Reasoning and Problem Solving
Step 1: Using Ratio Language

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

Differentiation:

Questions 1, 4 and 7 (Reasoning)
Developing Explain whether a statement comparing the ratio of 2 sets of objects in a linear arrangement is correct. Pictorial support provided.
Expected Explain whether a statement comparing the ratio of 2 sets of objects is correct. Pictorial representation is not provided and children use knowledge of multiples to understand the relationships between the sets of objects and simplify ratio statements.
Greater Depth Explain whether a statement referring to an extended pattern is correct when comparing 3 sets of objects. Children use knowledge of multiples to understand the relationships between the sets of objects and simplify ratio statements.

Questions 2, 5 and 8 (Problem Solving)
Developing Write a sentence to describe a ratio which compares 2 objects. Some pictorial support provided.
Expected Provide three possible ratios for a total number of objects. Comparing up to 3 sets of objects where children use knowledge of multiples to understand the relationships between the sets of objects and simplify ratio statements.
Greater Depth Provide all the possible ratios when comparing 3 sets of objects. No pictorial support provided.

Questions 3, 6 and 9 (Reasoning)
Developing Explain who is correct when comparing the ratio of 2 sets of objects in a linear arrangement. Pictorial support provided.
Expected Explain who is correct when comparing the ratio of 2 sets of objects in a linear arrangement, patterned sequence or groups. Children use knowledge of multiples to understand the relationships between the sets of objects and simplify ratio statements. Pictorial support provided.
Greater Depth Explain who is correct when comparing up to 3 sets of objects as part of an extended pattern. No pictorial support provided.

More Year 6 Ratio resources.

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Using Ratio Language

1a. Iqra has some fruit.

She says,

> There are 2 pears for every 4 apples.

Is she correct? Explain how you know.

D ⭐

R

Using Ratio Language

1b. Emmie has some toys.

She says,

> There are 4 balls for every 3 ducks.

Is she correct? Explain how you know.

D ⭐

R

2a. Jaiden has a bag of chocolate and strawberry sweets.

There are 10 sweets altogether.

If there are 3 chocolate sweets, write a sentence to show the ratio of chocolate to strawberry sweets.

D ⭐

PS

2b. Isaac has a bag of orange and lime sweets.

There are 8 sweets altogether.

If there are 2 orange sweets, write a sentence to show the ratio of orange to lime sweets.

D ⭐

PS

3a. Max and Felix are looking at the relationship between circles and squares.

Max thinks that there are 2 circles for every 5 squares.

Felix thinks that there is 1 circle for every 5 squares.

Who is correct? Explain how you know.

D ⭐

R

3b. Lucy and Hafsa are looking at the relationship between circles and squares.

Lucy thinks that there are 3 circles for every 4 squares.

Hafsa thinks that there are 4 circles for every 3 squares.

Who is correct? Explain how you know.

D ⭐

R

Using Ratio Language

Using Ratio Language

4a. Pippa has a bag of balloons.

There are 3 blue balloons for every 6 green balloons.

She says,

> If there was just 1 blue balloon, there would be 4 balloons in total.

Is she correct? Explain how you know.

☆E

R

4b. Millie has a bag of sweets.

There are 6 pink sweets for every 8 orange sweets.

She says,

> If there were 3 pink sweets, there would be 5 sweets in total.

Is she correct? Explain how you know.

☆E

R

5a. Jake has a bag of shopping containing apples and pears.

There are 14 pieces of fruit altogether.

Write 3 different sentences which show the possible ratios of the fruit.

☆E

PS

5b. Yusuf has a bag of shopping containing bananas and plums.

There are 20 pieces of fruit altogether.

Write 3 different sentences which show the possible ratios of the fruit.

☆E

PS

6a. Jaxon and Kai are looking at the relationship between strawberries and lemons.

Jaxon thinks that if there was 1 lemon, there would be 2 strawberries.

Kai thinks that if there was 1 strawberry, there would be 2 lemons.

Who is correct? Explain how you know.

☆E

R

6b. Isla and Ivy are looking at the relationship between tomatoes and chillies.
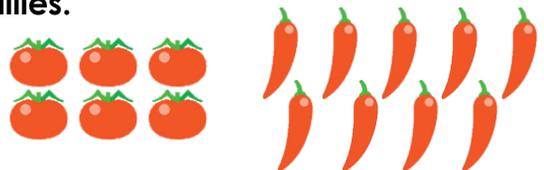
Isla thinks that if there were 3 chillies, there would be 2 tomatoes.

Ivy thinks that if there were 1 tomato, there would be 2 chillies.

Who is correct? Explain how you know.

☆E

R

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Reasoning and Problem Solving – Using Ratio Language – Year 6 Expected

Using Ratio Language

7a. Arlo has some fruit to the ratio of 1 lemon for every 4 limes and 3 satsumas.

He says,

> If I have 12 lemons I will have 16 limes and 15 satsumas.

Is he correct? Explain how you know.

GD   R

7b. Chen has some fruit to the ratio of 2 bananas for every 3 grapes and 4 apples.

He says,

> If I have 20 bananas I will have 23 grapes and 24 apples.

Is he correct? Explain how you know.

GD   R

8a. Euan has some red, blue and yellow counters.

There are 4 blue counters for every red counter, and 16 counters altogether.

Write all the possible sentences to show how many of each counter Euan may have.

GD   PS

8b. Toby has some red, blue and yellow counters.

There are 5 blue counters for every 2 red counters, and 25 counters altogether.

Write all the possible sentences to show how many of each counter Toby may have.

GD   PS

9a. Alfie and Ethan have some blue, green and red counters. There are 5 blue counters for every green counter and 30 counters altogether.

Alfie thinks that if there were 15 blue counters, there would be 5 green counters and 10 red counters.

Ethan thinks that if there were 20 blue counters, there would be 4 green counters and 6 red counters.

Who is correct? Explain how you know.

GD   R

9b. Jess and Rosie have some blue, green and red counters. There are 6 blue counters for every 4 green counters and 50 counters altogether.

Jess thinks that if there were 18 blue counters, there would be 12 green counters and 20 red counters.

Rosie thinks that if there were 24 blue counters, there would be 12 green counters and 14 red counters.

Who is correct? Explain how you know.

GD   R

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Reasoning and Problem Solving – Using Ratio Language – Year 6 Greater Depth

Reasoning and Problem Solving
Using Ratio Language

Developing

1a. Iqra is incorrect because she has the ratio the wrong way around. There are 2 apples for every 4 pears.

2a. There are 3 chocolate sweets to every 7 strawberry sweets.

3a. Max is correct, there are 2 circles for every 5 squares.

Expected

4a. Pippa is incorrect because there would now be 1 blue balloon, 2 green balloons, and 3 balloons in total.

5a. Various answers that add up to 14, for example: 1 and 13; 2 and 12; 3 and 11

6a. Jaxon is correct because there are 10 strawberries for every 5 lemons, therefore 2 strawberries for every lemon.

Greater Depth

7a. Arlo is incorrect because the number of lemons has increased by 12 so the same has to happen to limes and satsumas. If he has 12 limes, he will have 48 limes and 36 satsumas.

8a. 4 blue, 1 red and 11 yellow; 8 blue, 2 red and 6 yellow; 12 blue, 3 red and 1 yellow

9a. Ethan is correct because the number of blue to green counters has a ratio of 5 blue to every green, and all counters add up to 30.

Reasoning and Problem Solving
Using Ratio Language

Developing

1b. Emmie is incorrect because she has the ratio the wrong way around. There are 3 balls for every 4 ducks.

2b. There are 2 orange sweets for every 6 lime sweets.

3b. Lucy is correct, there are 3 circles for every 4 squares.

Expected

4b. Millie is incorrect because there would now be 3 pink sweets, 4 orange sweets, and 7 sweets in total.

5b. Various answers that add up to 20, for example: 1 and 19; 2 and 18; 3 and 17

6b. Isla is correct because there are 9 chillies for every 6 tomatoes, therefore 3 chillies for every 2 tomatoes.

Greater Depth

7b. Chen is incorrect because the number of bananas has increased by 10 so the same has to happen to grapes and apples. If he has 20 bananas, he will have 30 grapes and 40 apples.

8b. 5 blue, 2 red and 18 yellow; 10 blue, 4 red and 11 yellow; 15 blue, 6 red and 4 yellow

9b. Jess is correct because the number of blue to green counters is has a ratio of 6 blue to every 4 green, and all counters add up to 50.