2.83 Combined Ratio and Fraction Problems: 30-minute Pack

Total Marks

GL ASSESSMENT GL-11PLUS-MATHS · Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 In a group of 91, the ratio of red counters to blue counters is 5:8. How many more blue counters are there than red counters?

- [ ] A) 22
- [ ] B) 56
- [ ] C) 21
- [ ] D) 35
- [ ] E) 3

---

2 The ratio of adults to children is 7:9. What fraction of the group are children?

- [ ] A) 9/23
- [ ] B) 7/16
- [ ] C) 7/9
- [ ] D) 1/8
- [ ] E) 9/16

---

3 In a group of 45, the ratio of boys to girls is 1:8. How many more girls are there than boys?

- [ ] A) 36
- [ ] B) 5
- [ ] C) 7
- [ ] D) 35
- [ ] E) 40

© Revision Library | revisionlibrary.co.uk

4 A bowl contains sugar and water in the ratio 2:5. When 21 g of water is added the ratio becomes 2:7. How much sugar was in the bowl originally?

(2)

---

5 In a group of 42, the ratio of red counters to blue counters is 2:5. How many more blue counters are there than red counters?

- ☐ A) 3
- ☐ B) 14
- ☐ C) 18
- ☐ D) 24
- ☐ E) 30

---

6 In a group of 90, the ratio of cats to dogs is 4:5. How many more dogs are there than cats?

- ☐ A) 11
- ☐ B) 40
- ☐ C) 50
- ☐ D) 1
- ☐ E) 10

---

7 In a group of 128, the ratio of cherry sweets to lemon sweets is 7:9. How many more lemon sweets are there than cherry sweets?

- ☐ A) 2
- ☐ B) 16
- ☐ C) 112
- ☐ D) 17
- ☐ E) 72

---

8 A wins 3/8 of a prize fund of £240. The remaining money is split between B and C in the ratio 2:3. How much does C receive?

(2)

© Revision Library | revisionlibrary.co.uk

9 Two numbers are in the ratio 2:5. If 9 is added to each number, the ratio becomes 11:14. Find the original two numbers.

(2)

---

10 A and B share money in the ratio 5:3. A gives £6 to B and the new ratio becomes 7:5. How much did A have originally?

(2)

---

11 A, B and C share an amount. A has 1/3 of the total and B has 1/4 of the total. What is the ratio A:B:C?

(2)

---

12 B pays A £12 so that after the payment the ratio of A:B becomes 3:4. Before the payment A and B were in the ratio 2:3. How much money did A have at the start?

(3)

---

13 A, B and C share £480 in the ratio 4:5:7. C is then given an extra £30 (from outside) so that C's new amount becomes twice A's original amount. What was A's original share?

(3)

© Revision Library | revisionlibrary.co.uk

14 Two numbers are in the ratio 2:7. If 6 is added to each number the ratio becomes 4:9. Find the original two numbers.

(3)

---

15 Three drinks A, B and C are mixed in the ratio 2:4:3. The total mixture is 360 ml. How much of drink B is used?

- ☐ A) 80 ml
- ☐ B) 200 ml
- ☐ C) 120 ml
- ☐ D) 40 ml
- ☐ E) 160 ml

---

16 The ratio of boys to girls is 8:7. What fraction of the group are girls?

- ☐ A) 8/7
- ☐ B) 7/23
- ☐ C) 8/15
- ☐ D) 1/15
- ☐ E) 7/15

---

17 A pile of cards is split into three piles in the ratio 2:5:6. The middle pile has 30 more cards than the smallest pile. How many cards were there in the pile originally?

- ☐ A) 130
- ☐ B) 60
- ☐ C) 90
- ☐ D) 30
- ☐ E) 10

© Revision Library | revisionlibrary.co.uk

18 A pile of cards is split into three piles in the ratio 2:7:8. The middle pile has 15 more cards than the smallest pile. How many cards were there in the pile originally?

- [ ] A) 112
- [ ] B) 15
- [ ] C) 3
- [ ] D) 51
- [ ] E) 75

---

19 The ratio of cats to dogs is 3:2. What fraction of the group are dogs?

- [ ] A) 1/5
- [ ] B) 3/2
- [ ] C) 3/5
- [ ] D) 2/5
- [ ] E) 1/4

---

20 Three drinks A, B and C are mixed in the ratio 4:3:5. The total mixture is 480 ml. How much of drink B is used?

- [ ] A) 40 ml
- [ ] B) 360 ml
- [ ] C) 160 ml
- [ ] D) 200 ml
- [ ] E) 120 ml

---

21 Alfie and Priya share sweets in the ratio 7:5. They have 48 sweets in total. How many sweets does Priya have?

- [ ] A) 14
- [ ] B) 16
- [ ] C) 20
- [ ] D) 25
- [ ] E) 30

© Revision Library | revisionlibrary.co.uk

Mark scheme · 2.83 Combined Ratio and Fraction Problems: 30-minute Pack

Question 1

correct option C (21) cao **B1**

Answer: C) 21

Question 2

correct option E (9/16) cao **B1**

Answer: E) 9/16

Question 3

correct option D (35) cao **B1**

Answer: D) 35

Question 4

use 2k/(5k + 21) = 2/7 or equivalent and solve for k **M1**

21 g cao **A1**

Answer: 21 g (2k/(5k + 21) = 2/7 => 7*2k = 2*(5k + 21) => 14k = 10k + 42 => k = 10.5, sugar = 2k = 21 g.)

Question 5

correct option C (18) cao **B1**

Answer: C) 18

Question 6

correct option E (10) cao **B1**

Answer: E) 10

Question 7

correct option B (16) cao **B1**

Answer: B) 16

Question 8

calculate remainder after A: 240 - (3/8 x 240) = 150 or equivalent **M1**

£90 cao **A1**

Answer: £90 (A = 3/8 x £240 = £90, remainder £150 split 2:3 so C gets 3/5 of 150 = £90.)

Question 9

form equation (2k + 9)/(5k + 9) = 11/14 or equivalent **M1**

2 and 5 cao **A1**

Answer: 2 and 5 (Solve 14(2k + 9) = 11(5k + 9) giving k = 1, so numbers 2k = 2 and 5k = 5.)

Question 10

form equation (5k - 6)/(3k + 6) = 7/5 or equivalent **M1**

£90 cao **A1**

Answer: £90 (Solve 5(5k - 6) = 7(3k + 6) gives k = 18 so A = 5k = £90.)

Question 11

convert fractions to common denominator and express amounts as integers (e.g. 4/12, 3/12, 5/12) **M1**

4:3:5 cao **A1**

Answer: 4:3:5 (A = 1/3 = 4/12, B = 1/4 = 3/12, rest = 5/12 so ratio 4:3:5.)

Question 12

let A = 2k, B = 3k and form equation (2k + 12)/(3k - 12) = 3/4 or equivalent; accept an equivalent route to the same value without algebra, such as reasoning in ratio units **M1**

solve linear equation to find k = 84 **M1**

£168 cao **A1**

Answer: £168 (Let A = 2k, B = 3k. After B pays A £12: (2k + 12)/(3k - 12) = 3/4. Solve 4(2k + 12) = 3(3k - 12): 8k + 48 = 9k - 36 so k = 84. A = 2k = £168.)

Question 13

use total to find k (480 = 16k) or use equation 7k + 30 = 2 x 4k to find k **M1**

solve k = 30 **M1**

£120 cao **A1**

Answer: £120 (Let shares 4k, 5k, 7k. From 7k + 30 = 2(4k) we get k = 30, so A = 4k = £120. Check: total 16k = £480.)

Question 14

form equation (2k + 6)/(7k + 6) = 4/9 or equivalent **M1**

solve 9(2k + 6) = 4(7k + 6) leading to k = 3 **M1**

6 and 21 cao **A1**

Answer: 6 and 21 (Let numbers be 2k and 7k. 9(2k + 6) = 4(7k + 6) gives k = 3 so numbers 2k = 6 and 7k = 21.)

Question 15

correct option E (160 ml) cao **B1**

Answer: E) 160 ml

Question 16

correct option E (7/15) cao **B1**

Answer: E) 7/15

Question 17

correct option A (130) cao **B1**

Answer: A) 130

Question 18

correct option D (51) cao **B1**

Answer: D) 51

Question 19

correct option D (2/5) cao **B1**

Answer: D) 2/5

Question 20

correct option E (120 ml) cao **B1**

Answer: E) 120 ml

Question 21

correct option C (20) cao **B1**

Answer: C) 20 (Total parts 7+5 = 12, one part = 48/12 = 4, Priya has 5 parts = 5 x 4 = 20.)

© Revision Library | revisionlibrary.co.uk