

Lesson 65 - ADDING AND SUBTRACTING WITH SCIENTIFIC NOTATION (day 1)

*To add or subtract numbers written in scientific notation,
the powers of 10 **must** be the same.*

Add or subtract the coefficient and keep the base of ten and its exponent.

Make sure that the final answer is correctly written in scientific notation.

Examples:

1) $(6.72 \times 10^9) - (2.01 \times 10^9)$

2) $(4.076 \times 10^4) + (3.2 \times 10^4)$

3) $7.013 \times 10^{-8} + 2 \times 10^{-8}$

4) $5.4 \times 10^{21} - 4.2 \times 10^{21}$

Note: Look at your sum or difference, if it is not in proper scientific notation fix it!!

5) The mass of Earth and Venus are listed below.

Earth: 5.9722×10^{24} kg

Venus: 4.8685×10^{24} kg

a) Determine the **total mass** of the two planets.

b) Determine the **difference** in the masses of the two planets.

(6-7) Perform the indicated operations. All answers must be in scientific notation.

6) $2 \times 10^{-11} + 1.433 \times 10^{-11}$

7) $(5.671 \times 10^5) - (4.08 \times 10^5)$

*When the base 10 exponents are **not the same** we must
change the smaller exponent to match the larger exponent.
Once the exponents are the same, the numbers may can be added or subtracted.*

**USE THE FOLLOWING INFORMATION TO EXPLORE TWO METHODS
FOR ADDING (OR SUBTRACTING) WITH SCIENTIFIC NOTATION.**

- 8) The United States has a population of 3.1×10^8 . Canada has a population of 3.38×10^7 . What is the total number of people living in both Canada and the United States in scientific notation?

Method I:

Convert each number from scientific notation to standard form.
Perform the operation.
Convert the sum or difference back to scientific notation.

Method II:

Change the smaller number to have the same power of 10 as the larger number.

- a) Determine the number you will change the exponent to.
- b) Move the decimal point to the **left** that many places.
- c) **Add/subtract** the coefficients and keep the power.
- d) Be sure your answers are in scientific notation.

(9-10) Perform the indicated operations. All answers must be in scientific notation.

9) $(2.03 \times 10^3) + (3.214 \times 10^4)$

10) $(6.15 \times 10^7) - (3.56 \times 10^5)$

Now, You Try!

Directions: Evaluate the following expressions. Be sure to write your answer in scientific notation.

6) $(2 \times 10^7) + (6 \times 10^7)$

7) $(9.61 \times 10^8) - (2.9 \times 10^8)$

8) $(7 \times 10^5) - (5 \times 10^3)$

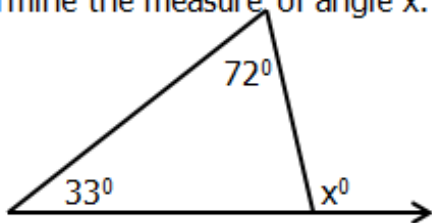
9) $(6.5 \times 10^7) - (3.2 \times 10^5)$

Review

1) A line has a slope of -5 and passes through the point $(0, 4)$. What is the equation of this line? Show work.

2)

Determine the measure of angle x . **Show work.**



$m\angle x = \underline{\hspace{2cm}}$