Rational Numbers on the Number Line

Rational numbers on number lines: Applications and decisions

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

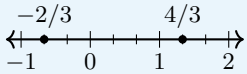
Plot $-\frac{2}{3}$ and $\frac{4}{3}$.

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.

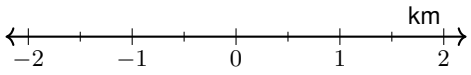
Answer: Left to right: $-\frac{2}{3}$, $\frac{4}{3}$.



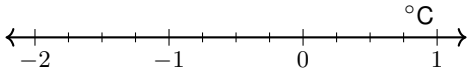
Practice Problems

Show your thinking.

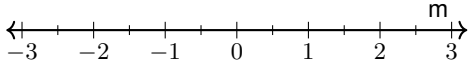
1. On a path, camp is 0. Take east as positive. Mark a pond 0.5 km west and a gate 1.5 km east.



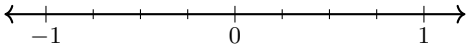
2. A sensor reads -1.75°C. Place the reading on the thermometer line.



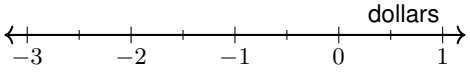
3. Mark elevations -1.5 m and 2.5 m relative to sea level on the number line.



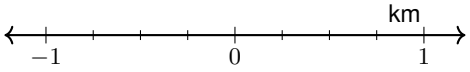
4. A game marker is one quarter unit below zero. Recover and plot its coordinate.



5. Two accounts have balances -2.5 and -0.5 dollars. Plot both and order them from least to greatest.



6. Take east as positive. A student puts a 0.75-km eastward marker at -0.75. Plot the repaired location.



Answer Key

1. Left to right: -0.5 km, 1.5 km.
2. Mark -1.75 °C.
3. Left to right: -1.5 m, 2.5 m.
4. Mark $-\frac{1}{4}$.
5. Left to right: -2.5 dollars, -0.5 dollars.
6. Mark 0.75 km.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. The small steps are $\frac{1}{2}$ of a kilometer each. Begin at the labeled 0.

2. -0.5 km: $\frac{1}{2} \div \frac{1}{2} = 1$, so move 1 small ticks left.

3. 1.5 km: $\frac{3}{2} \div \frac{1}{2} = 3$, so move 3 small ticks right.

Problem 2

1. The small steps are $\frac{1}{4}$ of a degree Celsius each. Begin at the labeled 0.

2. -1.75 °C: $\frac{7}{4} \div \frac{1}{4} = 7$, so move 7 small ticks left.

Problem 3

1. The small steps are $\frac{1}{2}$ of a meter each. Begin at the labeled 0.

2. -1.5 m: $\frac{3}{2} \div \frac{1}{2} = 3$, so move 3 small ticks left.

3. 2.5 m: $\frac{5}{2} \div \frac{1}{2} = 5$, so move 5 small ticks right.

Problem 4

1. The small steps are $\frac{1}{4}$ of a unit each. Begin at the labeled 0.

2. 1 small steps left give $0 - 1 \times \frac{1}{4} = -\frac{1}{4}$. Mark that tick.

Problem 5

1. The small steps are $\frac{1}{2}$ of a dollar each. Begin at the labeled 0.

2. -2.5 dollars: $\frac{5}{2} \div \frac{1}{2} = 5$, so move 5 small ticks left.

3. -0.5 dollars: $\frac{1}{2} \div \frac{1}{2} = 1$, so move 1 small ticks left.

Problem 6

1. The small steps are $\frac{1}{4}$ of a kilometer each. Begin at the labeled 0.

2. 0.75 km: $\frac{3}{4} \div \frac{1}{4} = 3$, so move 3 small ticks right.

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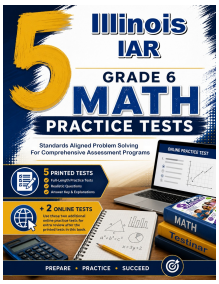

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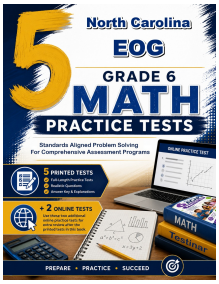

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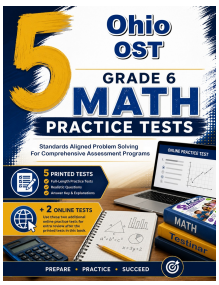

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