

Scientific Notation

Objectives:

- ...to represent numbers using scientific notation
- ...to convert numbers written in scientific notation to standard notation

Assessment Anchor:

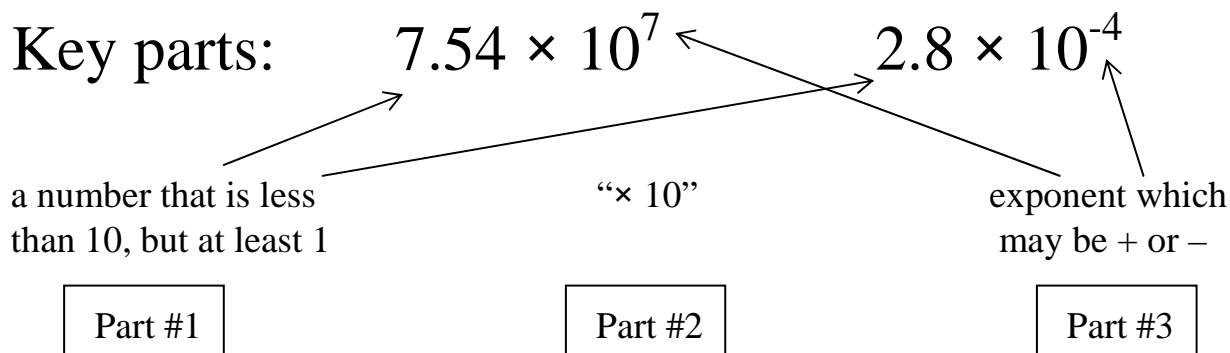


8.A.1.1 – Represent numbers in equivalent forms.

NOTES

Scientific notation: a way to write numbers using a power of ten
(which our number system is based on)

****** Usually used to express very large or very small numbers!!***



***** Positive** exponents are for **LARGE** numbers (10 or more)

***** Negative** exponents are for **SMALL** numbers (less than 1)

*******That means: The exponent to use for a number that is at least 1, but less than 10.... is..... _____.

Scientific Notation

To write a number in scientific notation:

1. Locate the decimal point
2. Move it to a location that will give you a number between 1 and 10 (or 1 exactly)
3. Write this new number down, followed by “ $\times 10$ ”
4. COUNT how many times you had to move the decimal point ...use this number as your exponent
5. Decide the sign of the exponent.
 - a. Large number makes exponent positive.
 - b. Small number makes exponent negative.
 - c. Number less than 10 but at least 1 makes an exponent of zero.

EXAMPLES

- 1) Write 3,500,000 in scientific notation.

$$3,500,000 \text{ -----} > 3.5 \times 10^6$$

- 2) Write 0.000467 in scientific notation.

$$0.000467 \text{ -----} > 4.67 \times 10^{-4}$$

- 3) Write 0.00000506 in scientific notation.

- 4) Write 83,040,000,000 in scientific notation.

- 5) Write 46.2 in scientific notation.

- 6) Write 3 in scientific notation.

Scientific Notation

To write a number in standard notation:

1. Use the exponent to determine if the number is **LARGE OR SMALL**
2. Determine which way to move the decimal point
3. Move the decimal point the number of times the exponent says to
4. Write the number you now have

MORE EXAMPLES

- 7) Write 4.59×10^7 in standard form.

$$4.59 \times 10^7 \text{ -----} > 45,900,000$$

- 8) Write 2.14×10^{-3} in standard form.

$$2.14 \times 10^{-3} \text{ -----} > 0.00214$$

- 9) Write 5.01×10^{-5} in standard form.

- 10) Write 8×10^8 in standard form.

- 11) Write 2.97×10^{-2} in standard form.

- 12) Write 4.25×10^{11} in standard form.

Scientific Notation

MORE PRACTICE PROBLEMS

Scientific Notation	Standard Notation
7.28×10^{10}	
3.409×10^{-3}	
	0.00000581
9.1×10^4	
	9,081,000,000
	27.58
1.54×10^{-5}	
	5.31
6×10^5	
	0.007009
	0.000000004
8.4×10^{-6}	
6.02×10^8	
	56,090,000
4×10^0	