LESSON MAKER PRO

Smart Sign Moves

Multiply and divide rational numbers using shortcuts.

GRADE 7 · 7.NOS.A.2.c

7.NOS.A.2.c "Use properties of operations to multiply and divide rational numbers flexibly and efficiently."

NAME _____ DATE _____

THE BIG IDEA

When you multiply, you can change the order of factors and group them to make the work easier. For fractions, cancel common factors before multiplying. To divide, multiply by the reciprocal of the divisor, then check the sign of your answer.

WORKED EXAMPLE

Find $(-7/8) \times (16/21) \times (-3/2)$.

1. Two negative factors make a positive product: $7/8 \times 16/21 \times 3/2$.
2. Cancel common factors: $16 \div 8 = 2$, and $21 \div 7 = 3$.
3. The remaining factors give $(2 \times 3)/(3 \times 2) = 1$.

Answer: 1

PRACTICE 6 problems

1 Find $(-3/4) \times (8/9) \times (-6)$.

ANSWER _____

2 Find $(5/12) \times (-18/25)$.

ANSWER _____

3 Find $(-2/3) \div (4/9)$.

ANSWER _____

4 Find $(-1.5) \times (-4/3)$.

ANSWER _____

5 Find $(7/10) \div (-14/15)$.

ANSWER _____

6 Find $(-11/18) \times (9/22) \times (-4)$.

ANSWER _____

APPLY IT Show your work

1 In a game, each missed target changes your score by -1.25 points. You miss 8 targets in each of 3 rounds. What is your total score change?

WORK SPACE

ANSWER _____

2 Four friends buy a $27 game together. Their shared wallet changes by -$27. If they split the cost equally, what is each friend's share of the wallet change?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Find (-5/12) × 24 ÷ (-15/2) without multiplying 24 × 15 first. Explain how you canceled or grouped factors.

WORK SPACE AND ANSWER

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find (-3/4) × (8/9) × (-6).	**4**
2	Find (5/12) × (-18/25).	**-3/10**
3	Find (-2/3) ÷ (4/9).	**-3/2**
4	Find (-1.5) × (-4/3).	**2**
5	Find (7/10) ÷ (-14/15).	**-3/4**
6	Find (-11/18) × (9/22) × (-4).	**1**

PART 2 · APPLY IT

1. **-30 points** Multiply -1.25 × 8 × 3. Group 1.25 × 8 to get 10, then multiply by 3 and apply the negative sign.
2. **-$6.75** Divide the wallet change by 4: -27 ÷ 4 = -6.75.

CHALLENGE

4/3. Dividing by -15/2 is the same as multiplying by -2/15. The negative signs cancel, and 24/12 = 2, so (5 × 2 × 2)/15 = 20/15 = 4/3.

Accept equivalent fractions and decimals for the practice problems. For the challenge, accept any correct explanation that uses a valid grouping or cancellation.