LESSON MAKER PRO

Number Power Lab

Work with fractions, decimals, scientific notation, and roots.

GRADE 8 · MA.8.NSO.1

MA.8.NSO.1 "Solve problems involving rational numbers, including numbers in scientific notation, and extend the understanding of rational numbers to irrational numbers."

NAME _____ DATE _____

THE BIG IDEA

Rational numbers can be written as a fraction of integers, while the square root of a nonperfect square is irrational. Use fraction or decimal rules to compute with rational numbers. When multiplying or dividing scientific notation, work with the front numbers and exponents, then write the result with a front number at least 1 but less than 10.

WORKED EXAMPLE

$(3.6 \times 10^{7})(5 \times 10^{-3})$

1. Multiply the front numbers: 3.6 x 5 = 18.
2. Add the exponents: $10^{7} \times 10^{-3} = 10^{4}$.
3. Rewrite in scientific notation: $18 \times 10^{4} = 1.8 \times 10^{5}$.

Answer: 1.8×10^{5}

PRACTICE 6 problems

1 -5/8 + 1/4

ANSWER _____

2 2.4 - 3.75

ANSWER _____

3 (-7/9)(3/14)

ANSWER _____

4 $(8.4 \times 10^{6}) / (2.1 \times 10^{2})$

ANSWER _____

5 Is sqrt(18) rational or irrational?

ANSWER _____

6 Write 0.375 as a fraction in simplest form.

ANSWER _____

APPLY IT Show your work

1 A video platform stores 6.3×10^8 bytes of footage. Each minute of footage uses 2.1×10^6 bytes. Find the number of minutes of footage stored.

WORK SPACE

ANSWER _____

2 A student's concert fund in a money app shows -$13.40. The student adds $21.65 from chores, then spends $4.25 on a snack. Find the new balance.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Without using a decimal, decide whether sqrt(70) is rational or irrational. Name the two consecutive whole numbers it lies between and explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY # Number Power Lab

GRADE 8 · MA.8.NSO.1

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	-5/8 + 1/4	**-3/8**
2	2.4 - 3.75	**-1.35**
3	(-7/9)(3/14)	**-1/6**
4	$(8.4 \times 10^6) / (2.1 \times 10^2)$	**4×10^4**
5	Is sqrt(18) rational or irrational?	**irrational**
6	Write 0.375 as a fraction in simplest form.	**3/8**

PART 2 · APPLY IT

1. **300 minutes** Divide the coefficients and subtract the exponents: $(6.3 / 2.1) \times 10^{(8 - 6)} = 3 \times 10^2$. This equals 300 minutes.
2. **$4.00** Compute -13.40 + 21.65 - 4.25. The balance is $4.00.

CHALLENGE

sqrt(70) is irrational. It lies between 8 and 9 because $8^2 < 70 < 9^2$, and 70 is not a perfect square.

Accept equivalent reduced fraction forms and correctly normalized scientific notation. For the challenge, accept an explanation using $64 < 70 < 81$ and stating that 70 is not a perfect square.