LESSON MAKER PRO

Quotient Sign Quest

Use signs carefully when you divide integers.

GRADE 7 · 7.NS.A.2b

CCSS.Math.Content.7.NS.A.2b "Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then -(p / q) = (- p)/ q = p /(- q)..."

NAME _____ DATE _____

SIGNS IN QUOTIENTS

You can divide any integer by a nonzero integer, and the quotient is a rational number. A quotient is positive when the two numbers have the same sign and negative when they have different signs. You can move one negative sign: -(p/q) = (-p)/q = p/(-q).

WORKED EXAMPLE

Find: -20 / 4

1. 20 / 4 = 5.
2. A negative divided by a positive is negative.
3. So, -20 / 4 = -5.

Answer: -5

PRACTICE 6 problems

1 Find: -35 / 5

ANSWER _____

2 Find: 42 / -7

ANSWER _____

3 Find: -48 / -8

ANSWER _____

4 Find: -(27 / 9)

ANSWER _____

5 Find: 0 / -11

ANSWER _____

6 Rewrite 26 / -16 with a positive divisor. Then simplify.

ANSWER _____

APPLY IT Show your work

1 A music app causes the available storage on your phone to change by -45 MB during 9 minutes. What is the average change in available storage each minute? Interpret the quotient.

WORK SPACE

ANSWER _____

2 During 8 rounds of a gaming tournament, a player's score changes by -15 points. If the change is equal in each round, what is the average score change per round? Interpret the quotient.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Let p = 7 and q = 12. Which expressions have a value of -7/12: -(p/q), (-p)/q, p/(-q), or (-p)/(-q)? Explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Quotient Sign Quest

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find: -35 / 5	**-7**
2	Find: 42 / -7	**-6**
3	Find: -48 / -8	**6**
4	Find: -(27 / 9)	**-3**
5	Find: 0 / -11	**0**
6	Rewrite 26 / -16 with a positive divisor. Then simplify.	**-13/8**

PART 2 · APPLY IT

1. **-5 MB per minute, meaning the available storage decreases by 5 MB each minute.** Divide the total change by the time: -45 / 9 = -5. The negative quotient shows that available storage is decreasing.
2. **-15/8 points per round, or -1 7/8 points per round, meaning the score decreases each round.** Divide the total score change by the number of rounds: -15 / 8 = -15/8. The negative result means the player's score goes down each round.

CHALLENGE

-(p/q), (-p)/q, and p/(-q) each equal -7/12. Each expression has exactly one negative sign. (-p)/(-q) equals 7/12 because two negatives make a positive.

Accept equivalent fraction forms, including -1 7/8 for -15/8. For the challenge, accept any clear explanation that the first three expressions have one negative sign and the last has two.