LESSON MAKER PRO

Power of Ten

Compute, then write each result in normalized scientific notation.

GRADE 8 · MA.8.NSO.1.5

MA.8.NSO.1.5 "Add, subtract, multiply and divide numbers expressed in scientific notation with procedural fluency."

NAME _____ DATE _____

MATCH, COMBINE, NORMALIZE

In normalized scientific notation, the coefficient is at least 1 and less than 10, so 10 is not included. To add or subtract, first rewrite the numbers with matching powers of 10. To multiply or divide, multiply or divide the coefficients and add or subtract the exponents, then normalize the result.

WORKED EXAMPLE

$(7.2 \times 10^5) \div (1.8 \times 10^2)$

1. Divide the coefficients: $7.2 \div 1.8 = 4$.
2. Subtract the exponents: $10^5 \div 10^2 = 10^{(5 - 2)}$.
3. Combine the results: 4×10^3.

Answer: 4×10^3

PRACTICE 6 problems

1 $(6.6 \times 10^8) + (1.1 \times 10^8)$

ANSWER _____

2 $(9.9 \times 10^9) - (8.8 \times 10^8)$

ANSWER _____

3 $(1.6 \times 10^8)(9 \times 10^7)$

ANSWER _____

4 $(9.9 \times 10^{13}) \div (1.1 \times 10^6)$

ANSWER _____

5 $(4.7 \times 10^{11}) + (3.5 \times 10^{10})$

ANSWER _____

6 $(1.9 \times 10^{10}) - (6.6 \times 10^9)$

ANSWER _____

APPLY IT Show your work

1 A student's tablet has 6.8×10^8 bytes of free storage. A video project uses 2.5×10^8 bytes. How many bytes of free storage remain?

WORK SPACE

ANSWER _____

2 A creator's short videos receive an average of 4.5×10^6 views each day for 8×10^1 days. How many views do the videos receive during that time?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Evaluate: $[(6.3 \times 10^9) + (2.7 \times 10^9)] \div (3 \times 10^2)$

WORK SPACE AND ANSWER

ANSWER KEY

Power of Ten

GRADE 8 · MA.8.NSO.1.5

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	$(6.6 \times 10^8) + (1.1 \times 10^8)$	**7.7×10^8**
2	$(9.9 \times 10^9) - (8.8 \times 10^8)$	**9.02×10^9**
3	$(1.6 \times 10^8)(9 \times 10^7)$	**1.44×10^{16}**
4	$(9.9 \times 10^{13}) \div (1.1 \times 10^6)$	**9×10^7**
5	$(4.7 \times 10^{11}) + (3.5 \times 10^{10})$	**5.05×10^{11}**
6	$(1.9 \times 10^{10}) - (6.6 \times 10^9)$	**1.24×10^{10}**

PART 2 · APPLY IT

1. **4.3×10^8 bytes** The powers of 10 already match, so subtract the coefficients: 6.8 - 2.5 = 4.3.
2. **3.6×10^8 views** Multiply the coefficients and add the exponents: $4.5 \times 8 = 36$ and $10^6 \times 10^1 = 10^7$. Normalize 36×10^7 to 3.6×10^8.

CHALLENGE

3×10^7

Require final answers in normalized scientific notation, with a coefficient greater than or equal to 1 and less than 10. Accept equivalent intermediate forms, but the final coefficient cannot be 10 or greater.