

Varied Fluency

Step 7: Ratio and Proportion Problems

National Curriculum Objectives:

Mathematics Year 6: (6R1) [Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts](#)

Mathematics Year 6: (6R2) [Solve problems involving the calculation of percentages \[for example, of measures, and such as 15% of 360\] and the use of percentages for comparison](#)

Mathematics Year 6: (6R3) [Solve problems involving similar shapes where the scale factor is known or can be found](#)

Mathematics Year 6: (6R4) [Solve problems involving unequal sharing and grouping using knowledge of fractions and multiples](#)

Differentiation:

Developing Questions to support solving ratio and proportion problems. Using 2 objects, where scale factors are double, half or ten times.

Expected Questions to support solving ratio and proportion problems. Using 2 or 3 objects, where scale factors are direct multiples or factors of the original values.

Greater Depth Questions to support solving ratio and proportion problems. Using 3 objects, where scale factors are not always direct multiples or factors, and where some ratios are simplified.

More [Year 6 Ratio](#) resources.

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Ratio and Proportion Problems

Ratio and Proportion Problems

1a. Shape A has been enlarged by different scale factors to make shapes B and C.

Shape	Length	Width
A	5cm	7cm
B		14cm
C	50cm	

Calculate the missing measurements.



VF

1b. Shape A has been reduced by different scale factors to make shapes B and C.

Shape	Length	Width
A	30cm	80cm
B	15cm	
C		8cm

Calculate the missing measurements.



VF

2a. True or false?

I need 1 banana for every 3 apples.

If I have 8 pieces of fruit, I will have 3 apples.



VF

2b. True or false?

I need 2 apples for every 3 oranges.

If I have 10 pieces of fruit, I will have 4 apples.



VF

3a. The ratio of red paint to blue paint is 5:1.

Kai has 60 bottles of paint in total.

Calculate the number of red and blue bottles of paint.



VF

3b. The ratio of sweets to chocolates is 7:2.

Hafsa has 18 snacks in total.

Calculate the number of sweets and chocolates.



VF

4a. Mia is buying some buttons.

The ratio of pink to gold buttons is 10:8.

If she buys 20 pink buttons, how many gold buttons will she need?



VF

4b. Louis is buying some buttons.

The ratio of red to blue buttons is 3:7.

If he buys 30 red buttons, how many blue buttons will he need?



VF

Ratio and Proportion Problems

Ratio and Proportion Problems

5a. Shape A has been enlarged by different scale factors to make shapes B, C and D.

Shape	Length	Width
A	3cm	4cm
B		12cm
C	15cm	
D	30cm	

Calculate the missing measurements.



VF

5b. Shape A has been reduced by different scale factors to make shapes B, C and D.

Shape	Length	Width
A	12cm	24cm
B		6cm
C	6cm	
D	2cm	

Calculate the missing measurements.



VF

6a. True or false?

I need 50g of flour for every 10g of sugar.

If I have 600g of ingredients, I will have 500g of flour.



VF

6b. True or false?

I need 25g of flour for every 30g of sugar.

If I have 275g of ingredients, I will have 100g of flour.



VF

7a. The ratio of strawberries to grapes is 3:2.

Pippa has 25 pieces of fruit in total.

Calculate the number of strawberries and grapes.



VF

7b. The ratio of peas to carrots is 5:4.

Leah has 108 vegetables in total.

Calculate the number of peas and carrots.



VF

8a. Jake is buying some paint.

The ratio of white to blue to green paint is 20:50:100.

If he buys 200 litres of blue paint, how much white and green paint will he need?



VF

8b. Jaiden is buying some paint

The ratio of white to blue to green paint is 5:7:8.

If he buys 64 litres of green paint, how much white and blue paint will he need?



VF

Ratio and Proportion Problems

Ratio and Proportion Problems

9a. Shape A has been enlarged by different scale factors to make shapes B, C and D.

Shape	Length	Height	Width
A	10.5cm	7cm	2.5cm
B	26.25cm		
C		49cm	
D	94.5cm		22.5cm

Calculate the missing measurements.



VF

9b. Shape A has been reduced by different scale factors to make shapes B, C and D.

Shape	Length	Height	Width
A	15cm	25cm	18cm
B	1.5cm		
C			3.6cm
D	7.5cm		

Calculate the missing measurements.



VF

10a. True or false?

I need 0.5m of ribbon for every 2m of blue and 3m of green fabric.

If I have 11m of supplies, I will have 7.5m of green fabric.



VF

10b. True or false?

I need 2.5m of ribbon for every 9m of pink and 11m of purple fabric.

If I have 11.25m of supplies, I will have 5m of pink fabric.



VF

11a. The ratio of cupcakes to donuts and cookies is 6:1:7

Sarah has 70 treats in total.

Calculate the number of cupcakes, donut and cookies.



VF

11b. The ratio of cupcakes to donuts and cookies is 5:3:2.

Jacob has 90 treats in total.

Calculate the number of cupcakes, donut and cookies.



VF

12a. Omar is buying baking ingredients.

The ratio of flour to sugar to butter is 125:150:90.

If he buys 750g of flour, how much sugar and butter will he need?



VF

12b. Toby is buying baking ingredients.

The ratio of flour to sugar to butter is 95:110:75.

If he buys 770g of sugar, how much flour and butter will he need?



VF

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Ratio and Proportion Problems

Developing

- 1a. B 10cm, C 70cm
- 2a. False. There will be 6 apples.
- 3a. 50 red, 10 blue
- 4a. 16

Expected

- 5a. B 9cm, C 20cm, D 40cm
- 6a. True
- 7a. 15 strawberries, 10 grapes
- 8a. 80L white, 400L green

Greater Depth

- 9a. B 17.5cm and 6.25cm, C 73.5cm and 17.5cm, D 63cm
- 10a. False. There will be 6m of green fabric.
- 11a. 30 cupcakes, 5 donuts, 35 cookies
- 12a. 900g sugar, 540g butter

Varied Fluency
Ratio and Proportion Problems

Developing

- 1b. B 40cm, C 3cm
- 2b. True
- 3b. 14 sweets, 4 chocolates
- 4b. 70

Expected

- 5b. B 3cm, C 12cm, D 4cm
- 6b. False. There will be 125g flour
- 7b. 60 peas, 48 carrots
- 8b. 40L white, 56L blue

Greater Depth

- 9b. B 2.5cm and 1.8cm, C 3cm and 5cm, D 12.5cm and 9cm
- 10b. False. There will be 4.5m of pink fabric.
- 11b. 45 cupcakes, 27 donuts, 18 cookies
- 12b. 665g flour, 525g butter