PREFIXES YOU MUST KNOW

Power of 10	Exponent	Prefix	Symbol	Common Name
9	10^{9}	giga	G	billion
6	10^{6}	mega	M	million
3	10^{3}	kilo	k	thousand
2	10^{2}	hecto	h	hundred
1	10^{1}	deca	da	ten
-1	10^{-1}	deci	d	tenth
-2	10^{-2}	centi	c	hundredth
-3	10^{-3}	milli	m	thousandth
-6	10^{-6}	micro	μ	millionth
-9	10^{-9}	nano	n	billionth

1

King Henry Did Usually Drink Chocolate Milk..

but that's for kids

2

SCIENTIFIC NOTATION

A number in scientific notation looks like:

4.25×10^{3} m

Number - Must start with an integer from 1 to 9

Power of 10

Units - one of the most important parts

0.425×10^{4} isn't quite right

3

EASIER TO READ

300,000,000 m/s

Light travels 300,000,000 meters each second
Find the decimal
Move the decimal - count how far it goes
Use that for the exponent

SUBTITLE GOES HERE

4

WHICH IS EASIER TO READ?

300,000,000 m/s or..

3×10^{8} m/s

SUBTITLE GOES HERE

5

EASIER TO READ

$0.0000065\ m$

Really small numbers work too
Find the decimal
Move the decimal - count how far it goes
This time, the exponent is negative

6

WHICH IS APPROPRIATE?

$0.0000065\ m$ or..

$6.5 \times 10^{-6}\ m$ or..

$6.5\ \mu m$

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NOT AS FAR TO GO

$8500 \times 10^{6}\ g$

This number isn't quite in scientific notation
Find the decimal
Move the decimal & count how far it goes
Change the exponent by that much

8

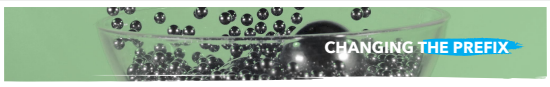
$8.500 \times 10^{6}\ g$

You moved the decimal 3 times
The number "looks" smaller
The exponent must become bigger by 3

$8.5 \times 10^{9}\ g$

$8.5\ Gg$ $8.5 \times 10^{6}\ kg$

9



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CONVERSIONS

How many centimeters are in 6.8 meters?

1 m = 1 x 10^2 cm

(or 1 cm = 1 x 10^{-2} m)

6.8 m = 6.8 x 10^2 cm

and you can say 680 if you'd prefer

11

TWO STEPS

How many cm are in 5 km?

Work with each prefix

1 km = 1 x 10^3 m

1 cm = 1 x 10^{-2} m

the two are 5 places apart

SUBTITLE GOES HERE

12

WATCH DIRECTIONS!

Decision: How many cm are in 5 km?

is it 5 x 10^5 or 5 x 10^{-5}

a lot or only a part of one?

500,000 or 0.00005

5 x 10^5 cm in 5 km

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