KS3.M-R3 Sharing in a Given Ratio

AQA KS3.M-R3 · Calculators not allowed · about 40 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Share 10 pounds between Maya and Noah in the ratio 1:1. Write down how much each person receives.

(2)

2 Share 15 apples between Priya and Kwame in the ratio 2:1. How many apples does each person get?

(2)

3 Share 14 biscuits between Erin and Yusuf in the ratio 3:4. How many biscuits does each person receive?

(2)

4 Share 18 pounds between Callum and Amelia in the ratio 2:1. State each share in pounds.

(2)

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5 Share 21 sweets between three friends in the ratio 1:1:1. How many sweets does each friend get?

(2)

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6 Share 30 marbles between A, B and C in the ratio 1:2:3. Find how many marbles C receives.

(3)

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7 A total of 56 centimetres is shared between two pieces in the ratio 3:5. Find the length of the smaller piece.

(2)

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8 A:B = 4:1 and A + B = 25. Find the value of A.

(2)

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9 Simplify the ratio 8:12 to its lowest terms.

(1)

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10 A packet of 40 sweets is shared between Ben and Zara in the ratio 3:5. Ben gives 6 of his sweets to Zara. Find the new ratio of Ben:Zara.

(3)

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11 Write the ratio 120 g : 80 g in its simplest form.

(1)

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12 A total of 55 pens are shared between two students in the ratio 4:7. How many pens does each student get?

(2)

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13 Share 48 centimetres in the ratio 3:2:1. What is the smallest share?

(2)

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14 A length of ribbon 81 cm is shared in the ratio 4:5. Find the two lengths.

(2)

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15 Given that a:b = 5:2 and a = 35, find b.

(2)

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16 Share 84 pounds between three siblings in the ratio 3:4:5. Find the largest share.

(2)

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17 Stretch. A and B share some money in the ratio 2:3. A gives 6 pounds to B. After this transfer the ratio of A:B becomes 1:2. Find the initial total amount of money shared.

(4)

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18 Stretch. A, B and C share 110 pounds in the ratio 2:3:5. C then gives 10 pounds to A. Find the new ratio A:B:C in simplest form.

(4)

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Mark scheme · KS3.M-R3 Sharing in a Given Ratio

Question 1

- **M1** divide 10 into 2 equal parts, 10/2 = 5
- **A1** 5 pounds and 5 pounds cao
- Answer: **5 pounds, 5 pounds**

Question 2

- **M1** find one unit: 15 divided by (2+1) = 15/3 = 5
- **A1** Priya 10, Kwame 5 cao
- Answer: **Priya 10, Kwame 5**

Question 3

- **M1** one unit = 14 / (3+4) = 14/7 = 2
- **A1** 3 units = 6 and 4 units = 8 cao
- Answer: **Erin 6, Yusuf 8**

Question 4

- **M1** one unit = 18 / (2+1) = 6
- **A1** 2 units = 12 and 1 unit = 6 cao
- Answer: **12 pounds, 6 pounds**

Question 5

- **M1** one unit = 21 / (1+1+1) = 7
- **A1** each friend gets 7 sweets cao
- Answer: **7, 7, 7**

Question 6

- **M1** find total units 1+2+3 = 6 and one unit = 30/6 = 5
- **M1** method to get C's share: 3 units = 3 x 5
- **A1** C receives 15 marbles cao
- Answer: **15**

Question 7

- **M1** one unit = 56 / (3+5) = 56/8 = 7
- **A1** smaller piece = 3 x 7 = 21 cm cao
- Answer: **21 cm**

Question 8

- **M1** one unit = 25 / (4+1) = 5
- **A1** A = 4 x 5 = 20 cao
- Answer: **20**

Question 9

- **B1** 2:3 cao (common factor 4 used)
- Answer: **2:3**

Question 10

- **M1** find initial shares: total units 3+5=8, one unit = 40/8 = 5, so Ben = 15, Zara = 25
- **M1** Ben gives 6 so Ben = 15-6 = 9 and Zara = 25+6 = 31
- **A1** new ratio Ben:Zara = 9:31 cao
- Answer: **9:31**

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Question 11

- **B1** 3:2 cao (divide both by 40)
- Answer: **3:2**

Question 12

- **M1** one unit = 55 / (4+7) = 55/11 = 5
- **A1** 4 units = 20 and 7 units = 35 cao
- Answer: **20, 35**

Question 13

- **M1** total units 3+2+1 = 6 so one unit = 48/6 = 8
- **A1** smallest share = 1 x 8 = 8 cm cao
- Answer: **8 cm**

Question 14

- **M1** one unit = 81 / (4+5) = 81/9 = 9
- **A1** 4 units = 36 and 5 units = 45 cao
- Answer: **36 cm, 45 cm**

Question 15

- **M1** unit value: a = 5 units, so one unit = 35/5 = 7
- **A1** b = 2 x 7 = 14 cao
- Answer: **14**

Question 16

- **M1** total units 3+4+5 = 12 so one unit = 84/12 = 7
- **A1** largest share = 5 x 7 = 35 pounds cao
- Answer: **35 pounds**

Question 17

- **M1** let initial shares be 2k and 3k; set up equation for after transfer (2k - 6)/(3k + 6) = 1/2
- **M1** clear fraction and form linear equation: 2(2k - 6) = 3k + 6
- **M1** solve for k: 4k - 12 = 3k + 6 so k = 18
- **A1** initial total = 5k = 5 x 18 = 90 pounds cao
- Answer: **90 pounds**

Question 18

- **M1** find one unit: total units = 2+3+5 = 10 so one unit = 110/10 = 11
- **M1** initial shares: A = 2x11 = 22, B = 3x11 = 33, C = 5x11 = 55
- **M1** after transfer A = 22+10 = 32 and C = 55-10 = 45
- **A1** new ratio A:B:C = 32:33:45 cao (already in simplest integer terms)
- Answer: **32:33:45**

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