2.6-2 Ratio and Proportion: Practice Set 2: 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 A squash drink is made from concentrate and water in the ratio 1 : 6. Calculate how much water is needed for 30 ml of concentrate.

- ☐ A) 186
- ☐ B) 180
- ☐ C) 150
- ☐ D) 210
- ☐ E) 36

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2 The ratio of oak trees to pine trees in a forest plot is 9 : 16. What percentage of the trees are pine?

- ☐ A) 36%
- ☐ B) 56%
- ☐ C) 60%
- ☐ D) 64%
- ☐ E) 69%

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3 A pancake recipe for 5 people uses 250 g of flour, 300 ml of milk and 125 g of sugar. Rewrite the recipe for 8 people.

(a) Calculate the mass of flour needed for 8 people. **(1)**

.....

(b) Calculate the volume of milk needed for 8 people. **(1)**

.....

(c) Calculate the mass of sugar needed for 8 people. **(1)**

.....

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4 8 identical erasers cost £3.20. Calculate the cost of 15 of these erasers.

- ☐ A) £4.80
- ☐ B) £5.40
- ☐ C) £6.00
- ☐ D) £6.40
- ☐ E) £7.20

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5 £108 is shared between Elena, Marcus and Priya in the ratio 2 : 4 : 3.

(a) Calculate how much Marcus receives. **(2)**

.....

(b) Calculate how much more Marcus receives than Elena. **(1)**

.....

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6 A map has a scale of 1 : 20 000. Two villages are 9 cm apart on the map. Calculate the real distance between the villages, giving your answer in kilometres.

- ☐ A) 1.8 km
- ☐ B) 0.198 km
- ☐ C) 18 km
- ☐ D) 1.98 km
- ☐ E) 0.18 km

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7 In a library, the ratio of fiction books to non-fiction books is 5 : 3.

(a) There are 120 fiction books. Calculate the number of non-fiction books. **(2)**

.....

(b) 18 non-fiction books are donated to another library, and no fiction books are added or removed. Calculate the new ratio of fiction to non-fiction books, giving your answer in its simplest form. **(2)**

.....

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8 A train travels at a constant speed and covers 252 km in 3.5 hours. Calculate how far the train would travel in 5 hours at the same speed.

- [ ] A) 252 km
- [ ] B) 420 km
- [ ] C) 180 km
- [ ] D) 300 km
- [ ] E) 360 km

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9 In an orchestra, the ratio of string players to wind players is 8 : 5. There are 21 more string players than wind players. Calculate the total number of players in the orchestra.

- [ ] A) 21
- [ ] B) 56
- [ ] C) 84
- [ ] D) 91
- [ ] E) 98

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10 Harriet, Devon and Sana invest money in a business in the ratio 3 : 4 : 5 respectively. The business makes a profit of £900, which is shared in the same ratio as their investment. Calculate how much more profit Sana receives than Harriet.

- [ ] A) £75
- [ ] B) £100
- [ ] C) £150
- [ ] D) £225
- [ ] E) £375

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11 A photograph measuring 12 cm by 20 cm is enlarged proportionally so that its new height is 30 cm. Calculate the new width of the enlarged photograph.

- [ ] A) 15 cm
- [ ] B) 18 cm
- [ ] C) 20 cm
- [ ] D) 22 cm
- [ ] E) 24 cm

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12 y is directly proportional to x. When x = 8, y = 20. Calculate the value of y when x = 14.

- ☐ A) 26
- ☐ B) 28
- ☐ C) 32.5
- ☐ D) 35
- ☐ E) 38.5

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13 Two numbers are in the ratio 7 : 11. Their sum is 162. Calculate the difference between the two numbers.

- ☐ A) 18
- ☐ B) 27
- ☐ C) 36
- ☐ D) 63
- ☐ E) 99

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14 A metal alloy is made from copper and zinc in the ratio 7 : 2. A metalworker has 54 g of zinc.

(a) Calculate how much copper must be added to the zinc to make the alloy. **(2)**

.....

(b) Calculate the total mass of alloy produced. **(1)**

.....

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15 In a school, the ratio of Year 10 pupils to Year 11 pupils is 7 : 6. The ratio of Year 11 pupils to Year 12 pupils is 2 : 3. Calculate the ratio of Year 10 to Year 11 to Year 12 pupils, giving your answer in its simplest form.

(3)

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16 A sum of money is divided between Olivia and Kofi in the ratio 9 : 5. Olivia receives £68 more than Kofi. Calculate the total sum of money divided between them.

(4)

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17 A sports club has 252 members. The ratio of members who play badminton, tennis and squash is 5 : 3 : 4. The number of badminton players is expected to decrease by 20%, while the total number of members remains 252 and the ratio of tennis to squash (among the unchanged members) stays the same as before. Calculate the new ratio of badminton to tennis to squash, giving your answer in its simplest form.

(4)

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Mark scheme · 2.6-2 Ratio and Proportion: Practice Set 2: 30-minute Pack

Question 1

B (180 ml) cao **B1**

Answer: 180 ml

Question 2

D (64%) cao **B1**

Answer: 64%

Question 3

(a) 400 g cao **B1**

(a) Answer: 400 g

(b) 480 ml cao **B1**

(b) Answer: 480 ml

(c) 200 g cao **B1**

(c) Answer: 200 g

Question 4

C (£6.00) cao **B1**

Answer: £6.00

Question 5

(a) total parts found (2 + 4 + 3 = 9) and 108/9 = 12 used, or equivalent method **M1**

(a) £48 cao **A1**

(a) Answer: £48

(b) £24 (ft from part a: Elena = 2 x their unit value, then Marcus - Elena) **B1**

(b) Answer: £24

Question 6

A (1.8 km) cao **B1**

Answer: 1.8 km

Question 7

(a) unit value found: 120/5 = 24, or equivalent method **M1**

(a) 72 cao **A1**

(a) Answer: 72

(b) new number of non-fiction books found (ft from part a): 72 - 18 = 54 **M1**

(b) 20 : 9 oe cao **A1**

(b) Answer: 20 : 9

Question 8

E (360 km) cao **B1**

Answer: 360 km

Question 9

D (91) cao **B1**

Answer: 91

Question 10

C (£150) cao **B1**

Answer: £150

Question 11

B (18 cm) cao **B1**

Answer: 18 cm

Question 12

D (35) cao **B1**

Answer: 35

Question 13

C (36) cao **B1**

Answer: 36

Question 14

(a) unit value found: 54/2 = 27 **M1**

(a) 189 g cao **A1**

(a) Answer: 189 g

(b) 243 g (ft from part a: 54 + their copper mass) **B1**

(b) Answer: 243 g

Question 15

finds a common value for Year 11 in both ratios (e.g. scales 2:3 to 6:9, using the LCM of 6 and 2, which is 6) **M1**

dep: combines to give 7 : 6 : 9 **M1**

7 : 6 : 9 cao (already in simplest form, HCF = 1) **A1**

Answer: 7 : 6 : 9

Question 16

difference in parts found: 9 - 5 = 4 **M1**

dep: unit value found: 68/4 = 17 **M1**

dep: total parts found (9 + 5 = 14) and their 17 x 14 **M1**

£238 cao **A1**

Answer: £238

Question 17

original numbers found: total parts 5 + 3 + 4 = 12, unit value 252/12 = 21, so badminton = 105, tennis = 63, squash = 84 **M1**

dep: new badminton number found: 105 x 0.8 = 84 **M1**

dep: remaining members (252 - 84 = 168) split in the ratio 3:4 (unit value 168/7 = 24), giving tennis = 72 and squash = 96 **M1**

7 : 6 : 8 cao **A1**

Answer: 7 : 6 : 8

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