Math and Science

Chemistry sometimes involves a bit of simple mathematics. It's worth brushing up on your multiplication and division skills, as well as what's listed here.

Key Facts

- ✓ **You must know how to rearrange a mathematical equation.**
- ✓ **You must know how to calculate a percentage.**
- ✓ **You must know how to calculate a ratio.**

How to rearrange an equation

The subject of a formula is what is being figured out. You can change the subject by performing the opposite calculation on what you want the new subject to be.

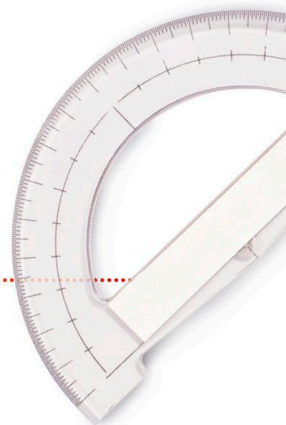
$$\text{area} = \text{base} \times \text{height}$$

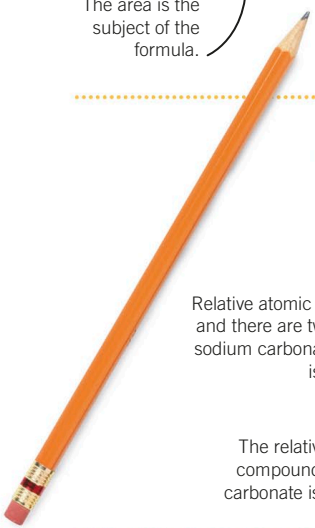
The area is the subject of the formula.

Make the base the subject of the formula by dividing instead of multiplying by height.

$$\text{base} = \frac{\text{area}}{\text{height}}$$

The base is new the subject of the formula.





How to calculate a percentage

A percentage is a way of expressing how much a value is of the total, which is represented as 100%. Calculate this by dividing the value by the total, and then multiply this by 100.

Relative atomic mass of sodium is 23, and there are two atoms of sodium in sodium carbonate. 23 multiplied by 2 is 46. This is the value.

$$\frac{46}{106} \times 100 = 43\%$$

Percentage of sodium by mass in sodium carbonate.

The relative formula mass of the compound that contains sodium carbonate is 106. This is the total.

How to calculate ratios

The ratio is a number representing the proportion of something in relation to something else. For example, here is the ratio of hydrogen atoms in an ammonia molecule to the number in hydrogen molecules.

$$NH_3 : H_2 \qquad 3:2$$

There are three hydrogen atoms in a molecule of ammonia.

There are two hydrogen atoms in a molecule of hydrogen gas.