1.11 Percentages of Amounts and Percentage Change: 2-hour Pack

Calculators not allowed · about 120 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Increase £240 by 15%.

(2)

2 Work out 40% of 40.

(2)

3 Work out 12% of 150.

(2)

4 (a) Write down the multiplier for an 18% decrease.
(b) Use your multiplier to decrease 200 by 18%.

(2)

5 A ticket costs £240. The price falls by 5%. Work out the new price.

(2)

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6 A jacket costs £250. In a sale there is 20% off. Work out the sale price.

(2)

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7 The cost of a ticket changed from 400 to 420. Work out the percentage increase.

(3)

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8 A phone tariff rises by 12%. The bill was £25. Work out the new bill, give your answer to 2 decimal places.

(2)

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9 A car is worth £1000. Its value is decreased by 10% in the first year and then decreased by 10% of its new value in the second year. Work out its value at the end of the second year.

(3)

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10 Work out 60% of 200.

(2)

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11 (a) Write down the multiplier for a 6% increase.
(b) Use your multiplier to increase 300 by 6%.

(2)

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12 (a) Write down the multiplier for a 7% increase.
(b) Use your multiplier to increase 500 by 7%.

(2)

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13 A car is worth £80. Its value is increased by 25% in the first year and then decreased by 15% of its new value in the second year. Work out its value at the end of the second year.

(3)

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14 Decrease £36 by 25%.

(2)

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15 A bike costs £120. A shop offers 5% off. A second shop sells the same bike for £119. Which shop is cheaper, and by how much?

(3)

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16 The price of a bike changed from 25 to 28. Work out the percentage increase.

(3)

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17 (a) Write down the multiplier for a 6% increase.
(b) Use your multiplier to increase 40 by 6%.

(2)

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18 (a) Write down the multiplier for a 4% increase.
(b) Use your multiplier to increase 150 by 4%.

(2)

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19 A car is worth £80. Its value is decreased by 15% 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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20 (a) Write down the multiplier for a 7% increase.
(b) Use your multiplier to increase 80 by 7%.

(2)

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21 A bike costs £50. A shop offers 30% off. A second shop sells the same bike for £40. Which shop is cheaper, and by how much?

(3)

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22 A car is worth £100. Its value is increased by 15% in the first year and then increased 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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23 After a 15% increase, the price of a laptop is £92. Work out the original price.

(3)

---

24 Use multipliers to work out each new amount.

(a) Increase 160 by 25% **(2)**

(b) Decrease 75 by 15% **(2)**

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25 Reverse percentages.

(a) A jacket now costs £96 after a 20% increase. Work out the original price before the increase. **(2)**

.....

(b) A laptop was first increased by 15% and then reduced by 10%. The final price is £103.50. Work out the original price before both changes. **(4)**

.....

26 Write the multiplier for a 40% increase, then use it to work out the new value of 50 after the increase.

(2)

27 A price of £220 is decreased by 5%. Calculate the new price.

(2)

28 Work out 12% of 550.

(2)

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29 A laptop's price increases from £400 to £460. Work out the percentage increase.

(3)

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30 A shop increases all its prices by 8%. A jacket now costs £108 after the increase. Work out the original price before the increase.

(3)

---

31 A gym membership costs £80. The fee is first reduced by 20% in a promotion, then the reduced fee is increased by 25% the following year. Work out the fee after both changes.

(3)

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32 A phone was originally priced at £250. It is now on sale for £212.50. Work out the percentage decrease.

(3)

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33 Find 20% of 90.

(1)

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34 A charity collected £4,500 last year. This year it collected £5,220. Work out the percentage increase in the amount collected.

(3)

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35 Find 50% of 84.

(1)

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36 Find 5% of 300.

(1)

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37 Find 1% of 700.

(1)

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38 Increase 80 by 10%.

(2)

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Mark scheme · 1.11 Percentages of Amounts and Percentage Change: 2-hour Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

15% of 240 = 36 or a multiplier of 1.15 used	M1
£276 cao	A1

Answer: **£276**

Question 2

10% = 4 or 40/100 x 40 seen	M1
16 cao	A1

Answer: **16**

Question 3

10% = 15 or 12/100 x 150 seen	M1
18 cao	A1

Answer: **18**

Question 4

(a) 0.82	B1
(b) 164	B1

Answer: **(a) 0.82, (b) 164**

Question 5

5% of 240 = 12 or a multiplier of 0.95 used	M1
£228 cao	A1

Answer: **£228**

Question 6

20% of 250 = 50 found or multiplier 0.8	M1
£200 cao	A1

Answer: **£200**

Question 7

change = 20 found	M1
20 ÷ 400 x 100 (change over original)	M1
5% increase cao	A1

Answer: **5% increase**

Question 8

method to find 12% or multiplier 1.12 applied, e.g. 25 x 1.12 or 25 + 3 (12% of 25) oe	M1
£28.00 cao	A1

Answer: **£28.00**

Question 9

first change: £900 (or multiplier 0.9)	M1
second change applied to the new value	M1
£810 cao	A1

Answer: **£810**

Question 10

10% = 20 or 60/100 x 200 seen	M1
120 cao	A1

Answer: **120**

Question 11

(a) 1.06	B1
(b) 318	B1

Answer: **(a) 1.06, (b) 318**

Question 12

(a) 1.07	B1
(b) 535	B1

Answer: **(a) 1.07, (b) 535**

Question 13

first change: £100 (or multiplier 1.25)	M1
second change applied to the new value	M1
£85 cao	A1

Answer: **£85**

Question 14

25% of 36 = 9 or a multiplier of 0.75 used	M1
£27 cao	A1

Answer: **£27**

Question 15

first shop price £114 found	M1
compares £114 with £119	M1
The first shop is cheaper by £5 cao	A1

Answer: **The first shop is cheaper by £5**

Question 16

change = 3 found	M1
3 ÷ 25 x 100 (change over original)	M1
12% increase cao	A1

Answer: **12% increase**

Question 17

(a) 1.06	B1
(b) 42.4	B1

Answer: **(a) 1.06, (b) 42.4**

Question 18

(a) 1.04	B1
(b) 156	B1

Answer: **(a) 1.04, (b) 156**

Question 19

first change: £68 (or multiplier 0.85)	M1
second change applied to the new value	M1
£54.40 cao	A1

Answer: **£54.40**

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Question 20

(a) 1.07 **B1**

(b) 85.6 **B1**

Answer: **(a) 1.07, (b) 85.6**

Question 21

first shop price £35 found **M1**

compares £35 with £40 **M1**

The first shop is cheaper by £5 cao **A1**

Answer: **The first shop is cheaper by £5**

Question 22

first change: £115 (or multiplier 1.15) **M1**

second change applied to the new value **M1**

£120.75 cao **A1**

Answer: **£120.75**

Question 23

multiplier 1.15 (or 115% = £92) **M1**

£92 ÷ 1.15 **M1**

£80 cao **A1**

Answer: **£80**

Question 24

(a) multiplier 1.25 used or method to find 25% then add oe **M1**

(a) 200 cao **A1**

(a) Answer: **200**

(b) multiplier 0.85 used or method to find 15% then subtract oe **M1**

(b) 63.75 cao **A1**

(b) Answer: **63.75**

Question 25

(a) use of multiplier 1.2 or method 20% of original added to original **M1**

(a) £80 cao **A1**

(a) Answer: **£80**

(b) method to reverse the 10% reduction, e.g. 103.50 / 0.9, or the combined multiplier 1.15 x 0.9 = 1.035 used **M1**

(b) method to reverse the 15% increase, e.g. their 115 / 1.15, or 103.50 / 1.035 oe **M1**

(b) 115 (price before the reduction) seen oe **A1**

(b) £100 cao **A1**

(b) Answer: **£100**

Question 26

correct multiplier 1.4 stated **M1**

70 cao **A1**

Answer: **70**

Question 27

correct method to find 5% of 220, e.g. 10% = 22, halved to 11 **M1**

£209 cao **A1**

Answer: **£209**

Question 28

correct method, e.g. 10% = 55 and 2% = 11, combined to find 12% **M1**

66 cao **A1**

Answer: **66**

Question 29

finds the increase, 460 - 400 = 60 **M1**

divides the increase by the original price, 60 / 400 **M1**

15% cao **A1**

Answer: **15%**

Question 30

recognises the multiplier for an 8% increase is 1.08 **M1**

divides the new price by the multiplier, 108 / 1.08 **M1**

£100 cao **A1**

Answer: **£100**

Question 31

correct method for the 20% reduction, e.g. 80 x 0.8 = 64 **M1**

correct method for the 25% increase applied to 64, e.g. 64 x 1.25 = 80 **M1**

£80 cao **A1**

Answer: **£80**

Question 32

finds the decrease, 250 - 212.50 = 37.50 **M1**

divides the decrease by the original price, 37.50 / 250 **M1**

15% cao **A1**

Answer: **15%**

Question 33

18 cao **B1**

Answer: **18**

Question 34

finds the increase, 5,220 - 4,500 = 720 **M1**

divides the increase by the original amount, 720 / 4,500 **M1**

16% cao **A1**

Answer: **16%**

Question 35

42 cao **B1**

Answer: **42**

Question 36

15 cao **B1**

Answer: **15**

Question 37

7 cao **B1**

Answer: **7**

Question 38

correct method to find 10% of 80, e.g. 80 x 0.1 = 8, or multiplier 1.1 used **M1**

88 cao **A1**

Answer: **88**

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