

Teaching and learning activities using Fractions ITP to create and describe ratios

Familiarise yourself with how to use the *Fractions* ITP using the



Identifying and describing ratios

Explain to the children that you are going to split the rectangular bar on the screen into equal sized pieces and colour some of them yellow. Explain that you want to describe how the number of yellow pieces compares with the number of green pieces.

- Use the Up arrow key to increase the number of divisions to five.
- Colour three divisions yellow by clicking on them.



Q: How many equal pieces are there? How many are yellow? How many are green?

Draw out that there are three yellow pieces compared with two green ones. Explain that when you compare parts of a whole in this way, you are using ratio. You can say that the ratio of yellow to green pieces is three to two.

Q: Does anyone know how this would be written using symbols?

Take suggestions. Click the  button to reveal the ratio 3 : 2.

Reset the ITP and repeat the activity for one or two other ratios, asking children to write the ratio of yellow : green parts onto individual whiteboards before revealing them.

Explain that you are now going to ask the question the other way round, by giving the children a ratio and asking them to plan how they would program the ITP to show that ratio. Write the ratio 5 : 3 on the board.

Q: Talk with your partner about how you would change the program so that the ratio of yellow to green parts is 5 : 3.

Ask one pair to come to the board and go through the steps they agreed, explaining why they are taking each step.

If children are not able to identify the steps they need, ask them how many parts they need altogether to give a ratio of five parts yellow to three parts green (eight).


If children have access to computers (one between two) they could then use the ITP in pairs to program the ITP to show given ratios such as 3 : 4, 6 : 2, 8 : 3, ...

Finding equivalent ratios

- Reset the ITP.

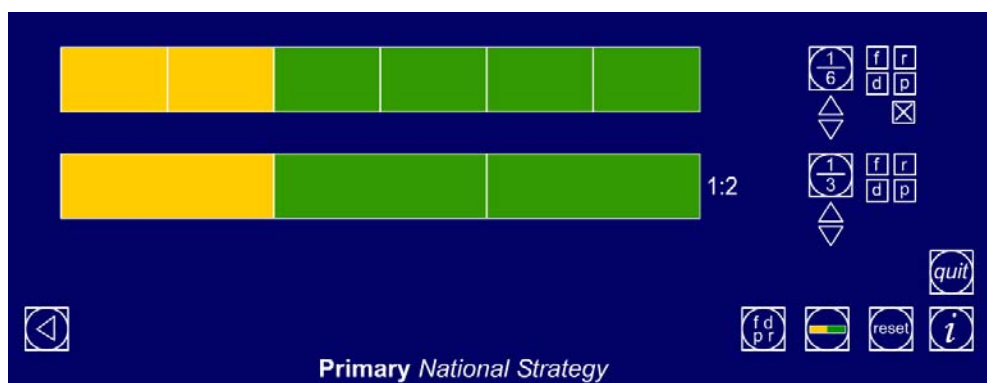
Q: Talk with your partner about how you would change the program so that the ratio of yellow to green parts is 1 : 2.

Ask one pair to come to the board and to go through the steps they agreed, explaining why they are taking each step.

- Click on the  button to create a second bar.
- Use the Up arrow to divide the second bar into sixths.

Q: How many pieces must be coloured yellow so that the yellow section of the bar is the same length as in the lower bar?

- Click on two sixths so that the yellow section in the upper bar matches the yellow section in the lower bar.



Q: Look at the top bar. How many pieces are yellow? How many pieces are green? What is the ratio of yellow : green pieces?

Take suggestions. Establish that it is 2 : 4 because there are two yellow parts compared with four green parts.

- Click the  button to reveal the ratio.

Clarify that, since each bar contains the same proportion of yellow, the ratio of yellow to green must be equivalent in each bar, so the ratio 1 : 2 is equivalent to 2 : 4.

Repeat this activity with a third bar divided into ninths. Ask children to predict the equivalent ratio that this will give. Record the three ratios:

1 : 2
2 : 4
3 : 6

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Q: What patterns do you notice in this sequence? Use the patterns to predict other ratios that are equivalent to these ratios.

Ask a volunteer to state their prediction and use the program to check it by creating another bar.

If children have access to computers (one between two) they could use the ITP in pairs to predict and check equivalent ratios for a given ratio.

Extension challenge: Predict the missing number in equations such as $3 : 4 = ? : 12$ and then use the program to illustrate that your prediction is correct.

Alongside activities using ITP, or as a separate activity, children could be asked to create a stick of cubes to show given ratios. For example:

- Children are asked make a stick with two sections, showing for instance, a ratio of 2 : 5 green to yellow or a ratio of 4 : 1 red to blue.
- Then they are asked to use a particular number of cubes to show a given ratio; for example to use ten cubes to make a stick with two sections showing a ratio of 2 : 3 of green to yellow.
- Finally, children are asked to create their own patterns and describe the ratio of one colour to another.