KS3.M-N11 Percentages of Amounts and Percentage Change

AQA KS3.M-N11 · Calculators not allowed · about 60 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down 10% of each amount.

(a) 10% of 150 **(1)**

(b) 10% of 2,340 **(1)**

(c) 10% of 3.6 kg **(1)**

2 Find 5% of each amount without a calculator.

(a) 5% of 80 **(1)**

(b) 5% of 1,200 **(1)**

(c) 5% of 0.9 m **(1)**

3 Calculate 15% of each amount. You may use mental or written methods, no calculator.

(a) 15% of 220 **(1)**

(b) 15% of 60 **(1)**

(c) 15% of 1,040 **(1)**

4 A jumper costs 48 pounds. It is reduced by 20%. Calculate the sale price.

(2)

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

(2)

6 Write each percentage as a multiplier.

(a) Multiplier for an increase of 25% **(1)**

(b) Multiplier for a decrease of 15% **(1)**

(c) Multiplier for an increase of 5% **(1)**

7 Use multipliers to work out each new amount.

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

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

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8 A coat is priced at 85 pounds. It is first reduced by 10% then a further 15% is taken from the reduced price. Calculate the final sale price, giving your answer to the nearest penny.

(4)

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9 Reverse percentages. a) A jacket now costs 96 pounds after a 20% increase. Work out the original price before the increase. b) A laptop was first increased by 15% and then reduced by 10%. The final price is 103.50 pounds. Work out the original price before both changes.

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

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

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10 A small town had a population of 12,400 last year. This year the population is 13,860. a) Work out the increase in population. b) Calculate the percentage increase in population, giving your answer correct to 1 decimal place.

(a) Work out the increase in population. **(2)**

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(b) Calculate the percentage increase in population, giving your answer correct to 1 decimal place. **(4)**

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11 A pair of trainers costs 160 pounds. During a sale the price is reduced by 25%. Later the shop increases that reduced price by 20%. Work out the final price after both changes.

(a) Find the price after the 25% reduction. **(2)**

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(b) Starting from the reduced price, work out the final price after increasing by 20%. **(4)**

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12 Stretch problem. During a clearance sale a camera is sold for 246 pounds after a 12% reduction. Work out the original price before the reduction. Give your answer to the nearest penny.

(6)

Mark scheme · KS3.M-N11 Percentages of Amounts and Percentage Change

Question 1

- (a) **B1** 15 cao
- (a) Answer: **15**
- (b) **B1** 234 cao
- (b) Answer: **234**
- (c) **B1** 0.36 kg cao
- (c) Answer: **0.36 kg**

Question 2

- (a) **B1** 4 cao
- (a) Answer: **4**
- (b) **B1** 60 cao
- (b) Answer: **60**
- (c) **B1** 0.045 m cao
- (c) Answer: **0.045 m**

Question 3

- (a) **B1** 33 cao
- (a) Answer: **33**
- (b) **B1** 9 cao
- (b) Answer: **9**
- (c) **B1** 156 cao
- (c) Answer: **156**

Question 4

- **M1** correct method to find 20% or 80% of 48, e.g. 10% = 4.8, 20% = 9.6 or 48 x 0.8 oe
- **A1** 38.4 pounds cao
- Answer: **38.4 pounds**

Question 5

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

Question 6

- (a) **B1** 1.25 cao
- (a) Answer: **1.25**
- (b) **B1** 0.85 cao
- (b) Answer: **0.85**
- (c) **B1** 1.05 cao
- (c) Answer: **1.05**

Question 7

- (a) **M1** multiplier 1.25 used or method to find 25% then add oe
- (a) **A1** 200 cao
- (a) Answer: **200**
- (b) **M1** multiplier 0.85 used or method to find 15% then subtract oe
- (b) **A1** 63.75 cao
- (b) Answer: **63.75**

Question 8

- **M1** correct method to find the price after the first 10% reduction, e.g. 85 x 0.9 or 85 - 8.5 oe
- **M1** correct method to find the further 15% reduction on the reduced price, e.g. multiply reduced price by 0.85 oe
- **A1** 65.03 pounds cao
- **A1** final answer rounded to nearest penny cao
- Answer: **65.03 pounds**

Question 9

- (a) **M1** use of multiplier 1.2 or method 20% of original added to original
- (a) **A1** 80 pounds cao
- (a) Answer: **80 pounds**
- (b) **M1** method to form combined multiplier 1.15 x 0.9 = 1.035 or equivalent
- (b) **M1** division by the combined multiplier to find original, e.g. 103.50 / 1.035 oe
- (b) **A1** 100.00 pounds cao
- (b) **A1** answer given to 2 decimal places cao
- (b) Answer: **100.00 pounds**

Question 10

- (a) **M1** subtract original from new population 13,860 - 12,400
- (a) **A1** 1,460 cao
- (a) Answer: **1,460**
- (b) **M1** method to divide the increase by the original population, 1,460 / 12,400
- (b) **M1** method to convert to percentage by multiplying by 100 or equivalent
- (b) **A1** 11.774...% seen or equivalent
- (b) **A1** answer rounded to 1 decimal place 11.8% cao
- (b) Answer: **11.8%**

Question 11

- (a) **M1** method to find 25% of 160 or multiplier 0.75 used
- (a) **A1** 120 pounds cao
- (a) Answer: **120 pounds**
- (b) **M1** method to find 20% of 120 or multiplier 1.2 used
- (b) **M1** correct addition of the 20% to the reduced price
- (b) **A1** 144 pounds cao
- (b) **A1** final answer stated with currency cao
- (b) Answer: **144 pounds**

Question 12

- **M1** recognition that multiplier for a 12% reduction is 0.88
- **M1** method to divide the sale price by 0.88 to find the original price
- **M1** correct division calculation 246 / 0.88 shown
- **A1** 279.54545... seen
- **A1** answer rounded to nearest penny 279.55 pounds cao
- **A1** final answer presented clearly with currency cao
- Answer: **279.55 pounds**