LESSON MAKER PRO

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) x (-4/11)

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

Answer: 52/187

PRACTICE 6 problems

1 (-6) x 8 =

ANSWER _____

2 (-9) x (-2) =

ANSWER _____

3 (1/5) x (-15) =

ANSWER _____

4 (-7/12) x (-18/35) =

ANSWER _____

5 0.6 x (-1.5) =

ANSWER _____

6 (-8/9) x (27/16) =

ANSWER _____

APPLY IT Show your work

1 A gaming app subtracts 2 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

Let p = (-1) × (-1). Use distribution to expand (-1) × (1 + (-1)). The left side is zero. Find p and explain why it must be positive. Do not just quote a sign rule.

WORK SPACE AND ANSWER

ANSWER KEY

Sign Power

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PART 1 · PRACTICE

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

PART 2 · APPLY IT

1. **-20 energy points, a decrease of 20 energy points** Multiply -2 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

0 = (-1) × 1 + (-1) × (-1) = -1 + p, so p = 1. The positive one is required to cancel negative one and keep distribution valid.

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. Challenge: require the expanded equality and additive-inverse reasoning; merely saying two negatives make a positive does not justify the rule.