LESSON MAKER PRO

Rational Number Routes

Estimate, calculate, and check signed rational number operations.

GRADE 7 · 7.CE.1.a

7.CE.1.a "Estimate, solve, and justify solutions to contextual problems involving addition, subtraction, multiplication, and division with rational numbers expressed as integers, fractions (proper or improper), mixed numbers, and decimals..."

NAME _____ DATE _____

PLAN, THEN CALCULATE

Estimate first by using nearby whole numbers, benchmark fractions, or friendly decimals to predict the size and sign of an answer. Then calculate exactly, keep track of negative signs, and for division by a fraction, multiply by its reciprocal.

WORKED EXAMPLE

$-1/3 + 2.5$

1. Rewrite 2.5 as 5/2.
2. Use denominator 6: -1/3 + 5/2 = -2/6 + 15/6.
3. Add: 13/6 = 2 1/6.

Answer: 2 1/6

PRACTICE 6 problems

1 Estimate, then solve: -7 + 12

ANSWER _____

2 Estimate, then solve: 5/6 - (-1/4)

ANSWER _____

3 Estimate, then solve: (-2.4) * 0.35

ANSWER _____

4 Estimate, then solve: (-9/10) / (3/5)

ANSWER _____

5 Estimate, then solve: 4 1/2 + (-2 3/4)

ANSWER _____

6 Estimate, then solve: -0.875 - 1.75

ANSWER _____

APPLY IT Show your work

1 Your game account starts with a balance of -$3.75. You add an $8.50 gift credit, then buy an add-on for $2.625. Estimate the final balance, find the exact balance, and explain whether the balance is positive or negative.

WORK SPACE

ANSWER _____

2 You have 5 1/4 yards of cord for making bracelets. Each bracelet needs 3/8 yard of cord. Estimate how many bracelets you can make, then find the exact number of complete bracelets.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A club's online store credit begins at -$4.80. Three members each add $2.35. Then the club buys a $1.875 digital asset. Estimate the final balance, solve exactly, and write one sentence explaining why you multiply before subtracting the cost.

WORK SPACE AND ANSWER

ANSWER KEY

Rational Number Routes

GRADE 7 · 7.CE.1.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Estimate, then solve: -7 + 12	**Estimate: about 5; exact answer: 5**
2	Estimate, then solve: 5/6 - (-1/4)	**Estimate: about 1; exact answer: 1 1/12**
3	Estimate, then solve: (-2.4) * 0.35	**Estimate: about -0.8; exact answer: -0.84**
4	Estimate, then solve: (-9/10) / (3/5)	**Estimate: about -1.5; exact answer: -1.5**
5	Estimate, then solve: 4 1/2 + (-2 3/4)	**Estimate: about 2; exact answer: 1 3/4**
6	Estimate, then solve: -0.875 - 1.75	**Estimate: about -3; exact answer: -2.625**

PART 2 · APPLY IT

1. **Estimate: about $2. Exact balance: $2.125 credit, which is positive.** Compute -3.75 + 8.50 - 2.625 = 2.125. The credit added is greater than the starting debt and the purchase cost.
2. **Estimate: about 15 bracelets; exact answer: 14 complete bracelets.** Divide 5 1/4 by 3/8: 21/4 * 8/3 = 14. The cord is used exactly, with no remainder.

CHALLENGE

The estimate is about $0.50, and the exact balance is $0.375 credit because 3 * $2.35 gives the total added before the $1.875 charge is subtracted.

Accept equivalent fraction, mixed-number, or decimal forms when they are exact. For estimates, accept reasonable nearby values that predict the correct sign and approximate size.