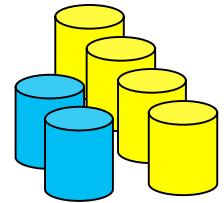# Proportion problems

Many problems involve finding a **value** that has **increased** or **decreased** in **proportion** with another.
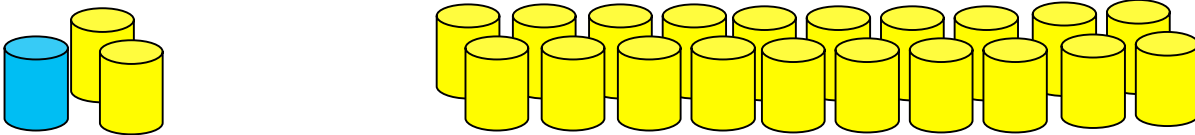
Mixing paint
A shade of green paint is produced using 2 litres of blue paint and 4 litres of yellow paint. How much yellow paint is needed for 10 litres of blue paint?
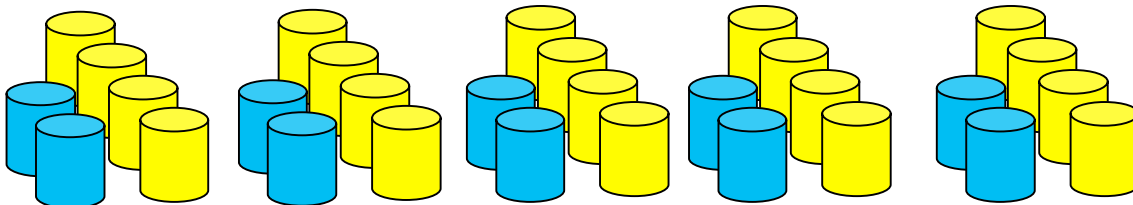
There are two ways to solve this problem:

1. 1 litre of blue paint uses 2 litres of yellow. So 10 litres of blue use **2 × 10 = 20 litres of yellow**.

2. For the blue paint: 2 litres to 10 litres means multiplying by 5. So **4 × 5 = 20 litres of yellow**.
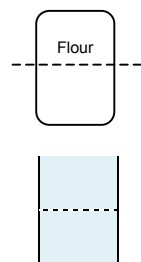
Making bread

Bread
500 g flour
2 teaspoons salt
7 g dry yeast
4 tablespoons olive oil
300 ml water

If you're **scaling down** the recipe and only using 250 g of flour, how much water should you use?

250 g is half of the 500 g in the recipe, so you need to halve everything.

Half of 300 ml is 150 ml. **So 150 ml of water is needed.**

Flour

Making concrete A concrete mix is made up of 1 part cement and 2 parts sand.

If 3 kg of cement is used, how much sand is needed?

There is **twice** the amount of sand.

3 kg × 2 = 6 kg sand

1kg   1kg   1kg

1kg   1kg   1kg
1kg   1kg   1kg