



3.12H Best Buy Questions: Higher Tier Practice

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 80 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** A shop sells a jacket at 35% off the original price. The sale price is 78 pounds.
Work out the original price of the jacket. Give your answer to the nearest 10 pence.

(Total for Question 1 is 3 marks)

- 2** Priya compares two mobile phone deals.
Deal A: 12 months at 18 pounds per month, plus a one-off activation fee of 25 pounds.
Deal B: 24 months at 12 pounds per month, no activation fee.
Which deal is cheaper overall? Show your working and give the difference in total cost.

(Total for Question 2 is 4 marks)

- 3** A supermarket sells olives in two pack sizes.
Small jar: 180 g for 1.10 pounds.
Large jar: 350 g for 1.85 pounds.
Which jar gives the better value for money in pence per 100 g? Show your calculations and give pence per 100 g to 2 decimal places.

(Total for Question 3 is 5 marks)

- 4 A retailer offers a yearly subscription with the following two payment options:
Option 1: Pay monthly at m pounds per month for 12 months with no discount.
Option 2: Pay a single yearly price of $10m - 24$ pounds. For which values of m is Option 2 cheaper than Option 1? Show your algebra and give your answer in inequality form.

(Total for Question 4 is 5 marks)

- 5 Show that for any integer n , buying n items at a 'buy 2 get 1 free' offer gives an average price per item of $(2/3)$ of the single-item price p when n is a multiple of 3.
You must show the algebraic steps and give the final average price per item.

(Total for Question 5 is 6 marks)

- 6** A department store sells a blender with recommended retail price 95 pounds. They mark up cost price by 40% to set RRP. After an initial sale they reduce the RRP by x percent to a sale price of 80 pounds.

(a) Find the cost price of the blender. (b) Find x , the percentage reduction from RRP to sale price, to 1 decimal place.

Show all working.

(a) (a) Find the cost price of the blender. **(3)**

(b) (b) Find x , the percentage reduction from RRP to sale price (RRP = 95, sale price = 80). Give x to 1 decimal place. **(3)**

(Total for Question 6 is 6 marks)

- 7** Kwame is deciding between two electricity tariffs.

Tariff X: 120 units at 0.18 pounds per unit, plus standing charge of 9.50 pounds.

Tariff Y: 100 units at 0.20 pounds per unit, plus standing charge of 5.00 pounds, plus a discount voucher of 8.00 pounds applied to the bill.

Calculate the total bill for each tariff and state which is cheaper and by how much. Give answers to the nearest penny.

(Total for Question 7 is 5 marks)

8 A shop sells fabric by the metre. The price per metre is p pounds. There is a special offer: buy at least 2 metres and get 15% off the total price; buy 5 or more metres and get 25% off the total price.

(a) For a customer buying 4 metres, show in terms of p the total cost after discount.

(b) For what values of p ($p > 0$) will the cost for 4 metres after that discount be less than 40 pounds? Give your answer as an inequality and solve.

(a) (a) Show the total cost after discount for 4 metres in terms of p . **(2)**

(b) (b) For what values of p will the cost for 4 metres after discount be less than 40 pounds? Solve the inequality. **(4)**

(Total for Question 8 is 6 marks)

Mark scheme · 3.12H Best Buy Questions: Higher Tier Practice

Question 1

- **M1** use $65\% = 78$, method: $78 / 0.65$ or equivalent
- **A1** original price 120.00 pounds cao
- **B1** answer given to nearest 10 pence (120.00 pounds) or shown explicitly
- **Answer: 120.00 pounds (120 pounds 0 pence). The original price is 120.00 pounds. ($78 / 0.65 = 120.0$). Working check: $35\% \text{ of } 120 = 42$; $120 - 42 = 78$.**

Question 2

- **M1** calculate total for Deal A: $12 \times 18 + 25$
- **M1** calculate total for Deal B: 24×12
- **A1** correct totals: Deal A = 241 pounds, Deal B = 288 pounds
- **A1** state cheaper deal A and difference 47 pounds cao
- **Answer: Deal A is cheaper by 47 pounds. (Deal A: $12 \times 18 + 25 = 216 + 25 = 241$. Deal B: $24 \times 12 = 288$. Difference $288 - 241 = 47$.) Working check: totals recomputed above.**

Question 3

- **M1** calculate pence per 100 g for small jar: $(110 \text{ pence} / 180) \times 100$ or equivalent
- **A1** small jar = 61.11 pence per 100 g (to 2 dp) cao
- **M1** calculate pence per 100 g for large jar: $(185 \text{ pence} / 350) \times 100$ or equivalent
- **A1** large jar = 52.86 pence per 100 g (to 2 dp) cao
- **B1** state large jar is better value and give difference 8.25 pence per 100 g ($61.11 - 52.86 = 8.25$) cao
- **Answer: Small jar: 61.11 pence per 100 g. Large jar: 52.86 pence per 100 g. The large jar is better value by 8.25 pence per 100 g. (Checks: $110/180 \times 100 = 61.111... \rightarrow 61.11$; $185/350 \times 100 = 52.857... \rightarrow 52.86$.)**

Question 4

- **M1** form inequality $10m - 24 < 12m$ or equivalent
- **M1** rearrange: $-24 < 2m$ leading to $m > -12$ or equivalent sign handling
- **A1** simplify correctly to $m > -12$
- **B1** interpretation: since m is price ($m > 0$), Option 2 is always cheaper for all realistic $m > 0$ (give reasoning)
- **A1** final statement in inequality form $m > -12$ with note that for all practical $m > 0$ Option 2 is cheaper
- **Answer: Inequality: $10m - 24 < 12m \rightarrow -24 < 2m \rightarrow m > -12$. Since m represents a positive monthly price, Option 2 is cheaper for all realistic $m > 0$. Working check: substitute $m = 10$ gives yearly price $10 \times 10 - 24 = 76 < 120$.**

Question 5

- **M1** express number of paid items for n divisible by 3: for $n = 3k$ you pay for $2k$ items
- **M1** total cost = $2k \times p$, number of items = $3k$
- **M1** average price per item = $(2k \times p) / (3k)$
- **A1** simplify to $(2/3)p$ cao
- **B1** clear statement for any integer $k > 0$ so $n = 3k$, the average is $(2/3)p$
- **A1** final boxed conclusion: average = $(2/3)p$
- **Answer: Let $n = 3k$ where k is a positive integer. Number paid = $2k$ so total cost = $2kp$. Average per item = $(2kp) / (3k) = (2/3)p$. Hence the average price per item is $(2/3)p$. Working check: for $k = 1$, pay $2p$ for 3 items $\rightarrow 2/3 p$ each.**

Question 6

- (a) **M1** use $RRP = \text{cost} \times 1.40$ or $\text{cost} = RRP / 1.40$
- (a) **A1** $\text{cost} = 95 / 1.4 = 67.857142... \rightarrow 67.86$ pounds to 2 dp cao
- (a) **B1** state cost price to sensible accuracy 67.86 pounds
- **(a) Answer: Cost price = $95 / 1.4 = 67.857142... \rightarrow 67.86$ pounds. Working check: $67.86 \times 1.4 = 95.004$ approx 95 (rounding).**
- (b) **M1** use percentage reduction formula: $x = (95 - 80) / 95 \times 100$
- (b) **M1** compute $(15 / 95) \times 100 = 15/95 \times 100$
- (b) **A1** $x = 15.789... \rightarrow 15.8\%$ to 1 dp cao
- **(b) Answer: $x = (95 - 80) / 95 \times 100 = 15/95 \times 100 = 15.789... \rightarrow 15.8\%$ (to 1 dp). Working check: $95 \times (1 - 0.158) = 95 \times 0.842 = 80.0$ approx.**

Question 7

- **M1** calculate Tariff X: $120 \times 0.18 + 9.50$
- **M1** calculate Tariff Y before voucher: $100 \times 0.20 + 5.00$, then apply -8.00
- **A1** Tariff X = $21.6 + 9.50 = 31.10$ pounds
- **A1** Tariff Y = $20.00 + 5.00 - 8.00 = 17.00$ pounds
- **B1** state Tariff Y is cheaper by 14.10 pounds cao
- **Answer: Tariff X = $120 \times 0.18 + 9.50 = 21.60 + 9.50 = 31.10$ pounds. Tariff Y = $100 \times 0.20 + 5.00 - 8.00 = 20.00 + 5.00 - 8.00 = 17.00$ pounds. Tariff Y is cheaper by 14.10 pounds. Working check: recompute totals as shown.**

Question 8

- (a) **M1** form $4p \times (1 - 0.15)$ or $4p \times 0.85$
- (a) **A1** correct expression $3.4 p$ cao
- **(a) Answer: Total cost = $4p \times 0.85 = 3.4 p$. Working check: 15% off means pay 85% so $4p \times 0.85 = 3.4p$.**
- (b) **M1** form inequality $3.4 p < 40$
- (b) **M1** solve $p < 40 / 3.4$
- (b) **A1** compute $40 / 3.4 = 11.764705...$ and round appropriately
- (b) **A1** final inequality $p < 11.76...$ so $p < 11.76(47)$ or $p < 11.76$ to 2 dp and state $p > 0$
- **(b) Answer: Inequality: $3.4 p < 40 \rightarrow p < 40 / 3.4 = 11.764705...$ So for $p > 0$ the cost is less than 40 pounds when $p < 11.764705...$ (approximately $p < 11.76$ pounds). Working check: $p = 11.76$ gives $3.4 \times 11.76 = 40.0$ approx.**