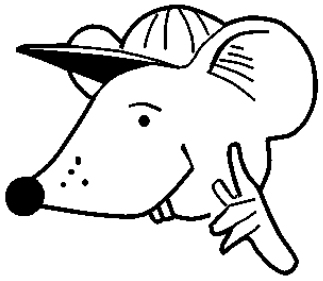
You should now be able to write small units as large units and large units as small units.

Try this with the measurements in the table.



Small units	Large units
Eg. 4 000kg	4t
6 574g	_____kg
_____cm	5.63m
943cm	_____m
_____mm	7.321m
9 529ml	_____l
_____ml	8.623 l
_____g	83kg
99cm	_____m
764cl	_____l
_____t	5 733kg
8 316mm	_____m
_____cl	12 l
12 634m	_____km
955m	_____km

Do you have trouble thinking what a tonne looks like?

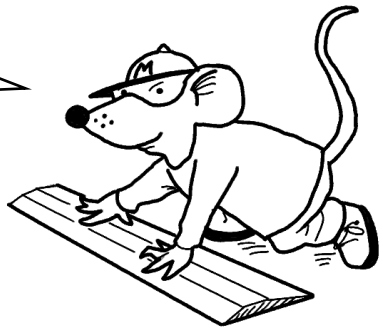
The 'size' of a tonne depends on the material used to make it.

A tonne of steel will obviously be smaller in size than a tonne of water.

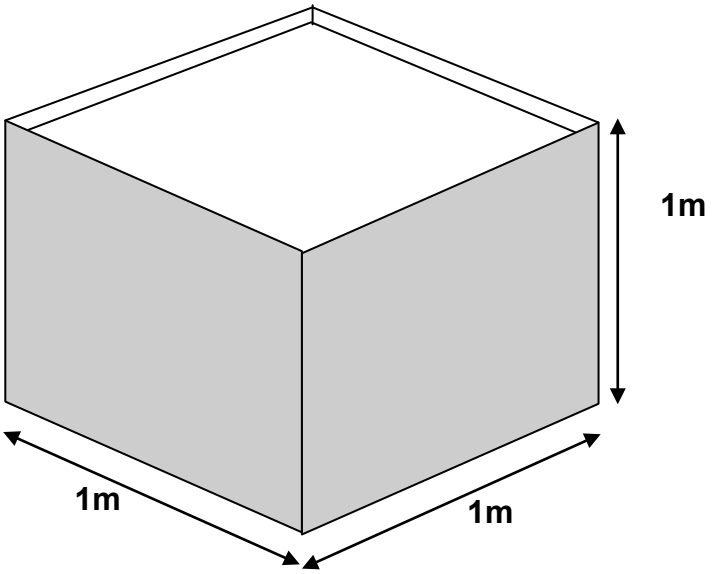
A tonne is the mass of a cubic metre of water.

Imagine a box in the shape of a cube 1m by 1m by 1m.

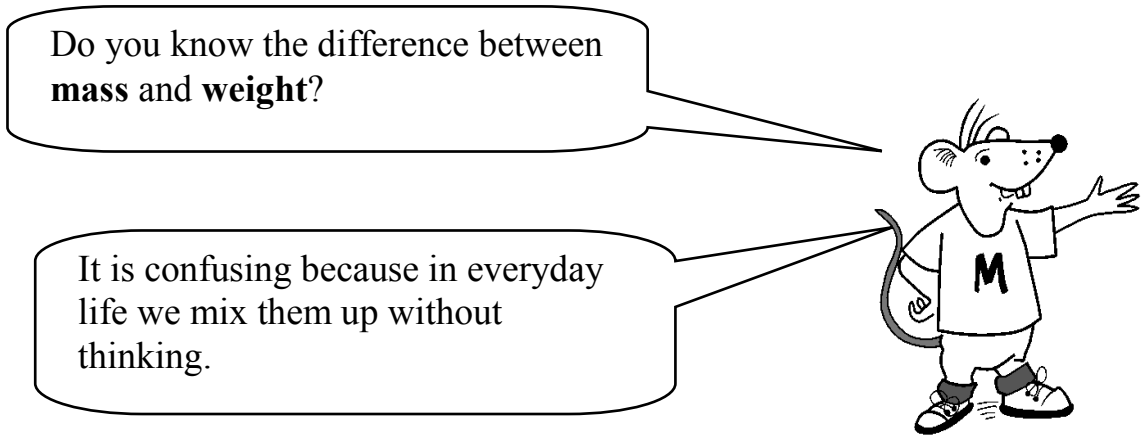
If this were filled with water, the water would weigh a tonne. Easy, really!



This amount of water weighs one tonne!



If a swimming pool is **2m** deep, **6m** wide and **25m** long, what is the mass of the water in the pool?



Mass
Mass is the **amount of material** in an object and is measured in **kilograms**. This stays the same wherever you take the object.

Weight
Weight is the **force by which the Earth (or other planet) pulls the object down** and is measured in **newtons**. This changes depending on where you take the object.

For example, if your **mass** is **40 kg**, you will have a **mass** of **40 kg** whether you are on the Earth, on Mars or on the Moon, because your body has the same amount of material wherever you are.

However, your **weight** will change because the gravity on Mars and the Moon is not as great as that on the Earth. On Earth your **weight** would be about **400 newtons**, on Mars it would be about **152 newtons** and on the Moon only about **66 newtons**.

Nelly the elephant was invited to the ball, but when she tried to put on her best dress she realised she had eaten so many buns she no longer fitted into it. She had heard, however, that astronauts were weightless in space, so she hitched a lift on the Space Shuttle.
Unfortunately, when she was in space she soon discovered that, although she didn't have any weight, she still had plenty of mass!

Michael was asked in a science test: 'What is the difference between mass and weight?'

He wrote: 'Mass is when you buy a bag of potatoes. Weight is when you have to carry them home!'

You should be familiar enough with the units of measurement now to answer these questions.

1. What is **one half** of these units. Give your answer in smaller units.
Eg. One **half** of a **kilometre** is **500 metres**.

a. kilometre **b.** metre **c.** kilogram **d.** litre **e.** centimetre

2. What is **one quarter** of these units. Give your answer in smaller units.

a. kilometre **b.** metre **c.** kilogram **d.** litre

3. What is **three quarters** of these units. Give your answer in smaller units.

a. kilometre **b.** metre **c.** kilogram **d.** litre

4. What is **one tenth** of these units. Give your answer in smaller units.

a. kilometre **b.** metre **c.** kilogram **d.** litre **e.** centimetre

5. What is **one hundredth** of these units. Give your answer in smaller units.

a. kilometre **b.** metre **c.** kilogram **d.** litre

6. What is **one thousandth** of these units. Give your answer in smaller units.

a. kilometre **b.** metre **c.** kilogram **d.** litre **e.** tonne

Answers

Page 1

4 000g	**4t**
6 574g	**6.574kg**
563cm	5.63m
943cm	**9.43m**
7 321mm	**7.321 m**
9 529ml	9.529 l
8 623ml	8.623 l
83 000g	**83kg**
99cm	**0.99m**
764cl	7.64 l
5.733t	**5 733kg**
8316mm	8.316m
1 200cl	**12 l**
12 634m	**12.634km**
955m	**0.955km**

Page 2

Water in the swimming pool weighs 300 tonnes

Page 4

1. a. 500m **b.** 50cm **c.** 500g **d.** 500ml **e.** 5mm

2. a. 250m **b.** 25cm **c.** 250g **d.** 250ml

3. a. 750m **b.** 75cm **c.** 750g **d.** 750ml

4. a. 100m **b.** 10cm **c.** 100g **d.** 100ml **e.** 1mm

5. a. 10m **b.** 1cm **c.** 10g **d.** 10ml

6. a. 1m **b.** 1mm **c.** 1g **d.** 1ml **e.** 1kg