

Sign Power

Multiply positive and negative rational numbers.

GRADE 7 • 7.NS.A.2a

CCSS.Math.Content.7.NS.A.2a "Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property..."

NAME _____

DATE _____

SIGN RULES

When you multiply rational numbers, multiply their absolute values, then decide the sign. Same signs make a positive product, and different signs make a negative product. These rules keep multiplication properties, including the distributive property, working with positive and negative numbers.

WORKED EXAMPLE

$$(-13/17) \times (-4/11)$$

1. The factors have the same sign, so the product is positive.
2. Multiply the numerators: $13 \times 4 = 52$.
3. Multiply the denominators: $17 \times 11 = 187$.

Answer: 52/187

PRACTICE 6 problems

1 $(-6) \times 8 =$

ANSWER _____

2 $(-9) \times (-2) =$

ANSWER _____

3 $(1/5) \times (-15) =$

ANSWER _____

4 $(-7/12) \times (-18/35) =$

ANSWER _____

5 $0.6 \times (-1.5) =$

ANSWER _____

6 $(-8/9) \times (27/16) =$

ANSWER _____

APPLY IT Show your work

- 1** A gaming app subtracts $2\frac{1}{2}$ energy points for each of 8 missed daily quests. What is the total change in a player's energy points?

WORK SPACE

ANSWER _____

- 2** At a robotics club, a test drone's altitude changes by -1.5 meters each second for 6 seconds as it lands. What is its total change in altitude?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Use the distributive property to find $(-8/3) \times (3/8 + -9/16)$. Show how the signs affect each partial product.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	$(-6) \times 8 =$	-48
2	$(-9) \times (-2) =$	18
3	$(1/5) \times (-15) =$	-3
4	$(-7/12) \times (-18/35) =$	3/10
5	$0.6 \times (-1.5) =$	-0.9
6	$(-8/9) \times (27/16) =$	-3/2

PART 2 • APPLY IT

1. **-20 energy points, a decrease of 20 energy points** Multiply $-2 \frac{1}{2}$ by 8. The negative product means the player's energy decreases.
2. **-9 meters, a decrease of 9 meters** Multiply -1.5 by 6. The negative product shows a decrease in altitude.

CHALLENGE

$$1/2; (-8/3) \times 3/8 + (-8/3) \times (-9/16) = -1 + 3/2 = 1/2$$

Accept equivalent fraction forms, such as 0.3 for $3/10$ and -1.5 for $-3/2$. For word problems, accept answers that state both the signed change and its meaning in context.