

**Scientific Notation** can be used to express very large or very small numbers. Click on the [NYU site](#) to familiarize yourself with Scientific Notation.

4,000 expressed in Scientific Notation is  $4 * 10^3$  (here we use \* to indicate multiplication)

.00067 expressed in Scientific Notation is  $6.7 * 10^{-4}$

**First, use the links to locate the information, and type in the answers into this document. Then go back and convert the answers to Scientific Notation (use the NYU site to help you.) Print when you are done using the instructions at the end.**

To write Scientific Notation in a word document, type all the numbers (such as  $4*10^3$ ) select only the exponent (3), then choose Format > Font > Superscript.

1. What is the elevation of [Mt. Everest?](#)
  - Standard Notation:
  - Scientific Notation:
2. What is the distance from [Earth to the Sun?](#)
  - Expressed in km/Scientific Notation?
  - Expressed in km?
  - Expressed in Astronomical Units?
3. How much water is in [the ocean?](#) Expressed in  $\text{km}^3$  ?
  - Standard Notation:
  - Scientific Notation:How many gallons?
  - Standard Notation:
  - Scientific Notation:
4. What is [the population](#) of
  - The U.S. right now?
  - Scientific Notation:
  - The world right now?
  - Scientific Notation:

- The U.S. when you finish this hunt?
- The world when you finish this hunt?

5. Use the [Scientific Calculator](#) to determine how much the population of the world has grown in the time it has taken you to finish this hunt?

(You may also use the Scientific Calculator to check your Scientific Notation.)

6. What is the diameter of a [bacterial cell](#) in mm?

- What is the diameter in meters (divide by 1000 or move the decimal 3 places to the left)?
- Now write the diameter in meters in Scientific Notation.

7. What is the [mass of a bacterium](#)?

- Scientific Notation:
- Standard Notation:

8. Use the [Cells Alive Interactive](#) to compare the sizes of very small things.

- Challenge: Using the magnification scale on the Cells Alive Interactive, describe how big a nanometer is (maybe in terms of meters or mm.)

**When you are finished: Save As "Hunt" with your initials into YOUR folder. Then print with a teacher's permission.**

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1. What is the elevation of [Mt. Everest?](#)

- Standard Notation: 29,000 ft
- Scientific Notation:  $2.9 * 10^4$

2. What is the distance from [Earth to the Sun?](#)

- Expressed in km/Scientific Notation?  $150 * 10^6$  km OR  $1.5 * 10^8$  km
- Expressed in km? 150,000,000 OR 150 million
- Expressed in Astronomical Units? 1 AU

3. How much water is in [the ocean?](#) Expressed in  $\text{km}^3$  ?

- Standard Notation: 1,386,000,000  $\text{km}^3$
- Scientific Notation:  $1.386 * 10^9$

How many gallons?

- Standard Notation: 36,614,237,300,000,000,000,000
- Scientific Notation:  $3.66 * 10^{22}$

4. What is [the population](#) of

- The U.S. right now? 307,518,650
- Scientific Notation:  $3.08 * 10^8$
- The world right now? 6,785,881,976
- Scientific Notation:  $6.79 * 10^9$

- The U.S. when you finish this hunt? 307,518,870
- The world when you finish this hunt? 6,785,887,268

5. Use the [Scientific Calculator](#) to determine how much the population of the world has grown in the time it has taken you to finish this hunt?

US added 220 (for example)

World added 5292 (for example)

(You may also use the Scientific Calculator to check your Scientific Notation.)

6. What is the diameter of a [bacterial cell](#) in mm? .001 mm

- What is the diameter in meters (divide by 1000 or move the decimal 3 places to the left)? .000001 m
- Now write the diameter in meters in Scientific Notation.  $1 \times 10^{-6}$

7. What is the [mass of a bacterium](#)?

- Scientific Notation:  $9.5 \times 10^{-13}$ g
- Standard Notation: .000000000000095 g

8. Use the [Cells Alive Interactive](#) to compare the sizes of very small things.

- Challenge: Using the magnification scale on the Cells Alive Interactive, describe how big a nanometer is (maybe in terms of meters or mm.)

One nanometer is one millionth of a mm, and one billionth of a meter.

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