Problem of the Week: Week 3 (Summer 2): Year 8: Ratio and proportion: Part: Whole and percentage change

- Understand that a multiplicative relationship between two quantities can be expressed as a fraction or a ratio
- Divide a given quantity into a ratio with more than two parts.
- Express the division of a quantity into two or more part as a ratio using appropriate notation
- Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics
- Work with percentages greater than 100%

Problem 1:

Some students have decided to make cakes for their class. They have a recipe for a tray bake that makes 12 portions. They need to make sure it is not too expensive to make and find out how much the ingredients are.

On the next page there are a set of cards, use these to

- Find a mauve card for 12 cakes, find a turquoise card with the recipe for 12 cakes and a green card with the cost of ingredients of 12 cakes, write down the letters for each of these cards.
- Now sort the rest of the cards into groups - in each group you should have one turquoise recipe card, one mauve card for the number of cakes and one green card for the cost of ingredients. Write down the letters for each of these cards.
- Work out the relationship between the recipes for the different numbers of cakes.
  For example:
  How do you work out the quantities for 6 cakes if you know them for 12 cakes, how do you work out the quantities for 12 cakes if you know the quantities for 6 cakes?
- Assume there are 30 students in your class find the cost and the quantities of each ingredient for making the cakes.
- What would you do if you need to make cakes for 50 people?

Adapted from: Tray bake https://nrich.maths.org/7781

12 Cakes **G**	24 Cakes **H**	6 Cakes **E**	36 Cakes **F**

A

65g caster sugar

___g margarine

___g self raising flour

1 egg

$\frac{1}{2}$ x 5ml spoon baking powder

B

___g caster sugar

260g margarine

___g self raising flour

___ eggs

2 x 5ml spoon baking powder

C

130g caster sugar

130g margarine

130g self raising flour

2 eggs

1 x 5ml spoon baking powder

D

___g caster sugar

___g margarine

390g self raising flour

6 eggs

___ x 5ml spoon baking powder

£1.30 **W**	65p **X**	£1.95 **Y**	33p **Z**

Problem 2:

A. Craig makes orange squash using 7 parts of water for every 3 parts of squash, Jess makes orange squash using 6 parts of water for every 2 parts of squash. Does Craig or Jess make the most orangery squash? Explain how you know.

B. If the ratio of boys to girls in a class is 7:2, could there be exactly 27 children in the class? Why? Could there be 25 boys? Why?

https://www.ncetm.org.uk/resources/47230 (secondary assessment materials)