2.1 Calculation Problems: Test Pack

EDEXCEL 1MA1 · Calculator allowed · about 65 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Amelia buys 3 exercise books. Each book costs £1.75. Work out how much Amelia pays in total.

(Total for Question 1 is 1 mark)

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2 Noah pays with a £20 note. He buys a book for £6.80 and a sandwich for £2.45. Work out the change Noah should get.

(Total for Question 2 is 2 marks)

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3 Priya pours 250 ml of squash equally into 4 cups. Work out the volume in each cup in millilitres.

(Total for Question 3 is 1 mark)

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4 A cinema charges £8.50 for an adult ticket and £5.75 for a child ticket. Work out the total cost for 2 adult tickets and 3 child tickets.

(Total for Question 4 is 2 marks)

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5 A packet of 12 biscuits costs £2.40. Work out the cost of 5 packets.

(Total for Question 5 is 2 marks)

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6 A carton contains 900 ml of orange juice. Yusuf drinks 2/5 of the carton. Work out how much juice, in millilitres, Yusuf drinks.

(Total for Question 6 is 2 marks)

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7 A train journey takes 1 hour 20 minutes and covers 85 miles. Work out the average speed of the train in miles per hour.

(Total for Question 7 is 3 marks)

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8 A raffle raises £540. The money is shared between the school fund and the charity fund in the ratio 5:4. Work out how much money the charity fund receives.

(Total for Question 8 is 3 marks)

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9 A school orders 24 tables at £39.50 each. There is a one-off delivery charge of £27.50. Work out the total cost.

(Total for Question 9 is 3 marks)

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10 A factory produces 720 widgets each day. 20% of the widgets are defective. The non-defective widgets are packed into boxes of 8. Work out how many full boxes are packed each day.

(Total for Question 10 is 3 marks)

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11 A supermarket sells rice in two sizes: a 500 g bag for £1.20, and a 2 kg bag for £4.32. Work out which bag gives better value for money. You must show your working.

(Total for Question 11 is 3 marks)

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12 A plumber charges a call-out fee of £45 plus £30 per hour worked. Show that the total cost of a job lasting 2.5 hours is £120.

(Total for Question 12 is 2 marks)

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13 A garden centre sells packs of plant food at £4.20 each. Priti buys 6 packs and uses a voucher that reduces the total cost by £3.50. Work out the total amount Priti pays.

(Total for Question 13 is 3 marks)

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14 Yusuf invests £1200 at simple interest of 3.5% per year for 4 years.

(a) Work out the total interest earned. **(2)**

.....

(b) Work out the total amount after 4 years. **(2)**

.....

(Total for Question 14 is 4 marks)

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15 A car hire charges £45 per day plus 15p per mile. Tariq hires a car for 3 days and drives 260 miles.

(a) Work out the total amount Tariq pays. **(2)**

.....

(b) Work out the average cost per mile, correct to the nearest penny. **(2)**

.....

(Total for Question 15 is 4 marks)

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16 A student's working to find 15% of £84 is shown below.

84 / 15 = 5.6
So 15% of £84 is £5.60

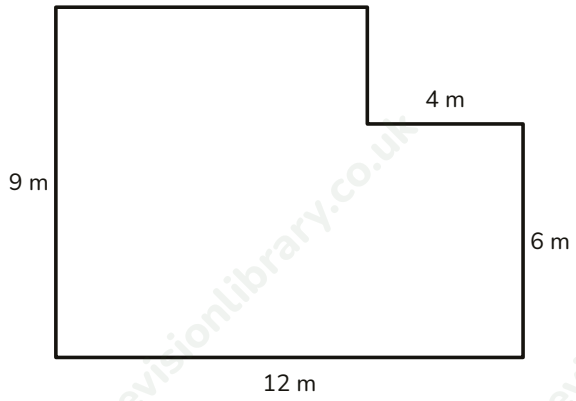
Identify the error in the student's method, then work out the correct value of 15% of £84.

(Total for Question 16 is 3 marks)

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17 The diagram shows the shape of a garden, made from two rectangles put together to form an L-shape. All corners are right angles. Diagram NOT drawn accurately.

Work out the cost of fencing the whole perimeter of the garden, if fencing costs £14.50 per metre.



(Total for Question 17 is 4 marks)

18 A school trip costs a total of £2,850. 2/5 of the total cost is for coach travel. Of the money remaining after paying for the coach, 30% is spent on entry tickets, and the rest is shared equally between 4 accompanying tutors as a contingency allowance. Work out how much each tutor receives.

(Total for Question 18 is 4 marks)

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Mark scheme · 2.1 Calculation Problems: Test Pack

A correct answer earns full marks unless the question asks for working, a method, proof or explanation.

Question 1

£5.25 cao **B1**

Answer: £5.25

Question 2

adds £6.80 + £2.45 correctly to get £9.25 (method) **M1**

£10.75 cao **A1**

Answer: £10.75. Working check: 6.80 + 2.45 = 9.25; 20.00 - 9.25 = 10.75.

Question 3

62.5 ml cao **B1**

Answer: 62.5 ml. Working check: 250 ÷ 4 = 62.5.

Question 4

finds the cost of the adult tickets and the cost of the child tickets, e.g. 2 x 8.50 = 17.00 and 3 x 5.75 = 17.25 (method) **M1**

£34.25 cao **A1**

Answer: £34.25. Working check: 2 x 8.50 = 17.00; 3 x 5.75 = 17.25; 17.00 + 17.25 = 34.25.

Question 5

uses multiplication 2.40 × 5 (method) **M1**

£12.00 cao **A1**

Answer: £12.00. Working check: 2.40 × 5 = 12.00.

Question 6

finds one fifth of 900: 900 / 5 = 180 (method) **M1**

360 ml cao **A1**

Answer: 360 ml. Working check: 900 / 5 = 180; 180 x 2 = 360.

Question 7

converts 1 hour 20 minutes to hours = 4/3 hours **M1**

uses 85 ÷ (4/3) or 85 × 3/4 to find speed **M1**

63.75 mph cao **A1**

Answer: 63.75 mph. Working check: 1 h 20 min = 1 + 20/60 = 4/3 h; 85 ÷ (4/3) = 85 × 3/4 = 255/4 = 63.75.

Question 8

finds the total number of parts: 5 + 4 = 9 **M1**

finds the value of one part: 540 / 9 = 60 **M1**

£240 cao **A1**

Answer: £240. Working check: 540 / 9 = 60; charity fund = 4 x 60 = 240; school fund = 5 x 60 = 300; 240 + 300 = 540.

Question 9

multiplies 24 × 39.50 **M1**

adds delivery charge to the product **M1**

£975.50 cao **A1**

Answer: £975.50. Working check: 39.50 × 24 = 948.00; 948.00 + 27.50 = 975.50.

Question 10

finds number non-defective: 720 - 20% of 720 **M1**

divides the non-defective number by 8 **M1**

72 boxes cao **A1**

Answer: 72 full boxes. Working check: 20% of 720 = 144 defective, non-defective = 720 - 144 = 576; 576 ÷ 8 = 72.

Question 11

finds a price per unit mass for the 500 g bag, e.g. 1.20 / 500 x 100 = £0.24 per 100 g (oe) **M1**

finds a price per unit mass for the 2 kg bag, e.g. 4.32 / 2000 x 100 = £0.216 per 100 g (oe, allow consistent units) **M1**

correct conclusion that the 2 kg bag is better value, since £0.216 per 100 g is less than £0.24 per 100 g, cao **A1**

Answer: The 2 kg bag is better value for money. Working check: 500 g bag = 1.20 / 500 = £0.0024 per gram (£0.24 per 100 g); 2 kg bag = 4.32 / 2000 = £0.00216 per gram (£0.216 per 100 g); 0.216 is less than 0.24.

Question 12

30 x 2.5 = 75 seen (oe) **M1**

45 + 75 = 120 shown correctly (cso) **A1**

Answer: £120 (shown). Working check: 30 x 2.5 = 75; 45 + 75 = 120.

Question 13

finds the cost of 6 packs: 6 x 4.20 (oe) **M1**

subtracts the £3.50 voucher from the total (method) **M1**

£21.70 cao **A1**

Answer: £21.70. Working check: 6 x 4.20 = 25.20; 25.20 - 3.50 = 21.70.

Question 14

(a) uses 1200 × 0.035 to find interest per year **M1**

(a) £168.00 cao for total interest over 4 years or method showing 42 × 4 = 168 **A1**

(a) Answer: £168.00 interest

(b) adds interest to principal or multiplies correctly (1200 + 168) **M1**

(b) £1,368.00 cao **A1**

(b) Answer: £1,368.00

Question 15

(a) calculates day cost and mileage cost **M1**

(a) £174.00 cao **A1**

(a) Answer: £174.00

(b) divides total cost by 260 **M1**

(b) £0.67 per mile cao (to nearest penny) **A1**

(b) Answer: £0.67 per mile (to nearest penny).

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Question 16

identifies the error: the student divided 84 by 15 instead of finding 15% (15/100) of 84, e.g. by multiplying by 0.15 (oe)	**B1**
correct method: 84 x 0.15 (oe 84 x 15/100)	**M1**
£12.60 cao	**A1**

Answer: The error: the student divided by 15 instead of multiplying by 15% (0.15). Correct value: £12.60. Working check: 84 x 0.15 = 12.60.

Question 17

finds the missing top edge: 12 - 4 = 8 m (oe)	**M1**
finds the missing middle edge: 9 - 6 = 3 m (oe)	**M1**
finds the total perimeter: 12 + 6 + 4 + 3 + 8 + 9 = 42 m (method, ft from the two found lengths)	**M1**
£609.00 cao	**A1**

Answer: £609.00. Working check: missing lengths 12 - 4 = 8 m and 9 - 6 = 3 m; perimeter = 12 + 6 + 4 + 3 + 8 + 9 = 42 m; 42 x 14.50 = 609.00.

Question 18

coach cost = 2/5 x 2850 = £1140 (oe)	**M1**
remaining after coach = 2850 - 1140 = £1710 (oe, ft)	**M1**
entry tickets = 30% of 1710 = £513; remaining after tickets = 1710 - 513 = £1197 (oe, ft)	**M1**
£299.25 cao (1197 / 4)	**A1**

Answer: £299.25. Working check: coach = 2/5 x 2850 = 1140; remaining = 2850 - 1140 = 1710; tickets = 0.30 x 1710 = 513; remaining = 1710 - 513 = 1197; 1197 / 4 = 299.25.

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