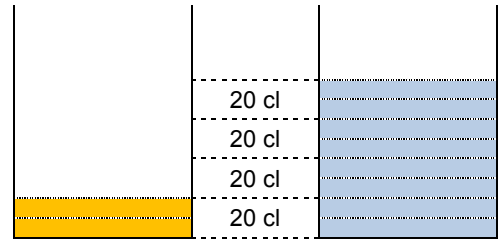


Understanding proportion

A drink is made up of concentrated fruit syrup and water. For this drink 20 cl (centilitres) of syrup is **mixed** with 80 cl of water.

Notice the amount of water is:

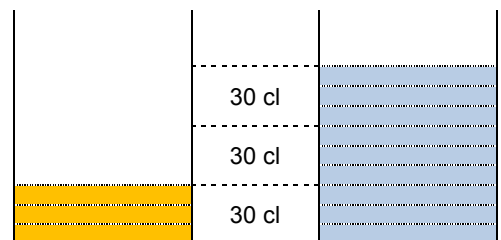
- 60 cl more than the amount of syrup
 $80 \text{ cl} - 20 \text{ cl} = 60 \text{ cl}$
- 4 times the amount of syrup
 $4 \times 20 \text{ cl} = 80 \text{ cl}$.



I want to top up this drink. What happens if I add 10 cl of syrup and 10 cl of water? I would have: 30 cl (20 cl + 10 cl) of syrup and 90 cl (80 cl + 10 cl) of water.

Now the amount of water is:

- still 60 cl more than the amount of syrup
 $90 \text{ cl} - 30 \text{ cl} = 60 \text{ cl}$, but
- 3 times the amount of syrup
 $3 \times 30 \text{ cl} = 90 \text{ cl}$

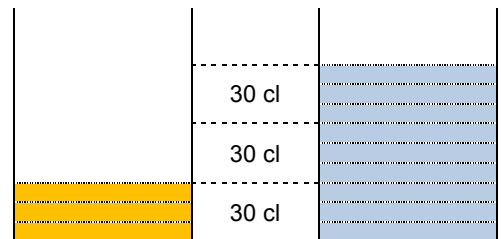


And how would it taste? Now it is **stronger**.

If I want to keep the same taste while adding 10 cl syrup then I would need to add 40 cl ($4 \times 10 \text{ cl}$) of water. In other words I would now have 30 cl of syrup and 120 cl of water.

For this drink the amount of water is:

- 90 cl more than the amount of syrup
 $120 \text{ cl} - 30 \text{ cl} = 90 \text{ cl}$, but
- 4 times the amount of syrup
 $4 \times 30 \text{ cl} = 120 \text{ cl}$



Quantities that keep the same taste are said to be **in proportion**. The amounts 20 cl to 80 cl and 30 cl to 120 cl are said to be in **the same proportion** because the second number is 4 times the first number in both cases.

Numbers increasing in proportion:



Notice that the numbers at the bottom are all **3 times the numbers at the top**.

Numbers not increasing in proportion:



Notice that the numbers at the bottom are **3 more than the numbers at the top**.