3.7 Percentages: Test Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Work out 10% of 80.

(Total for Question 1 is 1 mark)

2 (Non-calculator)

(a) Write 45% as a decimal. **(1)**

.....

(b) Write 3/4 as a percentage. **(1)**

.....

(c) Write 0.2 as a percentage. **(1)**

.....

(Total for Question 2 is 3 marks)

3 Which is greater, 5% of 60 or 30% of 300?
You must show your working.

(Total for Question 3 is 3 marks)

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4 Express 85 out of 125 as a percentage.

(Total for Question 4 is 2 marks)

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5 Out of 40 tomato plants in Mrs Whitfield's greenhouse, 18 produce ripe fruit before the end of July. Write 18 out of 40 as a percentage.

(Total for Question 5 is 2 marks)

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6 Yusuf invests £2000 in a savings account. The account pays 3% simple interest each year.

(a) Work out the total interest Yusuf earns after 4 years. **(3)**

.....

(Total for Question 6 is 3 marks)

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7 Write 15% as a fraction in its simplest form.

(Total for Question 7 is 2 marks)

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8 A shop sells rice in two sizes.
A 2 kg bag costs £3.20.
A 5 kg bag costs £7.50, with 10% off the marked price at the till.

(a) Determine which bag is the better value for money. You must show your working. **(4)**

(Total for Question 8 is 4 marks)

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9 Liam works out 30% of 150 by calculating 150 - 30 = 120. He says the answer is 120.

(a) Explain the mistake in Liam's method. **(2)**

(b) Work out the correct value of 150 reduced by 30%. **(2)**

(Total for Question 9 is 4 marks)

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10 A shop increases the price of a television by 20%. In a later sale, it decreases the new price by 20%.

(a) Using p pounds for the original price, show that the final price is 0.96p pounds, and state the overall percentage change. **(3)**

(b) Explain why the overall change is not 0%, even though one percentage is an increase of 20% and the other is a decrease of 20%. **(1)**

(Total for Question 10 is 4 marks)

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11 Priya invests £4000 on 01/09/2025. For the first year the account pays 2.5% compound interest. For the second year the rate rises to 3.2% compound interest. Work out the value of Priya's investment after the two years.

(Total for Question 11 is 3 marks)

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12 Show that increasing a number by 20% and then decreasing the result by 20% does not return to the original number. Use an algebraic approach with n as the original number and give the final expression in terms of n.

(Total for Question 12 is 4 marks)

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13 A furniture shop applies two successive discounts to the price of a sofa: first 10% off, then a further 15% off the reduced price. After both discounts, the sofa costs £91.80. Work out the original price of the sofa.

(Total for Question 13 is 4 marks)

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14 A company's revenue increases by 15% in Year 1. In Year 2, the revenue decreases by r%. Over the two years, the overall change in revenue is a decrease of 6%.

(Total for Question 14 is 4 marks)

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Mark scheme · 3.7 Percentages: Test Pack

Question 1

8 cao **B1**

Answer: 8 (or 8.0)

Question 2

(a) 0.45 **B1**

(a) Answer: 0.45

(b) 75% **B1**

(b) Answer: 75%

(c) 20% **B1**

(c) Answer: 20%

Question 3

3 found **M1**

90 found **M1**

30% of 300 is greater **A1**

Answer: 30% of 300

Question 4

85 / 125 x 100 **M1**

68% **A1**

Answer: 68%

Question 5

18/40 x 100 (oe) **M1**

45% **A1**

Answer: 45%

Question 6

(a) interest for one year = 3% of 2000 = 60 **M1**

(a) 60 x 4 (oe) **M1**

(a) 240 (pounds) **A1**

(a) Answer: £240

Question 7

express 15% as 15/100 or show method to convert percentage to fraction **M1**

3/20 cao **A1**

Answer: 3/20

Question 8

(a) 2 kg unit price = 3.20/2 = £1.60/kg **M1**

(a) 5 kg price after discount = 7.50 x 0.9 = £6.75 **M1**

(a) 5 kg unit price = 6.75/5 = £1.35/kg **M1**

(a) the 5 kg bag is better value because 1.35 < £1.60/kg **C1**

(a) Answer: 5 kg bag (£1.35/kg vs £1.60/kg)

Question 9

(a) identifies that Liam has subtracted the number 30, treating it as an amount, instead of finding 30% of 150 **B1**

(a) states that the correct method requires working out 30% of 150 (as an amount) and then subtracting that amount from 150 **B1**

(a) Answer: Liam subtracted the number 30 instead of subtracting 30% of 150 (which is 45)

(b) 30% of 150 = 45 (oe: 0.3 x 150) **M1**

(b) 105 **A1**

(b) Answer: 105

Question 10

(a) price after increase = p x 1.2 (oe) **M1**

(a) price after decrease = (1.2p) x 0.8 (oe) **M1**

(a) = 0.96p, an overall decrease of 4% **A1**

(a) Answer: 0.96p pounds; a 4% decrease overall

(b) the 20% decrease is taken from the larger, increased price, so the amount taken off (0.24p) is more than the amount added on (0.2p) **B1**

(b) Answer: The 20% decrease is applied to a larger amount than the original, so more is taken off than was added on

Question 11

value after year 1 = 4000 x 1.025 = 4100 (oe) **M1**

value after year 2 = 4100 x 1.032 (oe) **M1**

4231.20 (pounds) **A1**

Answer: £4231.20

Question 12

state after increase: n x 1.20 or 6/5 n **M1**

state after decrease: (n x 1.20) x 0.80 or (6/5 n) x 4/5 **M1**

simplify to give (6/5 x 4/5) n = 24/25 n **M1**

conclude 24/25 n, not equal to n, therefore does not return to original (cso) **A1**

Answer: 24/25 n

Question 13

recognises the combined multiplier 0.9 x 0.85 = 0.765 (oe) **M1**

sets up original price x 0.765 = 91.80 (oe) **M1**

91.80 / 0.765 (oe) **M1**

120 (pounds) **A1**

Answer: £120

Question 14

sets up 1.15 x (1 - r/100) = 0.94 (oe) **M1**

(1 - r/100) = 0.94 / 1.15 (oe) **M1**

r/100 = 1 - 0.94/1.15 = 0.182608... (oe, evaluated) **M1**

r = 18.3, awrt 1dp **A1**

Answer: r = 18.3 (1dp)

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