LESSON MAKER PRO

Tiny to Titanic

Write quantities using powers of ten.

GRADE 8 · MT.8.EE.3

MT.8.EE.3 "Represent very large or very small quantities using scientific notation, limited to a single digit times an integer power of ten."

NAME _____ DATE _____

THE BIG IDEA

Scientific notation writes a number as a value at least 1 but less than 10 multiplied by a power of 10. Move the decimal point to make the first value, then count the places moved. Use a positive exponent for a large number and a negative exponent for a number less than 1.

WORKED EXAMPLE

Write 0.000067 in scientific notation.

1. Move the decimal point five places right to get 6.7.
2. The starting number is less than 1, so use the exponent -5.

Answer: 6.7×10^{-5}

PRACTICE 6 problems

1 Write 45,000,000 in scientific notation.

ANSWER _____

2 Write 0.0000082 in scientific notation.

ANSWER _____

3 Write 608,000,000 in scientific notation.

ANSWER _____

4 Write 0.00039 in scientific notation.

ANSWER _____

5 Write 1.25×10^{9} as a decimal number.

ANSWER _____

6 Write 2.9×10^{-7} as a decimal number.

ANSWER _____

APPLY IT Show your work

1 A gaming video has 84,000,000 views. Write its view count in scientific notation.

WORK SPACE

ANSWER _____

2 A feature in a phone's processor is 0.000000003 meter wide. Write this width in scientific notation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A student writes 0.000045 as 45×10^{-6}. Is the value correct? Is it in scientific notation? Explain, then write it in scientific notation.

WORK SPACE AND ANSWER

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Write 45,000,000 in scientific notation.	**4.5×10^{7}**
2	Write 0.0000082 in scientific notation.	**8.2×10^{-6}**
3	Write 608,000,000 in scientific notation.	**6.08×10^{8}**
4	Write 0.00039 in scientific notation.	**3.9×10^{-4}**
5	Write 1.25×10^{9} as a decimal number.	**1,250,000,000**
6	Write 2.9×10^{-7} as a decimal number.	**0.00000029**

PART 2 · APPLY IT

1. **8.4×10^{7} views** Move the decimal point seven places left to get 8.4.
2. **3×10^{-9} meter** Move the decimal point nine places right to get 3. The original width is less than 1, so the exponent is -9.

CHALLENGE

The value is correct because $45 \times 10^{-6} = 0.000045$. It is not in scientific notation because 45 is greater than 10. In scientific notation, it is 4.5×10^{-5}.

Accept decimal answers with or without commas. When scientific notation is requested, the first factor must be at least 1 and less than 10.