Use ratio language

Notes and guidance

In this small step, children are introduced to the idea of ratio representing a multiplicative relationship between two amounts.

Children see how one value is related to another by making simple comparisons, such as: "For every 2 blue counters, there are 3 red counters." A double number line can be used to show such relationships, building up to recognise that this example is equivalent to 4 blue, 6 red or 20 blue, 30 red and so on. At this point, relationships will only be expressed in words and the ratio symbol will be introduced in the next step.

Children move on to expressing relationships more simply. For example, if there are 10 red and 15 blue counters, these can be physically rearranged so that "For every 2 red counters, there are 3 blue counters." Children can link this to dividing by a common factor, 5, and relate this to their understanding of simplifying fractions.

Things to look out for

- Children may use additive rather than multiplicative relationships to make comparisons, for example "There is one more blue than red."

Key questions

- How can you give the relationship between the number of ______ and the number of ______?
- For every ______, how many ______ are there?
- How can you rearrange the counters to make the ratio simpler?
- What number is a common factor of ______ and ______? How can you use this to make the ratio simpler?
- How many ______ would there be if there were ______?

Possible sentence stems

- For every ______, there are ______
- If there were ______, there would be ______
- A common factor of ______ and ______ is ______

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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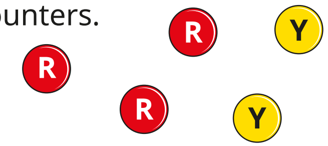
Key learning

- Complete the sentences to describe the counters.

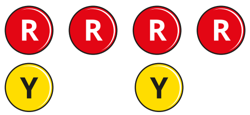


  There are ______ red counters and ______ yellow counters.

  For every ______ red counters, there are ______ yellow counters.

  For every ______ yellow counters, there are ______ red counters.

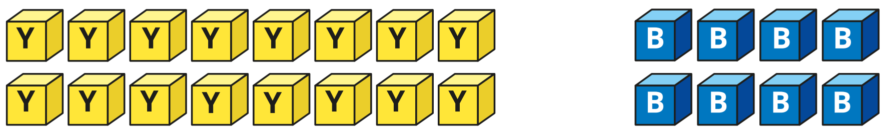
- Complete the sentence to describe the counters.



  For every ______ red counters, there is ______ yellow counter.

  Can you complete it a different way?

- Complete the sentences to describe the cubes.

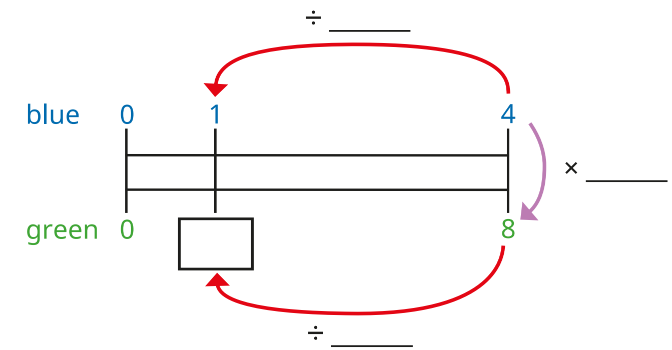


  For every 16 yellow cubes, there are ______ blue cubes.

  For every 8 yellow cubes, there are ______ blue cubes.

  For every 1 blue cube, there are ______ yellow cubes.

- Amir is using a double number line to find equivalent ratios.



  - Use Amir's number line to help you complete the sentence.

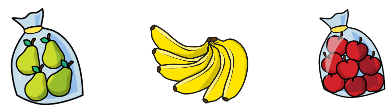
    For every 1 blue counter, there are ______ green counters.

  - Use a double number line to complete the sentences.

    For every 4 green counters, there are ______ blue counters.

    For every ______ blue counters, there are 16 green counters.

- Complete the sentences to describe the fruit.



  For every ______ pears, there are ______ bananas.

  For every ______ pears, there are ______ apples.

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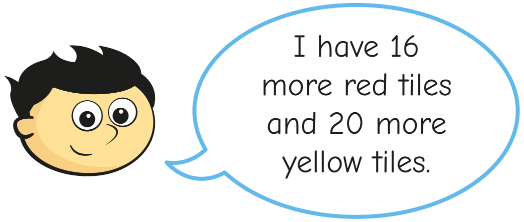
Reasoning and problem solving

Jack puts red and yellow tiles in this pattern.

R	R	Y	Y	Y	R	R	Y	Y	Y



Can Jack continue this pattern without there being any tiles left over?

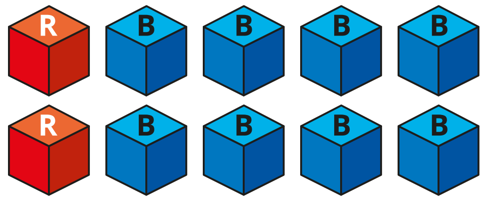
Explain your answer.

No

There are 2 red tiles for every 3 yellow tiles.

16 red tiles will need 24 yellow tiles.

Decide if each statement is true or false.



For every red cube, there are 8 blue cubes.	False
For every 4 blue cubes, there is 1 red cube.	True
For every 3 red cubes, there would be 12 blue cubes.	True
For every 16 cubes, 4 would be red and 12 would be blue.	False

Give reasons for your answers.