



EP.M105 Direct Proportion and Value for Money

GL ASSESSMENT GL-11PLUS-MATHS • Calculators not allowed • about 55 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Six apples cost 90p. What is the cost of one apple?

- ☐ A) 15p
- ☐ B) 14p
- ☐ C) 18p
- ☐ D) 150p
- ☐ E) 1.5p

(Total for Question 1 is 1 mark)

- 2** Three chocolate bars cost £1.35. What is the price of one bar?

- ☐ A) 45p
- ☐ B) 55p
- ☐ C) 40p
- ☐ D) 35p
- ☐ E) 50p

(Total for Question 2 is 1 mark)

- 3** A 5 kg sack of flour costs £7.50. What is the cost per kilogram?

- ☐ A) £0.75
- ☐ B) £1.50
- ☐ C) £2.50
- ☐ D) £15.00
- ☐ E) £0.15

(Total for Question 3 is 1 mark)

- 4 An item costs £4.00. The shop runs a 'buy one, get a second at 50% off' offer. How much would two of the items cost under this offer?

- ☐ A) £6.00
- ☐ B) £5.00
- ☐ C) £8.00
- ☐ D) £4.50
- ☐ E) £2.00

(Total for Question 4 is 1 mark)

- 5 A 250 g tin of baked beans costs 40p. What is the price per 100 g?

- ☐ A) 16p
- ☐ B) 10p
- ☐ C) 25p
- ☐ D) 18p
- ☐ E) 12p

(Total for Question 5 is 1 mark)

- 6 A 1 L bottle of water costs £1.20. A smaller 500 ml bottle costs 70p. Which bottle gives the cheaper price per litre?

- ☐ A) The 1 L bottle
- ☐ B) The 500 ml bottle
- ☐ C) They are the same
- ☐ D) Cannot tell
- ☐ E) Cheaper per 250 ml

(Total for Question 6 is 1 mark)

- 7 Cereal A costs £2.40 for 400 g. Cereal B costs £2.90 for 500 g. Which cereal is cheaper per 100 g?

- ☐ A) Cereal A
- ☐ B) Cereal B
- ☐ C) They cost the same
- ☐ D) Cereal A is twice the price of B
- ☐ E) Cannot tell

(Total for Question 7 is 1 mark)

8 A 750 ml bottle of cordial costs £1.80. What is the price per litre?

- ☐ A) £2.40
- ☐ B) £1.35
- ☐ C) £3.60
- ☐ D) £1.20
- ☐ E) £2.25

(Total for Question 8 is 1 mark)

9 A bakery offers 3 muffins for £2.00. What is the price of one muffin (to the nearest hundredth of a pound)?

- ☐ A) £0.66
- ☐ B) £0.67
- ☐ C) £0.60
- ☐ D) £0.75
- ☐ E) £0.70

(Total for Question 9 is 1 mark)

10 A jar normally contains 400 g of jam. A promotion gives 20% extra free for the same price. How many grams are in the promotional jar?

- ☐ A) 480 g
- ☐ B) 420 g
- ☐ C) 460 g
- ☐ D) 520 g
- ☐ E) 400 g

(Total for Question 10 is 1 mark)

11 How many 250 g packets are needed to make 3 kg?

- ☐ A) 10
- ☐ B) 11
- ☐ C) 12
- ☐ D) 13
- ☐ E) 14

(Total for Question 11 is 1 mark)

12 A supermarket sells 6 muffins for £3.00. What is the cost of one muffin?

- ☐ A) 40p
- ☐ B) 45p
- ☐ C) 50p
- ☐ D) 60p
- ☐ E) 55p

(Total for Question 12 is 1 mark)

13 A 500 g bag of rice costs £1.80. Work out the cost of 1 kg of rice.

(Total for Question 13 is 2 marks)

14 Four pencils cost 75p. How many pencils can you buy for £3.00?

(Total for Question 14 is 2 marks)

15 A 400 ml bottle of shampoo costs £3.20. The shop sells two 600 ml bottles for £5.60. Which offer gives better value per millilitre? Show your working.

(Total for Question 15 is 3 marks)

- 16** A box of cereal is 500 g and costs £2.40. It is sold with 25% extra free. (a) How many grams are in the promotional box? (b) What is the price per 100 g in the promotional box? Give your answer in pence to one decimal place.

(a) How many grams are in the promotional box? (1)

(b) What is the price per 100 g in the promotional box? Give answer to one decimal place in pence. (1)

(Total for Question 16 is 2 marks)

- 17** Priya sees an offer: 3 chocolate bars for £2.10. There is also a store discount of 20% off the total when you buy 5 or more bars. How much would she pay for 6 bars with the discount?

(Total for Question 17 is 2 marks)

- 18** A pen costs £1.25 each. A pack of 5 pens costs £5.60. The shop offers a loyalty voucher giving 10% off packs only. Using the voucher, what is the price per pen if you buy the 5-pack? Which is cheaper, a single pen or a pen from the discounted pack?

(Total for Question 18 is 3 marks)

- 19** A 750 ml bottle of juice costs £2.25. A larger 1.5 L bottle costs £3.80. Which bottle is cheaper per litre? Show your working.

(Total for Question 19 is 2 marks)

- 20** A toy shop sells small packs of 4 toys for £3.20 and large packs of 10 toys for £7.50. The shop runs a promotion: for every 3 large packs bought, you receive one small pack free. A customer needs 50 toys. Work out the least possible cost for the customer. Show your calculations.

(Total for Question 20 is 4 marks)

Mark scheme · EP.M105 Direct Proportion and Value for Money

Question 1

- **B1** correct option A (15p) cao
- **Answer: A) 15p** ($90\text{p} \div 6 = 15\text{p}$ per apple). The cost of one apple is 15p.

Question 2

- **B1** correct option A (45p) cao
- **Answer: A) 45p** ($\pounds 1.35 \div 3 = \pounds 0.45 = 45\text{p}$)

Question 3

- **B1** correct option B ($\pounds 1.50$) cao
- **Answer: B) $\pounds 1.50$** ($\pounds 7.50 \div 5 = \pounds 1.50$ per kg)

Question 4

- **B1** correct option A ($\pounds 6.00$) cao
- **Answer: A) $\pounds 6.00$** (first at $\pounds 4.00$, second at 50% of $\pounds 4.00 = \pounds 2.00$; total $\pounds 6.00$)

Question 5

- **B1** correct option A (16p per 100 g) cao
- **Answer: A) 16p** ($40\text{p} \div 250\text{ g} \times 100\text{ g} = 16\text{p}$ per 100 g)

Question 6

- **B1** correct option A (the 1 L bottle) cao
- **Answer: A) The 1 L bottle** ($\pounds 1.20$ per L versus 70p for 0.5 L = $\pounds 1.40$ per L)

Question 7

- **B1** correct option B (Cereal B) cao
- **Answer: B) Cereal B** (Cereal A: $240\text{p} \div 4 = 60\text{p}$ per 100 g; Cereal B: $290\text{p} \div 5 = 58\text{p}$ per 100 g)

Question 8

- **B1** correct option A ($\pounds 2.40$ per litre) cao
- **Answer: A) $\pounds 2.40$** ($\pounds 1.80 \div 0.75\text{ L} = \pounds 2.40$ per litre)

Question 9

- **B1** correct option B ($\pounds 0.67$) cao
- **Answer: B) $\pounds 0.67$** ($\pounds 2.00 \div 3$ approx $\pounds 0.6667$, rounded to $\pounds 0.67$)

Question 10

- **B1** correct option A (480 g) cao
- **Answer: A) 480 g** ($400\text{ g} + 20\%$ of $400\text{ g} = 400 + 80 = 480\text{ g}$)

Question 11

- **B1** correct option C (12 packets) cao
- **Answer: C) 12** ($3\text{ kg} = 3000\text{ g}$; $3000 \div 250 = 12$)

Question 12

- **B1** correct option C (50p) cao
- **Answer: C) 50p** ($\pounds 3.00 \div 6 = \pounds 0.50 = 50\text{p}$)

Question 13

- **M1** use of unitary method or recognition that 1 kg is two 500 g bags (1.80×2 seen) isw
- **A1** $\pounds 3.60$ cao
- **Answer: $\pounds 3.60$** (500 g costs $\pounds 1.80$ so $1\text{ kg} = 2 \times \pounds 1.80 = \pounds 3.60$)

Question 14

- **M1** use of scaling or unitary method to find number of pencils (e.g. 75p for 4 implies 300p for 16) ft
- **A1** 16 pencils cao
- **Answer: 16 pencils** ($75\text{p} \times 4 = 300\text{p}$ so $\text{£}3.00$ buys $4 \times 4 = 16$ pencils)

Question 15

- **M1** correct method for single bottle: $320\text{p} \div 400 = 0.8$ p per ml seen
- **M1** correct method for two-bottle deal: $560\text{p} \div 1200 = 0.4666\dots$ p per ml seen
- **A1** conclusion that the two-for-£5.60 deal is better value cao
- **Answer: Two-for deal is better value. Single:** $320\text{p} \div 400 \text{ ml} = 0.8 \text{ p/ml}$. **Two for £5.60:** $560\text{p} \div 1200 \text{ ml}$ approx 0.4667 p/ml. **The two-bottle offer is cheaper per ml.**

Question 16

- (a) **B1** 625 g cao
- (a) **Answer: 625 g**
- (b) **A1** 38.4p per 100 g cao
- (b) **Answer: 38.4p per 100 g**

Question 17

- **M1** full price for 6 bars found: $6 \times \text{£}0.70 = \text{£}4.20$ seen
- **A1** £3.36 cao (20% off £4.20 gives £3.36)
- **Answer: £3.36** (3 for £2.10 $\rightarrow$ £0.70 each; $6 \times \text{£}0.70 = \text{£}4.20$; 20% off $\rightarrow 80\% \times \text{£}4.20 = \text{£}3.36$)

Question 18

- **M1** correct calculation of pack after voucher: $\text{£}5.60 \times 0.90 = \text{£}5.04$ seen
- **M1** correct division to give per pen: $\text{£}5.04 \div 5 = \text{£}1.008$ seen
- **A1** conclusion that the discounted pack gives cheaper pens at about £1.01 each cao
- **Answer: Discounted pack is cheaper.** $\text{£}5.60 \times 0.90 = \text{£}5.04$; $\text{£}5.04 \div 5 = \text{£}1.008 \rightarrow$ about £1.01 per pen, cheaper than £1.25 single pen.

Question 19

- **M1** correct calculation of unit prices: $\text{£}2.25 \div 0.75 = \text{£}3.00$; $\text{£}3.80 \div 1.5$ approx £2.53
- **A1** conclusion that the 1.5 L bottle is cheaper per litre cao
- **Answer: 1.5 L bottle is cheaper.** 750 ml: $\text{£}2.25 \div 0.75 \text{ L} = \text{£}3.00$ per L. 1.5 L: $\text{£}3.80 \div 1.5 \text{ L}$ approx £2.53 per L.

Question 20

- **M1** correct use of the promotion to find toys from 3 large packs: $3 \times 10 = 30$ plus one free small pack = 34 toys seen
- **M1** correct cost calculation for 3 large packs: $3 \times \text{£}7.50 = \text{£}22.50$ seen
- **M1** correct calculation of additional small packs needed and their cost: need 16 more toys $\rightarrow$ 4 small packs cost $4 \times \text{£}3.20 = \text{£}12.80$ seen
- **A1** final minimum cost given as £35.30 cao with correct justification
- **Answer: Least cost £35.30. Buy 3 large packs (£22.50) which gives 30 toys plus one free small pack (4) = 34 toys. Need 16 more $\rightarrow$ 4 small packs at £3.20 = £12.80. Total £22.50 + £12.80 = £35.30.**