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- 11** Compare simple and compound interest on 1000 pounds at 5% per year for 3 years. Find the simple interest total and the compound total, then give the difference between them (compound minus simple).

(3)

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- 12** Hannah deposits 800 pounds into an account paying 6% compound interest. At the start of the second year she adds 200 pounds to the account. Find the total in the account at the end of the second year. Give your answer to 2 decimal places.

(3)

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- 13** A shirt is reduced by 20% in a sale. Later the price is increased by 25%. If the original price was 150 pounds, what is the final price after both changes?

(2)

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- 14** A machine is worth 648 pounds after losing 10% of its value each year for 2 years (compound depreciation). Work out the original price before the two years.

(2)

- 15** A car loses 18% of its value each year compound. Its value now, after 3 years, is 1976 pounds. Find the price of the car when it was new (value before the 3 years).

(3)

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- 16** A price is increased by 10% and then decreased by 10%. Work out the overall percentage change in the price.

(2)

-
- 17** A simple interest loan charges a total of 9% interest over 3 years. Work out the annual simple interest rate.

(2)

-
- 18** Sam wants 1200 pounds at the end of 2 years. He deposits 1000 pounds now into an account paying 4% compound interest and plans to add one extra deposit at the start of the second year. How much must he add at the start of the second year so that at the end of year 2 he has 1200 pounds? Give your answer to 2 decimal places.

(4)

Mark scheme · KS3.M-R10 Simple and Compound Interest

Question 1

- **M1** method: $500 \times 0.03 \times 2$ or $500 \times (3\% \text{ per year for 2 years})$ shown
- **A1** 30 (pounds) cao
- **Answer: 30 pounds**

Question 2

- **B1** 10 (pounds) cao
- **Answer: 10 pounds**

Question 3

- **M1** method: $1200 \times 0.05 \times 3$ or equivalent method for simple interest
- **A1** 180 (pounds) interest cao
- **A1** 1380 (pounds) total amount cao
- **Answer: 180 pounds; 1380 pounds**

Question 4

- **M1** method: use multiplier 1.10 or 400×1.10
- **A1** 440 (pounds) cao
- **Answer: 440 pounds**

Question 5

- **M1** method: use multiplier 1.05 twice or write 600×1.05^2
- **M1** correct intermediate multiplication leading to 600×1.1025 or equivalent
- **A1** 661.50 (pounds) cao
- **Answer: 661.50 pounds**

Question 6

- **M1** method: 250×1.08^3 or use multiplier 1.08 three times
- **M1** correct intermediate product leading to about 314.928
- **A1** 314.93 (pounds) cao
- **Answer: 314.93 pounds**

Question 7

- **M1** method: 15% of 180 or 180×0.15 found
- **A1** 153 (pounds) final value cao
- **Answer: 153 pounds**

Question 8

- **M1** method: use multiplier 0.90 twice or 1200×0.9^2
- **M1** correct intermediate product 1200×0.81 or equivalent
- **A1** 972 (pounds) cao
- **Answer: 972 pounds**

Question 9

- **M1** method: subtract 1 from multiplier or state 0.06
- **A1** 6% cao
- **Answer: 6%**

Question 10

- **M1** method: divide 1210 by 1000 to find multiplier per 2 years then take square root or deduce yearly multiplier 1.10
- **A1** 10% per year cao
- **Answer: 10%**

Question 11

- **M1** method for simple interest: $1000 \times 0.05 \times 3 = 150$
- **M1** method for compound: $1000 \times 1.05^3 = 1157.625$ or equivalent
- **A1** difference 7.63 (pounds) cao ($1157.63 - 1150.00$ rounded to 2 dp)
- **Answer: Simple interest = 150 pounds; compound total = 1157.63 pounds; difference = 7.63 pounds**

Question 12

- **M1** value after year 1: $800 \times 1.06 = 848$ shown
- **M1** add the deposit: $848 + 200 = 1048$ and then apply 6% for year 2 or show $(848 + 200) \times 1.06$
- **A1** 1110.88 (pounds) cao
- **Answer: 1110.88 pounds**

Question 13

- **M1** method: 150×0.80 then result $\times 1.25$ or equivalent
- **A1** 150 (pounds) cao
- **Answer: 150 pounds**

Question 14

- **M1** method: divide 648 by 0.9^2 or $648 \div 0.81$
- **A1** 800 (pounds) cao
- **Answer: 800 pounds**

Question 15

- **M1** method: use multiplier 0.82^3 or set original $\times 0.82^3 = 1976$
- **M1** divide: original = $1976 \div 0.82^3$ shown
- **A1** 3584 (pounds) cao
- **Answer: 3584 pounds**

Question 16

- **M1** method: use multipliers $1.10 \times 0.90 = 0.99$ shown
- **A1** 1% decrease cao
- **Answer: 1% decrease**

Question 17

- **M1** method: divide total percentage by number of years $9\% \div 3$
- **A1** 3% per year cao
- **Answer: 3% per year**

Question 18

- **M1** value after year 1: $1000 \times 1.04 = 1040$ shown
- **M1** let extra deposit = x , then $(1040 + x) \times 1.04 = 1200$ or equivalent equation shown
- **M1** correct method to find pre-final total: $1040 + x = 1200 \div 1.04$
- **A1** 113.85 (pounds) cao
- **Answer: 113.85 pounds**