LESSON MAKER PRO

Rational Number Moves

Use operation properties to make rational-number calculations easier.

GRADE 7 · 7.NR.1.9

7.NR.1.9 "Apply properties of operations as strategies to solve multiplication and division problems involving rational numbers represented in an applicable scenario."

NAME _____ DATE _____

CHOOSE FRIENDLY FACTORS

For multiplication, you may change the order or grouping of factors to pair numbers that make whole numbers. For division, multiply by the reciprocal of the divisor first, then use multiplication properties to simplify. You can also distribute multiplication across addition or subtraction to break apart a factor.

WORKED EXAMPLE

Find 11/13 x 26/11.

1. Group the factors as (11/11) x (26/13).
2. 11/11 = 1 and 26/13 = 2.
3. 1 x 2 = 2.

Answer: 2

PRACTICE 6 problems

1 Find (-3/5) x (25/9). Simplify before multiplying if you can.

ANSWER _____

2 Find (4/7) x (-21/8). Simplify before multiplying if you can.

ANSWER _____

3 Find (-2.4) x 0.5. Use a factor that makes the calculation easier.

ANSWER _____

4 Find 5/6 ÷ (-10/9). Rewrite division as multiplication first.

ANSWER _____

5 Find (-7/8) ÷ (14/15). Rewrite division as multiplication first.

ANSWER _____

6 Find 0.6 x (-1.5 + 0.5). Use the parentheses first or distribute.

ANSWER _____

APPLY IT Show your work

1 The media club uploads 8 short videos. Each video uses 3/4 GB of storage. How many GB of storage do the videos use altogether?

WORK SPACE

ANSWER _____

2 During a gaming test, a phone battery charge changes by -3/8 percentage point each minute. The total change is -4 1/2 percentage points. How many minutes does the test last?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Rewrite division as multiplication, then use properties to find (-3/4) ÷ (5/6) x (-8/15).

WORK SPACE AND ANSWER

ANSWER KEY

Rational Number Moves

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find (-3/5) x (25/9). Simplify before multiplying if you can.	**-5/3**
2	Find (4/7) x (-21/8). Simplify before multiplying if you can.	**-3/2**
3	Find (-2.4) x 0.5. Use a factor that makes the calculation easier.	**-1.2**
4	Find 5/6 ÷ (-10/9). Rewrite division as multiplication first.	**-3/4**
5	Find (-7/8) ÷ (14/15). Rewrite division as multiplication first.	**-15/16**
6	Find 0.6 x (-1.5 + 0.5). Use the parentheses first or distribute.	**-0.6**

PART 2 · APPLY IT

1. **6 GB** Multiply 8 x 3/4. Group 8 and 4 first, since 8/4 = 2, then 2 x 3 = 6.
2. **12 minutes** Divide -4 1/2 by -3/8. Rewrite -4 1/2 as -9/2 and multiply by the reciprocal, (-9/2) x (-8/3) = 12.

CHALLENGE

12/25

Accept equivalent fractions, mixed numbers, or decimals when they represent the same value. For the challenge, accept any correct multiplication-by-reciprocal rewrite that leads to 12/25.