3.10 Simple and Compound Interest: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A car is worth £160. Its value is increased by 5% in the first year and then decreased by 5% of its new value in the second year. Work out its value at the end of the second year.

(3)

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2 Work out the simple interest on £2500 invested at 3.5% per year for 4 years.

(2)

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3 A car is worth £400. Its value is increased by 20% in the first year and then decreased by 20% of its new value in the second year. Work out its value at the end of the second year.

(3)

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4 £2500 is invested for 4 years at 4% compound interest per year. Work out the total amount at the end of 4 years. Give your answer to the nearest penny.

(3)

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5 A car is worth £160. Its value is decreased by 25% in the first year and then increased by 25% of its new value in the second year. Work out its value at the end of the second year.

(3)

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6 A trader buys an item for £40 and sells it for £28. Work out the percentage loss.

(3)

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7 Work out the simple interest on £2500 invested at 3.5% per year for 2 years.

(2)

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8 A car is worth £200. Its value is decreased by 5% in the first year and then decreased by 30% of its new value in the second year. Work out its value at the end of the second year.

(3)

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9 Jo invests £2500 in an account paying simple interest. After 2 years the interest earned is £100. Work out the annual interest rate.

(3)

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10 £800 is invested for 4 years at 3% compound interest per year. Work out the total amount at the end of 4 years. Give your answer to the nearest penny.

(3)

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11 A trader buys an item for £200 and sells it for £220. Work out the percentage profit.

(3)

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12 A car is worth £200. Its value is increased by 10% in the first year and then decreased by 5% of its new value in the second year. Work out its value at the end of the second year.

(3)

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13 A trader buys an item for £250 and sells it for £175. Work out the percentage loss.

(3)

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14 £1000 is invested for 2 years at 6% per year. Work out how much more interest is earned with compound interest than with simple interest. Give your answer to the nearest penny.

(4)

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15 £200 is invested for 3 years at 2.5% simple interest per year. Work out the total amount in the account at the end of 3 years.

(3)

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16 A car is worth £160. Its value is decreased by 5% in the first year and then decreased by 20% of its new value in the second year. Work out its value at the end of the second year.

(3)

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17 A trader buys an item for £400 and sells it for £560. Work out the percentage profit.

(3)

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18 £200 is invested for 2 years at 10% per year. Work out how much more interest is earned with compound interest than with simple interest. Give your answer to the nearest penny.

(4)

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19 £800 is invested for 4 years at 10% compound interest per year. Work out the total amount at the end of 4 years. Give your answer to the nearest penny.

(3)

---

20 £1500 is invested for 3 years at 8% compound interest per year. Work out the total amount at the end of 3 years. Give your answer to the nearest penny.

(3)

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21 A trader buys an item for £40 and sells it for £60. Work out the percentage profit.

(3)

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22 A car is worth £400. Its value is decreased by 15% in the first year and then increased by 30% of its new value in the second year. Work out its value at the end of the second year.

(3)

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23 A trader buys an item for £25 and sells it for £10. Work out the percentage loss.

(3)

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24 A television worth £450 loses 15% of its value in one year (compound). Work out its value after one year.

(2)

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25 A price is increased by 20% and then decreased by 20%. Work out the overall percentage change.

(2)

---

26 A loan of £600 is charged simple interest for 4 years, with total interest of £96. Work out the annual simple interest rate.

(2)

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27 An investment grows from £800 to £864 after 1 year of compound interest. Work out the annual interest rate.

(2)

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28 A sum of £1500 is invested at 3.5% simple interest per year. Work out the total amount (principal plus interest) after 4 years.

(3)

---

29 An investment of £700 earns compound interest at 5% per year. Work out its value after 3 years, correct to 2 decimal places.

(3)

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30 A car worth £9000 loses 20% of its value in the first year and 15% of its remaining value in the second year (compound depreciation). Work out its value after 2 years.

(3)

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31 Work out 5% of £320. This represents the interest earned in one year. Give the interest only.

(1)

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32 A motorbike depreciates by 12% of its value each year (compound). After 2 years its value is £3097.60. Work out the price of the motorbike when it was new.

(4)

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33 A deposit of £250 earns 6% compound interest for 1 year. Work out the amount after 1 year.

(1)

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Mark scheme · 3.10 Simple and Compound Interest: 2-hour Pack

Question 1

first change: £168 (or multiplier 1.05)	M1
second change applied to the new value	M1
£159.60 cao	A1

Answer: **£159.60**

Question 2

£2500 x 3.5/100 = £87.50 per year or P x R x T ÷ 100	M1
£350 cao	A1

Answer: **£350**

Question 3

first change: £480 (or multiplier 1.2)	M1
second change applied to the new value	M1
£384 cao	A1

Answer: **£384**

Question 4

multiplier 1.04 used	M1
2500×1.04^4	M1
£2924.65 cao	A1

Answer: **£2924.65**

Question 5

first change: £120 (or multiplier 0.75)	M1
second change applied to the new value	M1
£150 cao	A1

Answer: **£150**

Question 6

loss of £12 found	M1
£12 ÷ £40 x 100	M1
30% loss cao	A1

Answer: **30% loss**

Question 7

£2500 x 3.5/100 = £87.50 per year or P x R x T ÷ 100	M1
£175 cao	A1

Answer: **£175**

Question 8

first change: £190 (or multiplier 0.95)	M1
second change applied to the new value	M1
£133 cao	A1

Answer: **£133**

Question 9

£100 ÷ 2 = £50 per year	M1
£50 ÷ £2500 x 100	M1
2% cao	A1

Answer: **2%**

Question 10

multiplier 1.03 used	M1
800×1.03^4	M1
£900.41 cao	A1

Answer: **£900.41**

Question 11

profit of £20 found	M1
£20 ÷ £200 x 100	M1
10% profit cao	A1

Answer: **10% profit**

Question 12

first change: £220 (or multiplier 1.1)	M1
second change applied to the new value	M1
£209 cao	A1

Answer: **£209**

Question 13

loss of £75 found	M1
£75 ÷ £250 x 100	M1
30% loss cao	A1

Answer: **30% loss**

Question 14

compound amount 1000×1.06^2	M1
compound total £1123.60	A1
simple interest £120	M1
£3.60 cao	A1

Answer: **£3.60**

Question 15

yearly interest £5	M1
x 3	M1
£215 cao	A1

Answer: **£215**

Question 16

first change: £152 (or multiplier 0.95)	M1
second change applied to the new value	M1
£121.60 cao	A1

Answer: **£121.60**

Question 17

profit of £160 found	M1
£160 ÷ £400 x 100	M1
40% profit cao	A1

Answer: **40% profit**

Question 18

compound amount 200×1.1^2	M1
compound total £242	A1
simple interest £40	M1
£2 cao	A1

Answer: **£2**

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Question 19

multiplier 1.1 used	M1
800×1.1^4	M1
£1171.28 cao	A1

Answer: **£1171.28**

Question 20

multiplier 1.08 used	M1
1500×1.08^3	M1
£1889.57 cao	A1

Answer: **£1889.57**

Question 21

profit of £20 found	M1
£20 ÷ £40 x 100	M1
50% profit cao	A1

Answer: **50% profit**

Question 22

first change: £340 (or multiplier 0.85)	M1
second change applied to the new value	M1
£442 cao	A1

Answer: **£442**

Question 23

loss of £15 found	M1
£15 ÷ £25 x 100	M1
60% loss cao	A1

Answer: **60% loss**

Question 24

method: 450*0.85	M1
382.50 (pounds) cao	A1

Answer: **£382.50**

Question 25

use multipliers 1.20*0.80 = 0.96	M1
4% decrease cao	A1

Answer: **4% decrease**

Question 26

method: rate = total interest/(principal*years) = 96/(600*4)	M1
4% per year cao	A1

Answer: **4% per year**

Question 27

method: divide 864 by 800 to find the multiplier, 864/800 = 1.08	M1
8% cao	A1

Answer: **8%**

Question 28

method: 1500*0.035*4	M1
find interest = 210	M1
1710 (pounds) cao	A1

Answer: **£1710**

Question 29

method: $700*1.05^3$	M1
correct intermediate value, about 810.34	M1
810.34 (pounds) cao	A1

Answer: **£810.34**

Question 30

value after year 1: 9000*0.8 = 7200	M1
value after year 2: 7200*0.85	M1
6120 (pounds) cao	A1

Answer: **£6120**

Question 31

16 (pounds) cao	B1

Answer: **£16**

Question 32

method: use multiplier 0.88^2 or original*0.88^2 = 3097.60	M1
find 0.88^2 = 0.7744	M1
divide: original = 3097.60/0.7744	M1
4000 (pounds) cao	A1

Answer: **£4000**

Question 33

265 (pounds) cao	B1

Answer: **£265**

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