

Mixing the drinks

If I'm mixing a drink like orange cordial, I need to mix the right amount of water with the right amount of cordial so that it tastes right and I don't waste any.



The label on the bottle usually tells you the right **proportion**, or **ratio**, to mix together.

If I'm making up a large quantity for a party, I might mix 1 bottle of cordial with 4 bottles of water. So a bottle of cordial is **one part** and four bottles of water are **four parts**.

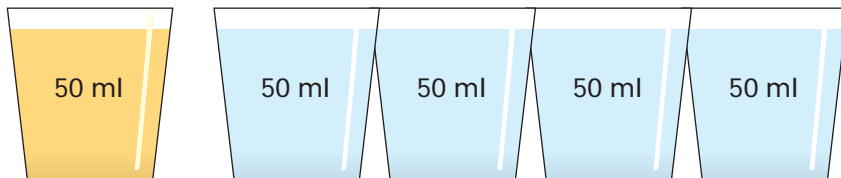
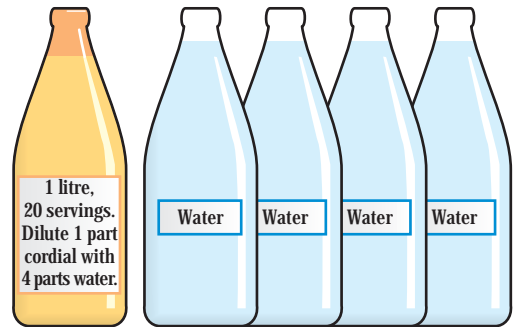
If I were making up one drink, I would need to know what amount of cordial would be needed for one drink. The bottle holds 1 litre and is enough for 20 servings.

1 litre = 1000 ml and is enough for 20 drinks.

The cordial for one drink would be 1000 ml divided by 20, which is 50 ml.

This amount is the **one part** of cordial.

The **four parts** of water would be four lots of 50 ml.



In this case the **amounts** are different. But the ratio of one part cordial to four parts water is the same. The drinks would taste the same because the ratio of cordial to water is the same.

There are other occasions when we use ratio without even thinking about it. For example, when you buy two bottles of lemonade and get a free bottle.

This is a ratio of 2 bottles bought to 1 bottle free.

If you decide to buy 4 bottles of lemonade, you will get 2 extra bottles free.

So you get **more** free bottles, but the **ratio** stays the same. For every 2 bottles you buy, you will get 1 free.



Talk about it

How many extra free bottles would you get if you bought 6 or 8 bottles?

6 bottles 8 bottles

Doubling and halving recipes

You can use this idea to change recipes. Here is a recipe for 8 syrup flapjacks

50 g butter 100 g golden syrup 50 g demerara sugar 100 g rolled oats

If you wanted to make 16 flapjacks, you would need to double **all** the amounts of the different ingredients. You would need 2×50 g of butter, which works out to 100 g.

What amounts of the other ingredients would you need for 16 flapjacks?

What amounts would you need if you wanted to make 4 flapjacks?

Write your answers in the table.

For	Butter	Syrup	Sugar	Oats
16	100g			
4				

Activity 12

With another person, or as a group, try these.

- 1 a If I am making mortar for bricklaying, the ratio of sand to cement is three parts sand to one part cement. If I use three buckets of sand, how many buckets of cement do I need to use?

- b I find that I need twice as much mortar as I had thought in question 1a. How many buckets of sand and cement will I need?

sand cement

- 2 A recipe for pastry needs 200 g of flour and 100 g of margarine. How many parts flour to margarine is that?

flour parts margarine parts

- 3 I have a bottle of cordial holding 2 litres of cordial. The correct ratio of cordial to water is one part cordial to five parts water.

How many litres of water should I mix with it?

- 4 Another bottle of cordial holds 2 litres. But the ratio of cordial to water is one to four. How many litres of water should I mix with the cordial?

cordial water

Working out the parts

Sometimes I have an order for a number of people at a party and then they'll ring me and say something like, 'Only 30 people are coming now instead of 40', so I have to reduce my food order to fit. I was going to order one chicken leg, three sandwiches, two pieces of cake and a drink for each person.

How did Victor do his calculations?

Original order 40 people

New order 30 people

He only needs $\frac{30}{40}$ of the food.

$\frac{30}{40}$ is the same as $\frac{3}{4}$.

So, for example, he was going to order 2×40 pieces of cake, which is 80 pieces.

To work out $\frac{3}{4}$ of that, first work out what $\frac{1}{4}$ of 80 is.

80 divided by 4 = 20.

$\frac{3}{4}$ is three times $\frac{1}{4}$.

So $\frac{3}{4}$ of the original order = $3 \times 20 = 60$

Remember

- The 4 on the bottom is called the **denominator**, which tells you **how many equal parts** the whole is divided into.
- The 3 on the top is called the **numerator**, which tells you **how many equal parts** there are.

As a group, work out how many chicken legs, sandwiches and pieces of cake Victor now needs to order.

Activity 13

As a group or with another person, try these.

- 1 My order for a party of 20 people who wanted three sandwiches and two drinks each has been changed to a party of 15.

What should my order be? sandwiches drinks

- 2 My order for 60 meals had to be changed when I was told that $\frac{2}{3}$ of the people were vegetarians.

How many vegetarian meals did I need to order?

- 3 $\frac{3}{4}$ of the 120 meals I was asked to cook had to be chicken.

How many was that?

- 4 $\frac{1}{3}$ of the 600 meals I make each month are vegetarian.

How many meals do I make with meat?



Activity 14

Recipes often say ‘Serves 4’, which is fine if there are four people. If you had to serve 25 people, work out how much would be needed.

Here’s a recipe for macaroni cheese:

Serves four		Serves one	
macaroni	100 g	macaroni	25 g
margarine	40 g	margarine	10 g
flour	40 g	flour	10 g
cheese	200 g	cheese g
milk	600 ml	milk ml

Find out how much is needed for one serving first. Divide the recipe by four. You would get 25 g of macaroni, 10 g of margarine and 10 g of flour.

As a group, can you work out how much cheese and milk you would need for one? Write your answers in the table above.

Now you know how much you need for one person. If you have to cater for 25, you need to multiply these quantities by 25.

So the amount of macaroni you would need would be $25 \text{ g} \times 25 = 625 \text{ g}$.

Work out how much of the other ingredients you would need. Write your answers in the table below.

For	Macaroni	Margarine	Flour	Cheese	Milk
25	625 g				
10					
15					
3					

With another person or on your own, work out the amounts you would need to make macaroni cheese for:

- 1 a party of 10 people 2 a party of 15 people 3 three people.

Add your answers to the table.

On your own, or with another person, find a recipe that serves a set number and work out the ingredients needed for 15 people and then for three people.