LESSON MAKER PRO

Decode the Display

Make sense of numbers shown by technology.

GRADE 8 · 8.AF.A.6.b

8.AF.A.6.b "Interpret scientific notation that has been generated by technology."

NAME _____ DATE _____

WHAT DOES E MEAN?

A display may use E to mean "times 10 to the power of." For example, E+3 means multiply by 10^3, while E-3 means divide by 10^3. A positive exponent moves the decimal point right, and a negative exponent moves it left.

WORKED EXAMPLE

A device shows 8.3E-6. Write this number in standard form.

1. 8.3E-6 means 8.3×10^{-6}.
2. $10^{-6} = 1/1{,}000{,}000$.
3. $8.3 \div 1{,}000{,}000 = 0.0000083$.

Answer: 0.0000083

PRACTICE 6 problems

1 A display shows 5.4E+3. Write the number in standard form.

ANSWER _____

2 A display shows 6.2E-3. Write the number in standard form.

ANSWER _____

3 A display shows 1.75E+5. Write the number in standard form.

ANSWER _____

4 A display shows 9.01E-2. Write the number in standard form.

ANSWER _____

5 A display shows 3E+7. Write the number in standard form.

ANSWER _____

6 A display shows 2.4E-5. Write the number in standard form. Explain why it is less than 1.

ANSWER _____

APPLY IT Show your work

1 A video platform shows that a stream has 4.8E+6 views. How many views is that? How many more than 4 million views is it?

WORK SPACE

ANSWER _____

2 Your gaming profile shows that one cloud save uses 2.5E-3 GB and another uses 6.0E-4 GB. How many more GB does the larger save use?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Two devices show 4.2E-5 and 3.1E-4. A student says 4.2E-5 is greater because 4.2 is greater than 3.1. Is the student correct? Write both numbers in standard form and explain your comparison.

WORK SPACE AND ANSWER

ANSWER KEY

Decode the Display

GRADE 8 · 8.AF.A.6.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A display shows 5.4E+3. Write the number in standard form.	**5,400**
2	A display shows 6.2E-3. Write the number in standard form.	**0.0062**
3	A display shows 1.75E+5. Write the number in standard form.	**175,000**
4	A display shows 9.01E-2. Write the number in standard form.	**0.0901**
5	A display shows 3E+7. Write the number in standard form.	**30,000,000**
6	A display shows 2.4E-5. Write the number in standard form. Explain why it is less than 1.	**0.000024. The negative exponent means divide 2.4 by 100,000, giving a number less than 1.**

PART 2 · APPLY IT

1. **4,800,000 views; 800,000 more than 4 million views** 4.8E+6 is 4,800,000. Subtract 4,000,000 to get 800,000.
2. **0.0019 GB** The saves use 0.0025 GB and 0.0006 GB. Subtract to get 0.0019 GB.

CHALLENGE

No. 4.2E-5 is 0.000042, and 3.1E-4 is 0.00031. Since 0.000042 < 0.00031, 4.2E-5 is smaller.

Accept equivalent explanations based on place value or powers of 10. A leading zero before the decimal point is optional.