

Rational Number Moves

Use operation properties to add and subtract signed fractions and decimals.

GRADE 7 • NY-7.NS.1.d

NY-7.NS.1.d "Apply properties of operations as strategies to add and subtract rational numbers."

NAME _____

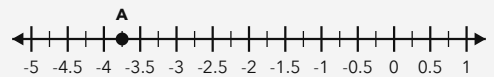
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GROUP SMARTLY

Rewrite subtraction as adding the opposite. Then use the commutative and associative properties to reorder or group numbers that make zeros, whole numbers, or easy sums.

WORKED EXAMPLE

Point A marks the first addend. Find $A + 2 \frac{1}{4}$.

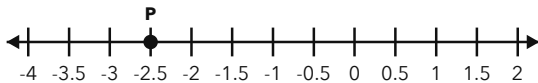


1. Read point A as $-3 \frac{3}{4}$.
2. Write $-3 \frac{3}{4} + 2 \frac{1}{4}$.
3. Group the integer and fractional parts:
 $(-3 + 2) + (-\frac{3}{4} + \frac{1}{4})$.
4. Simplify: $-1 + (-\frac{1}{2}) = -1 \frac{1}{2}$.

Answer: $-1 \frac{1}{2}$

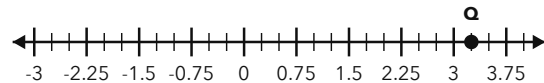
PRACTICE 6 problems

- 1** Point P is shown on the number line. Calculate $P + 1 \frac{1}{2}$.



ANSWER _____

- 2** Point Q is shown on the number line. Calculate $Q - 5 \frac{1}{2}$. First rewrite the subtraction as addition of an opposite.



ANSWER _____

- 3** Rewrite $-3.6 - 4.7$ as addition of an opposite. Then find the sum.

ANSWER _____

- 4** Use grouping to find $(-\frac{7}{8}) + \frac{3}{8} + (-\frac{1}{4})$.

ANSWER _____

- 5** Find $-2 \frac{2}{3} - (-1 \frac{5}{6})$.

ANSWER _____

- 6** Reorder or group to find $4.25 + (-6.8) + 1.75$.

ANSWER _____

APPLY IT Show your work

- 1** Jordan's phone has $6\frac{1}{4}$ GB of free storage. A video download uses $3\frac{1}{2}$ GB, and deleting old clips frees $1\frac{3}{4}$ GB. How much free storage does Jordan have now?

WORK SPACE

ANSWER _____

- 2** The esports club account begins at $-\$12.50$. It receives $\$18.75$ from a sponsor and then pays $\$4.25$ for a tournament entry. What is the account balance?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Evaluate $-4\frac{1}{6} + 1\frac{1}{6} + 3$ without converting to improper fractions. Explain how you grouped the numbers.

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Point P is shown on the number line. Calculate $P + 1\frac{1}{2}$.	-1
2	Point Q is shown on the number line. Calculate $Q - 5\frac{1}{2}$. First rewrite the subtraction as addition of an opposite.	$3\frac{1}{4} + (-5\frac{1}{2}) = -2\frac{1}{4}$
3	Rewrite $-3.6 - 4.7$ as addition of an opposite. Then find the sum.	$-3.6 + (-4.7) = -8.3$
4	Use grouping to find $(-7/8) + 3/8 + (-1/4)$.	$-3/4$
5	Find $-2\frac{2}{3} - (-1\frac{5}{6})$.	$-5/6$
6	Reorder or group to find $4.25 + (-6.8) + 1.75$.	-0.8

PART 2 • APPLY IT

- 1. $4\frac{1}{2}$ GB** Start with $6\frac{1}{4}$ GB and add $-3\frac{1}{2}$ GB + $1\frac{3}{4}$ GB. The net change is $-1\frac{3}{4}$ GB, so the final amount is $4\frac{1}{2}$ GB.
- 2. \$2.00** Add the signed changes: $-12.50 + 18.75 + (-4.25)$. Group 18.75 and -4.25 to get 14.50, then combine with -12.50.

CHALLENGE

0. Group $-4\frac{1}{6}$ and $1\frac{1}{6}$. Their fractional parts, $-1/6$ and $1/6$, cancel, and their integer parts give $-4 + 1 = -3$. Then $-3 + 3 = 0$.

Accept equivalent fraction forms, such as $-6/8$ for $-3/4$, when the value is correct. For problems that ask for a rewrite, require an addition expression with the correct opposite as well as the final value.