

Rational Number Moves

Use properties to multiply and divide signed fractions and decimals.

GRADE 7 • NY-7.NS.2.c

NY-7.NS.2.c "Apply properties of operations as strategies to multiply and divide rational numbers."

NAME _____

DATE _____

CHOOSE A SMART STRATEGY

Use the commutative and associative properties to reorder and regroup factors so common factors cancel before you multiply. To divide by a nonzero rational number, multiply by its reciprocal, then use the signs to decide whether the result is positive or negative.

WORKED EXAMPLE

Evaluate $(-13/17) * (34/19)$.

1. Rewrite the factors as one fraction: $(-13 * 34)/(17 * 19)$.
2. Cancel 34 and 17 because $34/17 = 2$.
3. Multiply the remaining factors: $(-13 * 2)/19 = -26/19$.

Answer: -26/19

PRACTICE 6 problems

- 1** Evaluate $(-3/8) * 16$. Regroup or cancel first if it helps.

ANSWER _____

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

ANSWER _____

- 3** Evaluate $(-2.4) * (-0.5)$.

ANSWER _____

- 4** Evaluate $(-15/4) \div (3/2)$.

ANSWER _____

- 5** Use the distributive property to evaluate $(-6/11)(22 + 11)$.

ANSWER _____

- 6** Use the distributive property or another efficient strategy to evaluate $(-2/3)(9/4 - 3/2)$.

ANSWER _____

APPLY IT Show your work

- 1** A playlist is $\frac{3}{4}$ hour long at normal speed. You listen at a rate of $\frac{3}{2}$ times normal speed. How long does the playlist take to play?

WORK SPACE

ANSWER _____

- 2** Four members of a gaming club split a \$7.20 fee charged to their shared account. Each member records the fee as an equal negative adjustment. What adjustment does each member record?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Evaluate $(-\frac{3}{4}) \div (\frac{5}{6}) * (-\frac{8}{9})$. Explain how you regrouped or canceled factors before multiplying.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Evaluate $(-3/8) * 16$. Regroup or cancel first if it helps.	-6
2	Evaluate $4/9 \div (-2/3)$.	-2/3
3	Evaluate $(-2.4) * (-0.5)$.	1.2
4	Evaluate $(-15/4) \div (3/2)$.	-5/2
5	Use the distributive property to evaluate $(-6/11)(22 + 11)$.	-18
6	Use the distributive property or another efficient strategy to evaluate $(-2/3)(9/4 - 3/2)$.	-1/2

PART 2 • APPLY IT

1. **1/2 hour** Divide the original length by the playback rate: $3/4 \div 3/2 = 3/4 * 2/3$. Cancel common factors to get 1/2 hour.
2. **-\$1.80** Treat the fee as -7.20 dollars and divide by 4. The equal adjustment is $-7.20 \div 4 = -1.80$ dollars.

CHALLENGE

4/5. Rewrite division as multiplication by 6/5, then regroup the factors. Cancel 3 with 9 and 8 with 4 before multiplying; the two negative factors make the result positive.

Accept equivalent fraction forms, such as -6/1 for -6. For the challenge, accept any correct explanation that rewrites division using the reciprocal and justifies the positive sign.