Metric and non-metric units for length

1. Complete this table.

Number	Name, in words	Power
1 000 000	One million	10^6
10 000 000		
100 000 000		
1 000 000 000		
10 000 000 000		
100 000 000 000		
1 000 000 000 000		

2. Convert

   a. 2.76 km = _____ mm b. 12 000 000 mm = _____ km

Problem Solving

3. To measure very small lengths, the Egyptians divided the digit into even smaller lengths. The smallest length they used was $\frac{1}{16}$ of a digit. If a royal cubit is 524 mm long, and it is divided into 28 digits, which is further divided into 16 parts, how long is one part, in millimetres?
4. The prefix for one million is 'mega'. While we talk about megabytes of computer memory, the term 'megameter' for one million metres is rarely used.
   a. Name a place in Australia that is about one megameter from Brisbane.
   b. Estimate how many megameters it is from Brisbane to Perth.
   c. Speculate on why the term 'megameter' is rarely used.

Challenge

5. While the most well known unit was the *cubit*, the Egyptians used other units as well. There were 28 *digits* in one cubit. The *hand* was equal to 5 digits. How many hands are in one cubit?
6. For longer distances, the Egyptians used the

   khet which was equal to 100 royal cubits

   ater which was equal to 120 khets.

   If the distance from Brisbane to Sydney is 1000 kilometres, what is its distance in *aters*?
7. The metre was defined to be "one ten-millionth part of a quarter of the earth's circumference.". Based on this definition, what is the circumference of the Earth?
8. Astronomical distances are enormous.
   a. The Moon is about 390 000 km from Earth. If you travelled to the moon at 100 kilometres per hour (kph), how many days would it take you?
   b. The Sun is about 150 000 000 km from Earth. How many years would it take you to drive to travel to the Sun, at 100 kph?
   c. The distance to the stars is measured in **light years**. A light year is the distance that light travels in one year. Light travels about 300 000 km per second. Use this information to convert light years to kilometres:

      1 light year = _____ km.

   d. The furthest object in the universe known to man is 13.4 billion light years from Earth. How far is this in kilometres?