Rational Numbers on the Number Line

Rational numbers on number lines: Mistakes and missing information

Name _____ **Date** _____ **Score** _____ / 6

QUICK REVIEW

Count the equal intervals from one labeled whole number to the next. If there are four, each small step is $\frac{1}{4}$. Start at zero: move left for a negative number and right for a positive number.

Worked example

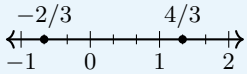
Plot $-\frac{2}{3}$ and $\frac{4}{3}$.

1. The small steps are $\frac{1}{3}$ of a unit each. Begin at the labeled 0.

2. $-\frac{2}{3}$: $\frac{2}{3} \div \frac{1}{3} = 2$, so move 2 small ticks left.

3. $\frac{4}{3}$: $\frac{4}{3} \div \frac{1}{3} = 4$, so move 4 small ticks right.

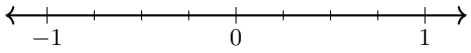
Answer: Left to right: $-\frac{2}{3}$, $\frac{4}{3}$.



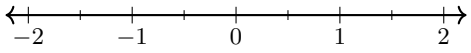
Practice Problems

Show your thinking.

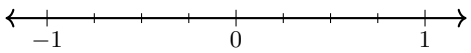
1. A student puts $-\frac{3}{4}$ right of zero. Plot the correct position.



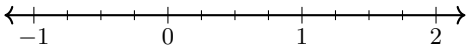
2. Find and mark the point three half-unit ticks left of zero.



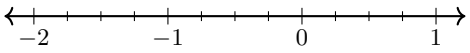
3. A student places -0.25 and 0.25 at the same tick. Repair both points.



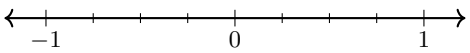
4. Mark the point five quarter-unit steps right of zero.



5. Correct the claim that $-\frac{5}{4}$ is right of $-\frac{3}{4}$ by plotting both.



6. Design two opposite points each $\frac{1}{2}$ unit from zero.



Answer Key

1. Mark $-\frac{3}{4}$.
2. Mark $-\frac{3}{2}$.
3. Left to right: $-\frac{1}{4}$, $\frac{1}{4}$.
4. Mark $\frac{5}{4}$.
5. Left to right: $-\frac{5}{4}$, $-\frac{3}{4}$.
6. Left to right: $-\frac{1}{2}$, $\frac{1}{2}$.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The small steps are $\frac{1}{4}$ of a unit each. Begin at the labeled 0.
2. $-\frac{3}{4}$: $\frac{3}{4} \div \frac{1}{4} = 3$, so move 3 small ticks left.

Problem 2

1. The small steps are $\frac{1}{2}$ of a unit each. Begin at the labeled 0.
2. 3 small steps left give $0 - 3 \times \frac{1}{2} = -\frac{3}{2}$. Mark that tick.

Problem 3

1. The small steps are $\frac{1}{4}$ of a unit each. Begin at the labeled 0.
2. $-\frac{1}{4}$: $\frac{1}{4} \div \frac{1}{4} = 1$, so move 1 small ticks left.
3. $\frac{1}{4}$: $\frac{1}{4} \div \frac{1}{4} = 1$, so move 1 small ticks right.

Problem 4

1. The small steps are $\frac{1}{4}$ of a unit each. Begin at the labeled 0.
2. 5 small steps right give $0 + 5 \times \frac{1}{4} = \frac{5}{4}$. Mark that tick.

Problem 5

1. The small steps are $\frac{1}{4}$ of a unit each. Begin at the labeled 0.
2. $-\frac{5}{4}$: $\frac{5}{4} \div \frac{1}{4} = 5$, so move 5 small ticks left.
3. $-\frac{3}{4}$: $\frac{3}{4} \div \frac{1}{4} = 3$, so move 3 small ticks left.

Problem 6

1. The small steps are $\frac{1}{4}$ of a unit each. Begin at the labeled 0.
2. $-\frac{1}{2}$: $\frac{1}{2} \div \frac{1}{4} = 2$, so move 2 small ticks left.
3. $\frac{1}{2}$: $\frac{1}{2} \div \frac{1}{4} = 2$, so move 2 small ticks right.

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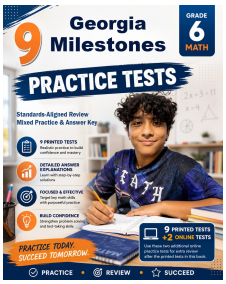

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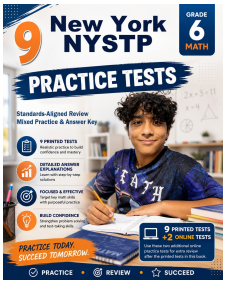

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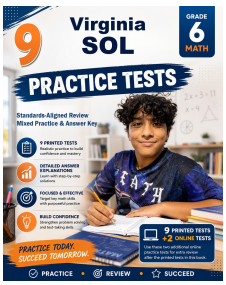

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