LESSON MAKER PRO

Moves and Opposites

Add rational numbers by tracking direction and distance.

GRADE 7 · 7.NS.A.1b

CCSS.Math.Content.7.NS.A.1b "Understand p + q as the number located a distance | q | from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses)..."

NAME _____ DATE _____

DIRECTION MATTERS

A sum p + q starts at p. Move |q| units right when q is positive, or |q| units left when q is negative. A number and its opposite are the same distance from 0 in opposite directions, so their sum is 0.

WORKED EXAMPLE

Find -11 + 4/7.

1. Start at -11.
2. Because 4/7 is positive, move 4/7 unit in the positive direction.
3. Rewrite -11 as -77/7.
4. -77/7 + 4/7 = -73/7 = -10 3/7.

Answer: -10 3/7

PRACTICE 6 problems

1 Find -6 + 6.

ANSWER _____

2 Find 15 + (-21).

ANSWER _____

3 Find -2/5 + 8/5.

ANSWER _____

4 Find 1 1/8 + (-5/8).

ANSWER _____

5 Name the opposite of -12.5. Then find the sum of the number and its opposite.

ANSWER _____

6 Start at p = -2/9. Add q = -6/9. State the direction and distance of the move, then find p + q.

ANSWER _____

APPLY IT Show your work

1 During a scuba lesson, Lena is 18 2/3 feet below the water's surface. She rises 6 1/5 feet. Write an addition equation and find Lena's new location relative to the surface.

WORK SPACE

ANSWER _____

2 A game store account has a balance of $18.75. Jordan buys an add-on for $24.50. Write an addition equation and find the new account balance.

WORK SPACE

ANSWER _____

CHALLENGE One step up

In a video game, a player's score changes by -2 1/8 points, then +6 1/2 points, then -4 3/8 points. Find the total change. Explain how the positive and negative changes form additive inverses.

WORK SPACE AND ANSWER

ANSWER KEY

Moves and Opposites

GRADE 7 · 7.NS.A.1b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find -6 + 6.	**0**
2	Find 15 + (-21).	**-6**
3	Find -2/5 + 8/5.	**6/5, or 1 1/5**
4	Find 1 1/8 + (-5/8).	**1/2**
5	Name the opposite of -12.5. Then find the sum of the number and its opposite.	**Opposite: 12.5; sum: 0**
6	Start at p = -2/9. Add q = -6/9. State the direction and distance of the move, then find p + q.	**Move 6/9 unit in the negative direction; -8/9**

PART 2 · APPLY IT

1. **-18 2/3 + 6 1/5 = -12 7/15. Lena is 12 7/15 feet below the surface.** Represent below the surface with a negative number and rising with a positive number. Add -56/3 and 31/5 to get -187/15, or -12 7/15.
2. **18.75 + (-24.50) = -5.75. The new balance is -$5.75.** A purchase is a negative change to the balance. Add 18.75 and -24.50 to get -5.75.

CHALLENGE

The total change is 0 points. The two negative changes add to -6 1/2, which is the opposite of +6 1/2, so -6 1/2 + 6 1/2 = 0.

Accept equivalent fraction forms, such as 6/5 or 1 1/5. For direction statements, accept “left” for the negative direction and “right” for the positive direction.