Warm Up

11/6

Amanda wrote an equation that modeled her ride in a tricycle race that measured her distance in meters (y) for each second (x) she rode:

$$y = 1.5x + 1$$

$\frac{\Delta y}{\Delta x} = \frac{\text{meters}}{\text{sec}}$

What do the slope and y-intercept represent in the context of the problem?

slope: she rode 1.5 m/second

y-int: (0, 1) at time = 0 she is at 1 meter

time, distance

y-int tells us she had a 1 meter head start

$y = 1.5x + 1$ $\frac{\Delta y}{\Delta x} = \frac{1.5m}{sec}$

If the race is 25 meters long, use the equation to find out how long it took before Amanda crossed the finish line.

$y = 1.5x + 1$

$25 = 1.5x + 1$

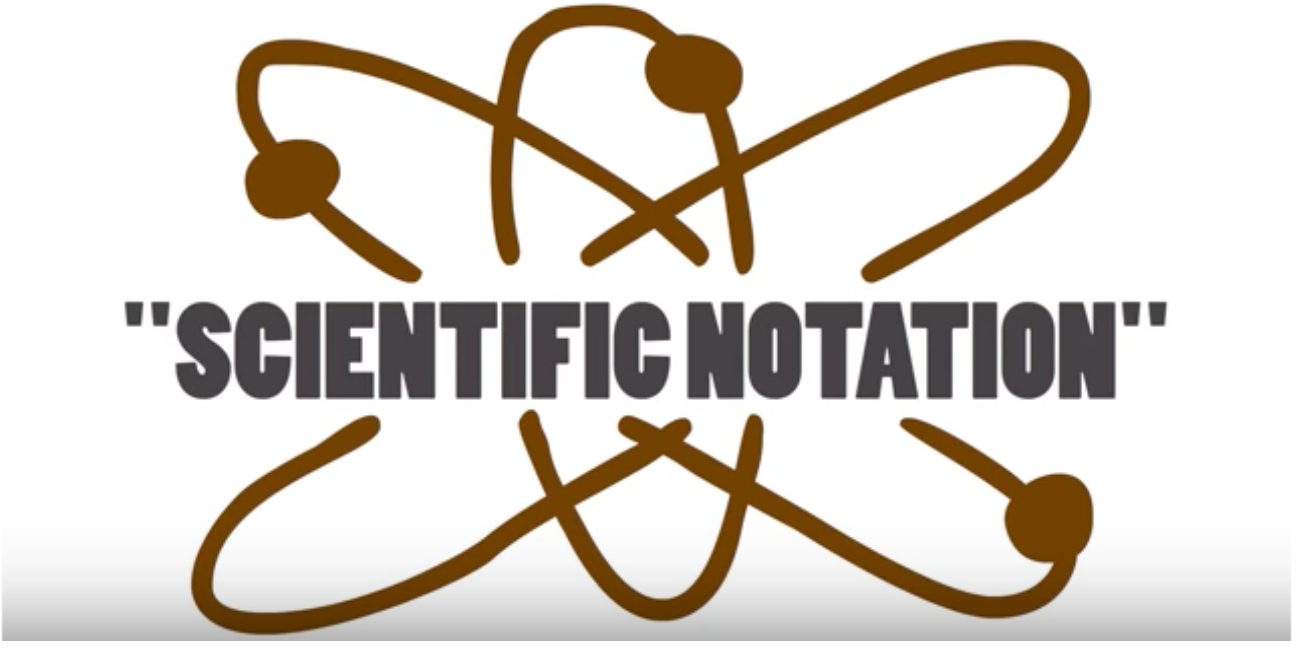
$-1 \qquad -1$

$24 = 1.5x$

$\frac{24}{1.5} = \frac{1.5x}{1.5}$

$16 = x$

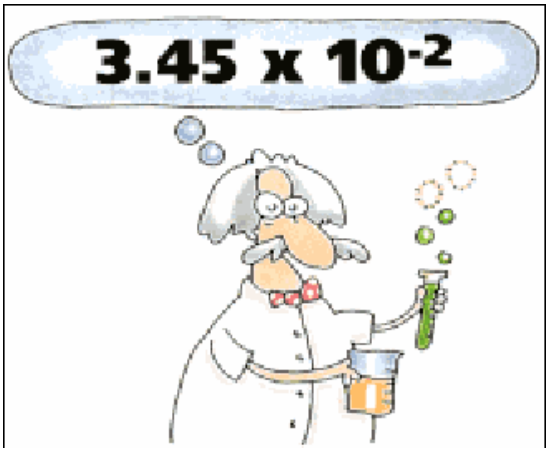
16 seconds



http://www.youtube.com/watch?v=AWof6knvQwE

Converting Scientific Notation

Kimberley Thomas



SCIENTIFIC NOTATION

A number is written in **scientific notation** if it is of the form

$$c \times 10^{n}$$

where $1 \leq c < 10$ and n is an integer.*

* an integer is a positive or negative whole number including zero

{... -3, -2, -1, 0, 1, 2, 3 ... }

Sort the given values.

Written in proper scientific notation

1.9×10^{-22}

2.1203×10^{-16}

2.35×10^{5}

3.214×10^{1}

5×10^{-9}

6.09×10^{7}

12×10^{0}

45.9×10^{-6}

10.3×10^{9}

***Not* written in proper scientific notation**

Scientific notation is used to write really big numbers.

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standard notation	⟶ scientific notation
123,000,000,000	1.23×10^{11}
45,000,000	4.5×10^{7}
67,800,000,000,000	6.78×10^{13}
9,000	9.0×10^{3}

It's about place values!

We know where the decimal point currently is, and we know where we need it to be to write the number in proper scientific notation. We then need to count how many place values we have moved it.

Scientific notation is used to write really big numbers.

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scientific notation ⟶ standard notation

7.820×10^{3} = 7820

3.04×10^{8} = 304,000,000

3.04 000000.

5×10^{4} = 50,000

5.0000.

6.2103×10^{10}

6.2103000000. 62,103,000,000

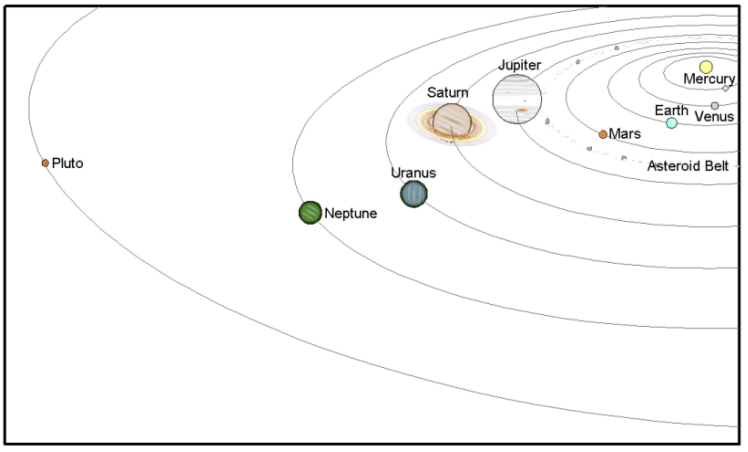
The exponent tells you how many decimal places you need to move.

Start with the number written in SN form. See where the decimal point currently is and then move the number of places that the exponent indicates.

An example of a really big number.
Please write it in scientific notation.

As the planets orbit the sun, the closest Pluto gets to Earth is approximately 2,700,000,000 miles.

2.7×10^9



Scientific notation is used to write really small numbers.

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standard notation	⟶ scientific notation
0.000000034	3.4×10^{-8}
0.0000000005609	5.609×10^{-10}
0.000000000064	6.4×10^{-11}
0.007	7×10^{-3}

Scientific notation is used to write really small numbers.

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scientific notation ⟶ standard notation

4.8×10^{-6} = 0.0000048

0.0000048

1.2×10^{-12} 0.000000000012

0.000000000012

0.9×10^{-2} = 0.09

7.1034×10^{-5} = 0.000071034

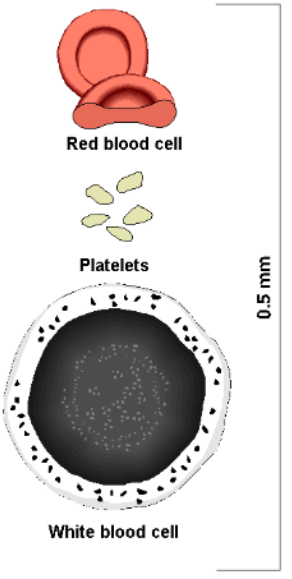
0.000071034

The exponent tells you how many decimal places you need to move.

An example of a really small number.
Please write it in scientific notation.

The thickness of a red blood cell is approximately 0.0003125 of an inch.

3.125×10^{-4}



How do you know that a number written in scientific notation will be really big or really small ?

Big

exponent is a large positive #

Small

exponent is negative

Write in proper Scientific Notation Form

347.8×10^{3}

347.800

3.478×10^{5}

$.0045 \times 10^{8}$

.0045 0000

4.5×10^{5}

$.023 \times 10^{-2}$

.0023

2.3×10^{-4}

850×10^{-5}

.0850

8.5×10^{-3}

Until you understand the pattern, it helps to expand out to standard form and then put back into proper SN form.

Rewrite in decimal form.

1. 3.79×10^{5}

2. 2.5×10^{-2}

3. 8.44×10^{1}

4. 6.5393×10^{4}

5. 3.589×10^{-3}

6. 9.1187×10^{0}

7. 1.0056×10^{-5}

8. 7.2658746×10^{8}

Extra Practice

Rewrite in scientific notation.

7,960,000,000	63,000,000
0.007485	0.0602
45.668	22,078,60β
998.653	0.000070005
0.0000056388	64.3

Homework

Finish classwork