5.3H Reverse Percentages: Higher Tier Practice

Total Marks

EDEXCEL Edexcel 1MA1 · Calculator allowed · about 75 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A coat is sold after a 25% reduction. The sale price is 90 pounds. Work out the original price of the coat.

(Total for Question 1 is 2 marks)

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2 A textbook has a price increased by 12% and the new price is 22.40 pounds. Find the original price of the textbook, giving your answer to 2 decimal places.

(Total for Question 2 is 3 marks)

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3 A bakery sells a loaf at 1.50 pounds after applying a 20% profit on cost. Work out the cost price of the loaf.

(a) Find the cost price of one loaf. **(3)**

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(b) If the bakery makes 240 loaves a week, find the weekly profit in pounds. **(1)**

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(Total for Question 3 is 4 marks)

4 A phone was sold for 306 pounds after a 15% discount was applied. Lorraine says the original price was 360 pounds. Is she correct? Show your working.

(Total for Question 4 is 4 marks)

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5 A retailer increases the shelf price of a product by 40% to allow for a trade discount of 20% to retailers and still achieve the desired selling price to the public. The desired public selling price is 84 pounds. Work out the original manufacturing cost before the 40% increase.

(a) Find the shelf price that results after the 40% increase, given the public selling price is 84 pounds after the 20% trade discount is applied to the shelf price. **(3)**

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(b) Find the manufacturing cost before the 40% increase. **(3)**

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(Total for Question 5 is 6 marks)

6 A charity sells tickets for a concert. They set the ticket price so that after paying an 18% commission to the box office and giving 12% of the remaining amount to the performers, the charity receives 5000 pounds. Work out the ticket price before commissions and payments if this amount relates to the total ticket revenue.

(a) Let total ticket revenue be R. Express the amount the charity receives in terms of R and show the equation to find R. **(2)**

(b) Solve your equation to find the total ticket revenue R, giving your answer to 2 decimal places and include appropriate units. **(4)**

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(Total for Question 6 is 6 marks)

Mark scheme · 5.3H Reverse Percentages: Higher Tier Practice

Question 1

- **M1** use 90 = 75% of original, or equivalent method (90/0.75)
- **A1** 120 cao
- **Answer: 120 pounds**

Question 2

- **M1** use 22.40 = 112% of original so original = 22.40/1.12
- **M1** perform the division 22.40/1.12
- **A1** 20.00 cao, to 2 dp
- **Answer: 20.00 pounds**

Question 3

- (a) **M1** recognise selling price 1.50 = 120% of cost and divide by 1.20
- (a) **A1** 1.25 cao
- (a) **B1** units and currency correct
- **(a) Answer: 1.25 pounds**
- (b) **B1** profit per loaf = 1.50 - 1.25 = 0.25, weekly profit = 240 * 0.25 = 60
- **(b) Answer: 60 pounds**

Question 4

- **M1** calculate original as 306/0.85 or apply reverse percent
- **A1** 360 cao
- **M1** state whether Lorraine is correct with calculation or counterexample
- **A1** conclusion: Lorraine is correct (or equivalent statement) cao
- **Answer: 360 pounds. Lorraine is correct.**

Question 5

- (a) **M1** let shelf price = S, then public price 84 = S*(1-0.20)=0.80S or reverse: S = 84/0.80
- (a) **M1** calculate S = 105 (or equivalent)
- (a) **A1** 105 pounds cao
- **(a) Answer: 105 pounds**
- (b) **M1** use shelf price 105 = cost * 1.40 so cost = 105/1.40
- (b) **M1** calculate cost = 75
- (b) **A1** 75 pounds cao
- **(b) Answer: 75 pounds**

Question 6

- (a) **M1** subtract 18% commission: remaining = 0.82R, then give 12% of remaining to performers so charity keeps 0.88 of 0.82R = 0.82*0.88R
- (a) **A1** equation 0.82*0.88 R = 5000 or 0.7216R = 5000
- **(a) Answer: Equation: 0.82 * 0.88 * R = 5000 or 0.7216R = 5000**
- (b) **M1** rearrange 0.7216R = 5000 to R = 5000/0.7216
- (b) **M1** calculate the division 5000 / 0.7216
- (b) **A1** 6929.05 cao, to 2 dp
- (b) **B1** include units: pounds
- **(b) Answer: 6929.05 pounds**