



MATHEMATICS



N.S. Yr. 6 P.93

**Units to estimate or measure
length, mass or capacity.**

Equipment

Paper, pencil, ruler
Various measuring instruments
Straws

MathSphere

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Concepts

This module is linked to the previous module, 6091, the vocabulary of measures.

The emphasis is on using the correct units of measurement in length, mass and capacity.

Included are problems, such as how to measure the thickness of a piece of paper - the easiest way to do this is to find the thickness of 100 pieces of paper and then divide by 100.

One unit of measurement which is included in the Numeracy document is the Newton. An explanation of the difference between mass and weight can be found in module 6091. Children should be aware of this as it is an important part of the Science National Curriculum and newtons are included in most of the Science National Curriculum test papers. They should be able to remember that :

1 kilogram is 10 newtons

so: 100 grams (about an apple) is 1 newton

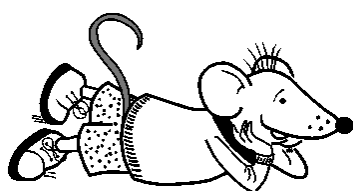
and the weight of a child with a mass of 40 kilograms would be 400 newtons.

How can you?

Here's a tricky little problem for you to solve!

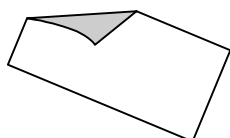
How heavy is this sheet of paper?

Well, it is a bit tricky as I don't know what to use to weigh it...perhaps I could fold it in half and then half and then....



As it happens, it is impossible to keep folding a piece of paper in half.

Once you have found out how heavy this piece is perhaps could see how many times you can fold it in half.



So: how can you find the weight of this piece of paper?

How heavy is a straw?



Do you enjoy a milkshake, or perhaps an orange juice.
Ever thought about the straw and how heavy it is?



You've got it.....we
want you to find out
how heavy a straw is.

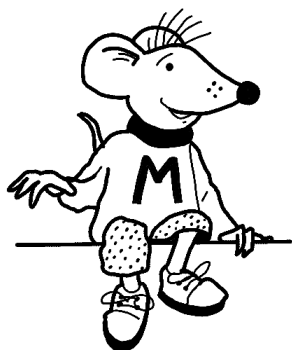


It was a straw that broke the
camel's back!

I wonder if the original
straws were made out of
straw?
Imagine sucking up a thick
chocolate milkshake through
a piece of straw!



Newtons



You have probably come across Newtons in Science.

Newtons measure the force by which the earth pulls an object down. This is called the object's weight.

A Newtonmeter or forcemeter is used to measure forces.

Weight is measured in Newtons.

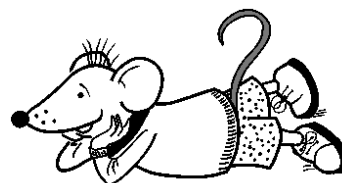
Mass is measured in kilograms.

In everyday life we mix the two measurements up all the time. When people talk about their weight, or being overweight, they are really talking about their mass.

An apple has a mass of about 100 g. It has a weight of about 1 Newton.



That's because an apple fell on Newton's head when he was thinking about gravity!



A one kilogram mass has a weight of 10 newtons (N)

Write down ten things which you could weigh using newtons.

Which units to use?

The units you use can make measuring easy or hard...or even impossible!



Write down the units that you think are best for making these measures - and keep to metric please (no feet and inches or pounds and stones - we are not in the stone age now!)

1. The distance round a tree.

2. The amount of water in a teaspoon.

3. The mass of a paper clip.

4. The distance round the world.

5. The width of a pencil line.

6. The weight of a lorry.

7. The distance from London to Paris.

Units of measurement

Write down some of the units of measurement you would expect to find at these places:

A supermarket

A hospital

On road signs

A kitchen

Answers

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1. metres or centimetres **2.** millilitres **3.** grams **4.** kilometres

5. millimetres **6.** kilograms or tonnes **7.** kilometres