



KS2.M-Y6N5 Ratio and Proportion

Calculators not allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** Share 80 sweets between Aisha and Luis in the ratio 3:5. How many sweets does Luis get?

(2)

- 2** A recipe uses milk and water in the ratio 2:7. If you have 63 ml of water, how much milk do you need?

(2)

- 3** A map is drawn with scale 1:25 000. A straight road on the map is 4.8 cm long. Work out the actual length of the road in metres.

(2)

4 Three friends share a prize of 360 points in the ratio 4:3:5.

Part a: How many points does the friend with 3 parts get?

Part b: If the friend with 5 parts gives 20 points to the friend with 4 parts, what are their new totals?

(a) How many points does the friend with 3 parts get? (1)

(b) If the friend with 5 parts gives 20 points to the friend with 4 parts, what are their new totals? (2)

5 A rectangular photo is enlarged by a scale factor of 3. The original photo has width 6 cm and height 4 cm. What is the area of the enlarged photo in square centimetres?

(2)

6 Share 95 metres of ribbon between three boxes in the ratio 1:1:3. How many metres does each of the smaller two boxes get?

(2)

7 A chemist mixes X and Y in the ratio 7:2. If there are 63 ml of X, how much Y is needed?

(2)

- 8** Emma and Noah share a box of 48 pencils in the ratio 2:6.
Explain why sharing in the ratio 1:3 gives the same result. Give the number of pencils each gets as part of your explanation.

(3)

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- 9** A model plane is made with a scale of 1:50. The model wingspan is 18 cm. What is the real wingspan in metres?

(2)

-
- 10** A class of 30 children have pets in the ratio cats:dogs = 2:3. How many children have cats?

(2)

-
- 11** Two quantities are in the ratio 5:8. If the smaller quantity is 35, find the larger quantity.

(2)

-
- 12** A picture is reduced so that its width becomes 12 cm from an original 20 cm. What scale factor was used? Give your answer as a fraction in simplest form.

(2)

- 13** A mixture contains sugar and water in the ratio 5:12. A chef needs 170 g of mixture. How much sugar should he use? Show your method.

(3)

-
- 14** A drawing is enlarged by a scale factor of 2.5. The original length is 8 cm. What is the new length in centimetres? Give your answer as a decimal.

(2)

-
- 15** A school orders fruit boxes in the ratio apples:bananas:pears = 4:3:1. If the school orders 320 pieces of fruit in total, how many pears do they order?

(2)

-
- 16** Tom says that if two quantities are in the ratio 6:9, you can write it as 2:3. Explain the mathematical step he uses and show the simplified ratio.

(2)

-
- 17** A poster is printed so that its width and height are in the ratio 5:8. The width is 50 cm. Explain whether the height could be 80 cm, showing your reasoning and giving the correct height if needed.

(3)

- 18** A bag contains red and blue counters in the ratio 3:4. If there are 63 counters altogether, what fraction of the counters are red? Give your answer in simplest form.

(3)

Mark scheme · KS2.M-Y6N5 Ratio and Proportion

Question 1

- **M1** Divide 80 into 8 equal parts or show $80 \div (3+5)$ seen
- **B1** Luis gets 50 sweets cao
- **Answer: 50**

Question 2

- **M1** Use ratio 2:7 so water corresponds to 7 parts; find 1 part = $63 \div 7 = 9$
- **B1** Milk needed $2 \times 9 = 18$ ml cao
- **Answer: 18**

Question 3

- **M1** Convert: 4.8 cm at 1:25 000 is $4.8 \times 25\ 000$ cm or show method
- **B1** Actual length 1,200 m cao
- **Answer: 1200**

Question 4

- (a) **B1** 90 points cao
- (a) **Answer: 90**
- (b) **M1** Find original totals for 4 parts and 5 parts (4×30 and 5×30) or equivalent
- (b) **B1** New totals 4-part friend 140, 5-part friend 130 cao
- (b) **Answer: 140 and 130**

Question 5

- **M1** Scale lengths by 3 so new width 18 and height 12, or state area scale factor is 9
- **B1** Area = 216 cm² cao
- **Answer: 216**

Question 6

- **M1** Divide 95 into total parts $1+1+3=5$, $95 \div 5 = 19$
- **B1** Each smaller box gets 19 m cao
- **Answer: 19**

Question 7

- **M1** 63 corresponds to 7 parts so 1 part = 9
- **B1** $Y = 2 \times 9 = 18$ ml cao
- **Answer: 18**

Question 8

- **M1** State that 2:6 can be simplified by dividing both parts by 2 (or show equivalent simplification)
- **M1** Show $1+3 = 4$ parts and $48 \div 4 = 12$ or equivalent
- **B1** Give final amounts: Emma 12, Noah 36 cao
- **Answer: Emma 12, Noah 36**

Question 9

- **M1** Scale 1:50 so actual = 18×50 cm = 900 cm or equivalent
- **B1** 900 cm = 9 m cao
- **Answer: 9**

Question 10

- **M1** Total parts $2+3 = 5$, $30 \div 5 = 6$
- **B1** Cats = $2 \times 6 = 12$ cao
- **Answer: 12**

Question 11

- **M1** Find 1 part: $35 \div 5 = 7$
- **B1** Larger = $8 \times 7 = 56$ cao
- **Answer: 56**

Question 12

- **M1** Show factor $12 \div 20$ or equivalent
- **B1** Scale factor $3/5$ cao
- **Answer: 3/5**

Question 13

- **M1** Total parts $5+12=17$, find 1 part = $170 \div 17 = 10$ or show equivalent
- **M1** Calculate sugar 5×10 or equivalent method
- **B1** Sugar = 50 g cao
- **Answer: 50**

Question 14

- **M1** Multiply 8×2.5 or show method
- **B1** New length 20.0 cm or 20 cm cao
- **Answer: 20**

Question 15

- **M1** Total parts $4+3+1=8$, $320 \div 8 = 40$
- **B1** Pears = $1 \times 40 = 40$ cao
- **Answer: 40**

Question 16

- **M1** Divide both parts by their highest common factor (3) or state dividing by 3
- **B1** Simplified ratio 2:3 cao
- **Answer: 2:3**

Question 17

- **M1** Show 50 corresponds to 5 parts so 1 part = 10 or equivalent
- **M1** Multiply 8×10 or state 8 parts = 80 but show reasoning about units
- **B1** Conclude height = 80 cm and explain this is correct cao
- **Answer: 80**

Question 18

- **M1** Find red count: total parts $3+4=7$, $63 \div 7 = 9$, red = $3 \times 9 = 27$
- **M1** Form fraction $27/63$ or equivalent
- **B1** Simplify fraction to $3/7$ cao
- **Answer: 3/7**