Can I explain and use ratio notation?

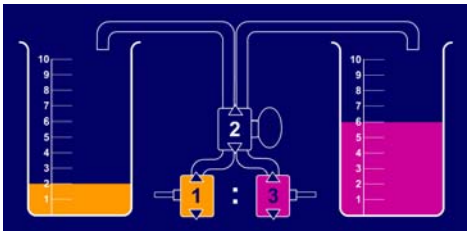
Teaching guidance

Key vocabulary

ratio, for every, to every, equivalent, simplify, problem, pattern, relationship, scale up/down

Models and images and resources

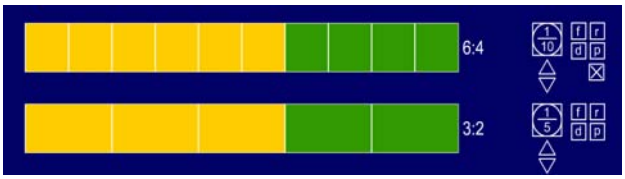
Ratio and proportion ITP



This program enables you to set the ratio for yellow:pink liquid that is poured into two measuring cylinders. This provides a visual image for the relationship between two quantities in this ratio.

A scale factor can be used that scales up the amount of each colour poured in.

Fraction ITP

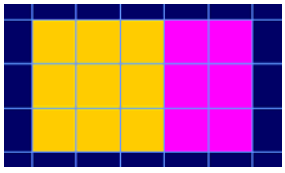


This program allows you to break a strip into different parts and to colour some of the parts yellow. The program can display the ratio of yellow to green parts.

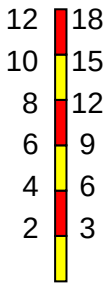
Area ITP or tiles or squared paper

Rows of coloured tiles or squares can be displayed in a given ratio to create a sequence of equivalent ratios.

3 orange:2 pink
6 orange:4 pink
9 orange:6 pink...



Number lines or counting stick



A sequence of equivalent ratios is produced when a given ratio is scaled up by a factor of one, then two, then three...

This can be represented on a number line or counting stick.

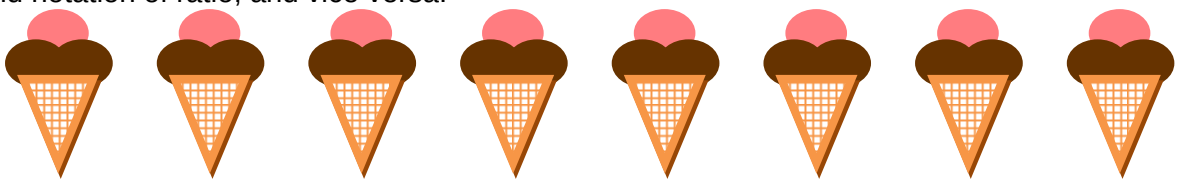
Encourage children to describe the patterns within the sequence.

Teaching tips

- Ratio can describe a part to part relationship. For example:
  - The ratio of girls to boys in a class is two to every three (represented as 2:3).

  Ratio can also describe the relationship between two comparable quantities/measures:
  - The ratio of a distance on a map to the distance on the ground is 1:10 000.

- Provide visual images for ratios then ask children to describe the scenario using the language and notation of ratio, and vice versa:



  - Each cone has two scoops of chocolate ice cream to every one scoop of strawberry.

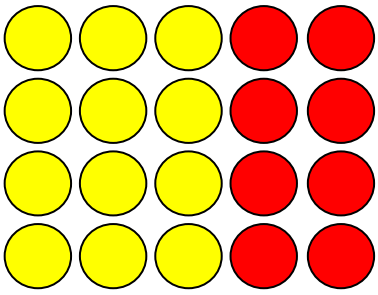
- Ensure that children understand and can use ratios described in different ways:
  - Using everyday language: there is one black tile to three white tiles; there is one black tile for every three white tiles.
  - Using a colon (use everyday language first, then the colon form):

    The ratio of black tiles to white tiles is one to every three.

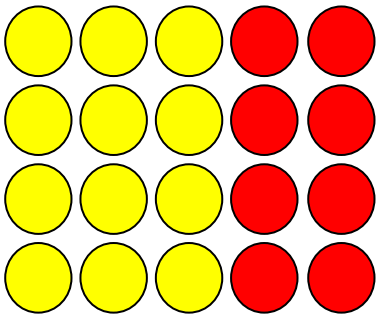
    The ratio of black tiles to white tiles is 1:3.

    The ratio of white tiles to black tiles is 3:1.

- Ensure that children can use and describe ratios in their simplest form, for example 1:3 is the simplest form of the relationship 3:9.
- Demonstrate how ratios can be simplified in a similar way to fractions:



12 yellow:8 red



3 yellow:2 red

The following activity/activities available via the NRich site can be used to support use and application of mathematics associated with this Can I sequence.

Pumpkin Pie Problem **http://nrich.maths.org/public/viewer.php?obj_id=1026**