LESSON MAKER PRO

Powers in Action

Calculate with numbers in scientific notation

GRADE 8 · MT.8.EE.4

MT.8.EE.4 "Perform operations with numbers expressed in scientific notation."

NAME _____ DATE _____

HOW THE POWERS WORK

To multiply, multiply the first numbers and add the exponents. To divide, divide the first numbers and subtract the exponents. To add or subtract, first rewrite the numbers with matching powers of 10. Write each final answer with a first number at least 1 and less than 10.

WORKED EXAMPLE

Find $(3 \times 10^7) \times (4 \times 10^6)$.

1. Multiply the first numbers: $3 \times 4 = 12$.
2. Add the exponents: $7 + 6 = 13$.
3. Rewrite 12×10^{13} as 1.2×10^{14}.

Answer: 1.2×10^{14}

PRACTICE 6 problems

1 Find $(2 \times 10^5) \times (6 \times 10^2)$. Write your answer in scientific notation.

ANSWER _____

2 Find $(8 \times 10^9) / (2 \times 10^3)$. Write your answer in scientific notation.

ANSWER _____

3 Find $(5.6 \times 10^4) + (2.1 \times 10^4)$. Write your answer in scientific notation.

ANSWER _____

4 Find $(9 \times 10^8) - (2 \times 10^7)$. Write your answer in scientific notation.

ANSWER _____

5 Find $(7.5 \times 10^{-3}) \times (2 \times 10^5)$. Write your answer in scientific notation.

ANSWER _____

6 Find $(6.4 \times 10^{-2}) / (8 \times 10^{-5})$. Write your answer in scientific notation.

ANSWER _____

APPLY IT Show your work

1 A game download uses 6×10^9 bytes of storage. One photo uses about 2×10^6 bytes. About how many photos would use the same amount of storage? Write your answer in scientific notation.

WORK SPACE

ANSWER _____

2 During a livestream, 2.5×10^5 viewers each send 8×10^1 reactions. How many reactions do they send in all? Write your answer in scientific notation.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A creator has 9×10^8 bytes of free storage. They upload five videos that each use 8×10^7 bytes, then save other files that use 2×10^8 bytes. How many bytes of free storage remain? Write your answer in scientific notation and explain your calculation in one sentence.

WORK SPACE AND ANSWER

Powers in Action

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find $(2 \times 10^5) \times (6 \times 10^2)$. Write your answer in scientific notation.	**1.2×10^8**
2	Find $(8 \times 10^9) / (2 \times 10^3)$. Write your answer in scientific notation.	**4×10^6**
3	Find $(5.6 \times 10^4) + (2.1 \times 10^4)$. Write your answer in scientific notation.	**7.7×10^4**
4	Find $(9 \times 10^8) - (2 \times 10^7)$. Write your answer in scientific notation.	**8.8×10^8**
5	Find $(7.5 \times 10^{-3}) \times (2 \times 10^5)$. Write your answer in scientific notation.	**1.5×10^3**
6	Find $(6.4 \times 10^{-2}) / (8 \times 10^{-5})$. Write your answer in scientific notation.	**8×10^2**

PART 2 · APPLY IT

1. **3×10^3 photos** Divide 6×10^9 by 2×10^6. The result is 3×10^3 photos.
2. **2×10^7 reactions** Multiply 2.5×10^5 by 8×10^1 to get 20×10^6. Rewrite this as 2×10^7 reactions.

CHALLENGE

3×10^8 bytes remain because the videos use 4×10^8 bytes, and subtracting that and 2×10^8 from 9×10^8 leaves 3×10^8 bytes.

Answers should be in normalized scientific notation. For the challenge, accept any one-sentence explanation that correctly accounts for both the videos and the other files.