

# Introduction to the ratio symbol

## Notes and guidance

In this small step, children continue to explore the multiplicative relationship between values, now seeing it written using the ratio symbol, a colon.

Explain that the wording, “For every \_\_\_\_\_, there are \_\_\_\_\_” can be written as \_\_\_\_\_:\_\_\_\_\_. Show children that the order in which the notation is used is important. For example, for every 2 red cubes there are 3 blue cubes, so red to blue is 2 : 3. For every 3 blue cubes, there are 2 red cubes, so blue to red is 3 : 2. Ensure that children know, and convey in their answers, which number refers to which value.

Children build on the ideas of the previous step to understand that the same ratio can be written in different forms, for example 4 : 6 can be written as 2 : 3. This step is a good opportunity to use contexts such as measure, looking at the ratios of the masses of ingredients in recipes.

## Things to look out for

- Children may not understand the meaning of the ratio symbol, and may confuse it with a decimal point.
- When simplifying a ratio, children may try to use additive rather than multiplicative relationships.

## Key questions

- If there are 3 blue counters and 5 red counters, how can you describe the relationship between these numbers?
- What does the : symbol mean in the context of ratio?
- What does 2 : 3 mean?
- How can you compare the relationship between three quantities?
- Are the ratios 2 : 3 and 3 : 2 the same?
- How else can you write the ratio 2 : 4?

## Possible sentence stems

- For every \_\_\_\_\_, there are \_\_\_\_\_, which can be written as \_\_\_\_\_:\_\_\_\_\_
- The ratio of \_\_\_\_\_ to \_\_\_\_\_ is \_\_\_\_\_:\_\_\_\_\_
- In the ratio \_\_\_\_\_ : \_\_\_\_\_, the first number represents \_\_\_\_\_ and the second number represents \_\_\_\_\_

## National Curriculum links

- Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts

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## Key learning

- Complete the sentences.



For every \_\_\_\_\_ red counters, there are \_\_\_\_\_ blue counters.

The ratio of red counters to blue counters is \_\_\_\_\_ : \_\_\_\_\_

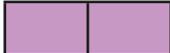
For every \_\_\_\_\_ blue counters, there are \_\_\_\_\_ red counters.

The ratio of blue counters to red counters is \_\_\_\_\_ : \_\_\_\_\_

- Aisha draws a bar model to show the ratio of yellow to purple gummy bears.



yellow 

purple 

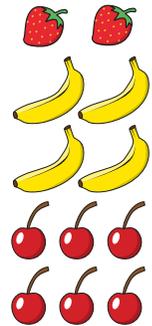
Complete the sentences.

The ratio of yellow gummy bears to purple gummy bears is \_\_\_\_\_ : \_\_\_\_\_

The ratio of purple gummy bears to yellow gummy bears is \_\_\_\_\_ : \_\_\_\_\_

- Write the ratio of:

- bananas to strawberries
- cherries to strawberries
- strawberries to bananas to cherries
- cherries to strawberries to bananas

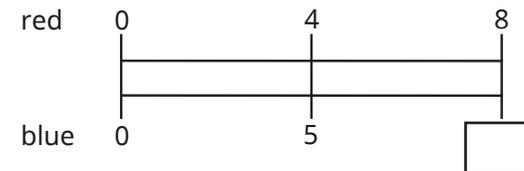


Draw a bar model to represent each ratio.

- Here are 8 red counters.



How many blue counters does he need so that the ratio of red to blue is 4 : 5?

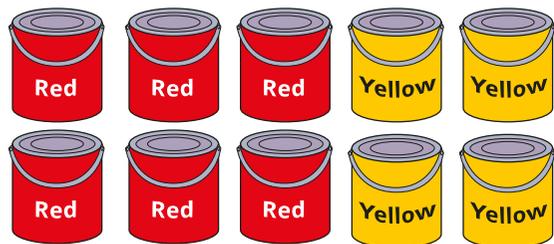


How does the double number line help to work it out?

- Max has blue and red counters in the ratio 3 : 5  
He has 15 blue counters.  
How many red counters does he have?

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## Reasoning and problem solving



Decide if each statement is true or false.

There are 2 yellow tins for every 3 red tins.

- True
- False
- False
- True

There are 2 red tins for every 3 yellow tins.

The ratio of red tins to yellow tins is 2:3

The ratio of yellow tins to red tins is 2:3

Explain your answers.



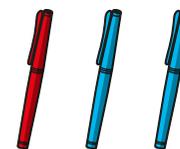
In a box, there are some red, blue and green pens.



The ratio of red pens to green pens is 3:5



For every 1 red pen, there are 2 blue pens.



There are 6 red pens in the box.

How many green pens are there?

How many blue pens are there?

Write the ratio of red pens to blue pens to green pens.

10

12

3:6:5

6:12:10

3:6:5