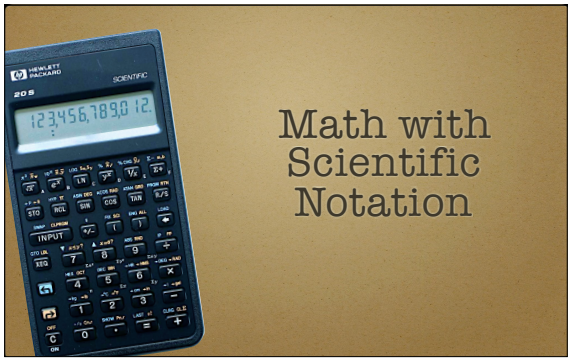

1

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

2

Time to Forget Henry

- King Henry Did Usually Drink Chocolate Milk.. but that's for kids.

3

Scientific Notation

- A number in scientific notation looks like...

4.25×10^{3} m

- Number
  - Must start with an integer from 1 to 9
  - 0.21×10^{2} isn't quite right
- Power of 10
- Units
  - one of the most important parts

4

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

5

Which is Easier to Read?

300,000,000 m/s or..

3×10^8 m/s

6

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

7

Which is Appropriate?

0.0000065 m or..

6.5×10^{-6} m or..

6.5 μm

8

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

9

8.500×10^6 g

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

8.5×10^9 g

8.5 Gg 8.5 $\times 10^6$ kg

10

Changing the Prefix

11

Conversions
powers of 10

- 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

12

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

13

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

14