

Problem of the Week: Week 1 (Summer 2): Year 8: Number: Decimals and fractions

- Relate the language of ratios and the associated calculations with the arithmetic of fractions

Mixing lemonade

I mixed up some lemonade in two glasses.

The first glass had 200ml of lemon juice and 300ml of water.

The second glass had 100ml of lemon juice and 200ml of water.

Which mixture has the stronger tasting lemonade?
How do you know?

How might you use fractions to help you to work out which mixture is stronger?

How might you use ratios?

Solution:

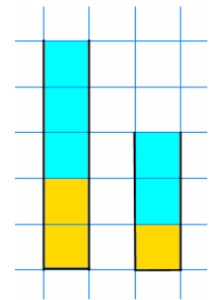
Glass 1 ratio of lemon juice to water is 200:300, this simplifies to 2:3, which gives

Glass 1: $\frac{2}{5}$ is lemon juice, $\frac{3}{5}$ is water

Glass 2 ratio of lemon juice to water is 100:200, this simplifies to 1:2, which gives

Glass 2: $\frac{1}{3}$ is lemon juice, $\frac{2}{3}$ is water

Because $\frac{2}{5}$ is greater than $\frac{1}{3}$, glass 1 will be stronger as there is a greater proportion of lemon juice.


Can you make lemonade that is weaker than the weakest one here?
Solution:

If a glass has one quarter lemon juice and three quarters water, this gives a ratio of 1:3 and will be weaker

Can you make lemonade that is stronger than the strongest one here?
Solution:

If a glass has five sixths lemon juice and one sixth water, this gives a ratio of 5:1 and will be stronger

If you combine the original two glasses of lemonade what fraction of the mix is lemon juice?

Solution:

You will have 300ml of lemon juice and 500ml of water, which means $\frac{3}{8}$ of the solution is lemon juice and $\frac{5}{8}$ is water

<https://nrich.maths.org/6870>

