

## Measuring Lengths: large and small numbers

About 3 cm from the left-hand side of a sheet of paper draw a long, thin, vertical 'ladder' with 22 rungs.

Count up to the sixth rung from the bottom, and label it '1 metre'. Label the rungs above '1 metre', going upwards  $10^1$  metres (meaning 10 metres),  $10^2$  (meaning 100),  $10^3$  (meaning 1,000), up to  $10^{16}$ . Label the rungs below '1 metre', going downwards  $10^{-1}$  (meaning 0.1) metre,  $10^{-2}$  (meaning 0.01), .... $10^{-5}$ metre. Each rung of this ladder represents a length 10 times the rung below and one-tenth of the rung above. Now write in the following names where their length or size should come on the ladder.

Nearest star	$10^{13}$ kilometres	= $10^{16}$ metres
Sun to planet Pluto	$6 \times 10^9$ km	= $6 \times 10^{12}$ metres
Sun to Earth	$1.5 \text{ km} \times 10^8$ km	=
Earth to Moon	400,000 km	=
Earth's diameter	13,000 km	=
London to Edinburgh	640 km	=
1 kilometre	1 km	=
Height of Salisbury Cathedral	120 metres	=
Tall man	? (Guess)	=
Baby	50 centimetres	= $5 \times 10^{-1}$ metres
Length of your little finger	? (Measure it)	=
Diameter of a pencil	? (Measure it)	=
Thickness of paper	$10^{-2}$ cm	= metres
Red blood corpuscle	$10^{-3}$ cm	= metres