LESSON MAKER PRO

Power Moves

Multiply, divide, and interpret scientific notation.

GRADE 8 · 8.EE.A.4

CCSS.Math.Content.8.EE.A.4 "Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used..."

NAME _____ DATE _____

WORK WITH POWERS

When you multiply numbers in scientific notation, multiply the coefficients and add the exponents. When you divide, divide the coefficients and subtract the exponents. Write each final answer so its coefficient is at least 1 but less than 10.

WORKED EXAMPLE

$(1.7 \times 10^{14})(2.5 \times 10^{11})$

1. Multiply the coefficients: 1.7 x 2.5 = 4.25.
2. Add the exponents: 14 + 11 = 25.
3. Combine the results: 4.25 x 10^{25}.

Answer: 4.25 x 10^{25}

PRACTICE 6 problems

1 $(3 \times 10^{5})(2 \times 10^{3})$

ANSWER _____

2 $(8 \times 10^{7}) / (4 \times 10^{2})$

ANSWER _____

3 $0.0006 \times (5 \times 10^{4})$

ANSWER _____

4 $(7.2 \times 10^{6}) + (1.8 \times 10^{6})$

ANSWER _____

5 $(9 \times 10^{-3}) / (3 \times 10^{2})$

ANSWER _____

6 A calculator displays 6.04E-7. Write this number in decimal form.

ANSWER _____

APPLY IT Show your work

1 During an online gaming tournament, a livestream sends 4×10^8 bytes of data each minute for 3×10^2 minutes. How many bytes of data does it send altogether? Write your answer in scientific notation.

WORK SPACE

ANSWER _____

2 A school air-quality sensor collects 2.4×10^{-6} grams of dust each minute. It runs for 5×10^4 minutes. How many grams of dust does it collect? Write your answer in scientific notation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Evaluate $(6.3 \times 10^5) / 0.09$. Write the answer in scientific notation and explain how you used 0.09.

WORK SPACE AND ANSWER

ANSWER KEY # Power Moves

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	$(3 \times 10^5)(2 \times 10^3)$	**6×10^8**
2	$(8 \times 10^7) / (4 \times 10^2)$	**2×10^5**
3	$0.0006 \times (5 \times 10^4)$	**3×10^1**
4	$(7.2 \times 10^6) + (1.8 \times 10^6)$	**9×10^6**
5	$(9 \times 10^{-3}) / (3 \times 10^2)$	**3×10^{-5}**
6	A calculator displays 6.04E-7. Write this number in decimal form.	**0.000000604**

PART 2 · APPLY IT

1. **1.2×10^{11} bytes** Multiply the coefficients, 4 x 3 = 12, and add the exponents, 8 + 2 = 10. Rewrite 12×10^{10} as 1.2×10^{11}.
2. **1.2×10^{-1} grams** Multiply 2.4 x 5 = 12 and add exponents, -6 + 4 = -2. Rewrite 12×10^{-2} as 1.2×10^{-1} grams.

CHALLENGE

7×10^6. Since $0.09 = 9 \times 10^{-2}$, divide 6.3 by 9 and subtract -2 from 5.

Accept equivalent decimal forms when a problem asks for decimal form. Scientific-notation answers should have a coefficient greater than or equal to 1 and less than 10.