DIVIDING NUMBERS IN SCIENTIFIC NOTATION

LEARNING GOAL

1. I can divide numbers that are in scientific notation.

ASSIGNMENT

Complete exercises 1-3 to help you avoid common mistakes when using scientific notation. Then find each quotient using scientific notation for exercises 4-6. **Show all of the steps to receive credit!**

COMMON MISTAKE

A common mistake is writing an incorrect sign for the exponent in scientific notation. You need to remember the following facts.

1. A **positive exponent** is used to represent a number **greater than 1**.
2. A **negative exponent** is used to represent a number **greater than 1**.

EXERCISE 1

Fill in the table with the different representations of the powers of 10.

Exponent form	Rewrite with positive exponents	Expanded form	Fraction form	Decimal form	> 1 or < 1?
10^5					
10^4					
10^3					
10^2					
10^1					
10^0					
10^{-1}					
10^{-2}					
10^{-3}					

EXERCISE 2

Fill in the table to predict the sign of the exponent when each number is written in scientific notation (SN).

Standard form	Is the number greater than or less than 1?	Sign of the exponent in SN
21,000		
0.008		
30		

EXERCISE 3

Fill in the table to predict the whether the number in scientific notation is greater than or less than 1.

Scientific notation (SN)	Sign of the exponent in SN	Is the number greater than or less than 1?
$5.2 \cdot 10^{24}$		
$1.8 \cdot 10^{-31}$		
$6.23 \cdot 10^{23}$		

EXAMPLE 1

Find the quotient using scientific notation:

$$(8 \cdot 10^5) \div (2 \cdot 10^3)$$

EXAMPLE 2

Find the quotient using scientific notation:

$$\frac{0.002}{50}$$

EXERCISE 4

Find the quotient using scientific notation:

$$(9 \cdot 10^5) \div (3 \cdot 10^3)$$

EXERCISE 5

Find the quotient using scientific notation:

$$\frac{6 \cdot 10^{5}}{5 \cdot 10^{-3}}$$

EXERCISE 6

Find the quotient using scientific notation:

$$\frac{320}{0.0005}$$