

Name: \_\_\_\_\_

# Lesson Guide

This lesson guide accompanies the following video lesson:



## Scientific Notation

### Key Questions

- What is scientific notation?
- How can you express numbers in scientific notation?

Scientific notation is a way of expressing numbers that are too \_\_\_\_\_ or too \_\_\_\_\_ to be conveniently written in decimal form.

### ➤ **Example 01: The Population of Arizona**

> **Step One:** Rewrite the Number as a Decimal (if necessary)

**7,200,000.0**

> **Step Two:** Count the number of place values between the decimal and the first \_\_\_\_\_ digit, in the case 7.

**7** 200 000.0

There are \_\_\_\_\_ decimal places between the decimal point and the first non-zero digit.

> **Step Three:** Move the decimal point in front of the first non-zero digit and get rid of all of the zeros that come after the last non-zero digit.

**7** 200 000.0 → **7.2**

> **Step Four:** Use the number of place values that you found in Step Two to rewrite the value in scientific notation;

*When using scientific notation, you are always multiplying by 10 raised to a power!*

**7.2 × 10<sup>6</sup>**

➤ **Example 02:**

Rewrite the following value using scientific notation.

**29,700,000,000**

> **Step One:** Rewrite the Number as a Decimal (if necessary)

> **Step Two:** Count the number of place values between the decimal and the first \_\_\_\_\_ digit, in the case 7.

**There are \_\_\_\_\_ decimal places between the decimal point and the first non-zero digit.**

> **Step Three:** Move the decimal point in front of the first non-zero digit and get rid of all of the zeros that come after the last non-zero digit.

> **Step Four:** Use the number of place values that you found in Step Two to rewrite the value in scientific notation;

## Extra Practice:

Write each number in scientific notation.

1) 37,000

2) 9,560

3) 750

4) 8,880,000

5) 154,000

6) 6,229,000

7) 222,000,000

8) 320,000

9) 800,100,000

10) 1,893,000,000

## ANSWER KEY

1)  $3.7 \cdot 10^4$

5)  $15.4 \cdot 10^4$

9)  $8.001 \cdot 10^8$

2)  $9.56 \cdot 10^3$

6)  $6.229 \cdot 10^6$

10)  $1.893 \cdot 10^9$

3)  $7.5 \times 10^2$

7)  $2.22 \cdot 10^8$

4)  $88.8 \cdot 10^5$

8)  $3.2 \cdot 10^5$