

Rational Number Trail

Plot, compare, and order numbers on both sides of zero.

GRADE 6 • MA.6.NSO.1.1

MA.6.NSO.1.1 "Extend previous understanding of numbers to define rational numbers. Plot, order and compare rational numbers."

NAME _____

DATE _____

NUMBERS ON A LINE

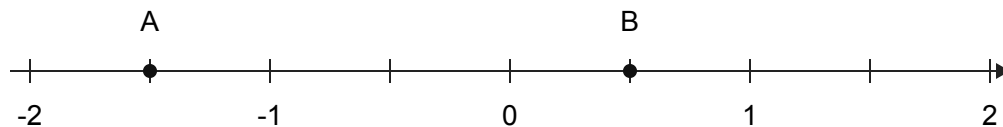
A rational number can be written as a/b , where a and b are integers and b is not zero. Integers, fractions, terminating decimals and repeating decimals are rational. On a number line, values increase to the right. Compare signed numbers in the same form; rewrite positive fractions, decimals and percentages in a common form when needed.

WORKED EXAMPLE

Use the number line. Compare Point A and Point B using $<$ or $>$.

1. Point A is at -1.5 , and Point B is at 0.5 .
2. Point B is to the right of Point A.
3. A number farther right is greater.

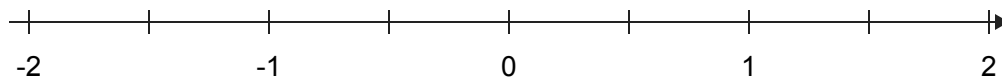
Answer: $-1.5 < 0.5$



Each small interval: $1/2$

PRACTICE 6 problems

- 1** Plot and label $A = -1.5$, $B = -0.5$ and $C = 1.0$. Order the numbers using $<$.



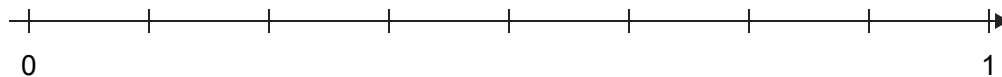
Each small interval: $\frac{1}{2}$

ANSWER _____

- 2** Order from least to greatest using $<$: $-\frac{3}{4}$, $\frac{1}{2}$, $-\frac{2}{3}$.

ANSWER _____

- 3** Rewrite $\frac{1}{2}$, 0.75 and 25% as decimals. Plot and label them A, B and C, respectively. Order the original values using $<$.



Each small interval: $\frac{1}{8}$

ANSWER _____

- 4** Explain why -3 , 0.6 and 25% are rational by writing each as a fraction of integers with a nonzero denominator.

ANSWER _____

5 Write $<$, $>$ or $=$: -0.875 ____ -0.9 . Explain using number-line order.

ANSWER _____

6 Compare $1\frac{3}{8}$, 1.4 and 140% . Order from least to greatest, using $=$ when values match.

ANSWER _____

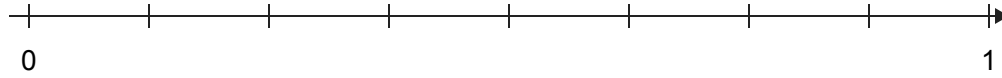
APPLY IT Show your work

1 At 7:00 a.m., the garden temperature was -1.25 degrees Celsius; at 8:00 a.m., it was -1.20 degrees Celsius. Write a comparison using $<$ or $>$, then identify the colder time.

WORK SPACE

2

Three hikers report their fraction of a trail completed: Ari $\frac{3}{4}$, Beau 0.6 and Chen 80%. Plot their progress as A, B and C on the line. Order the original amounts and name who is farthest along. Each small interval is $\frac{1}{8}$; estimate between ticks when necessary.

**CHALLENGE** One step up

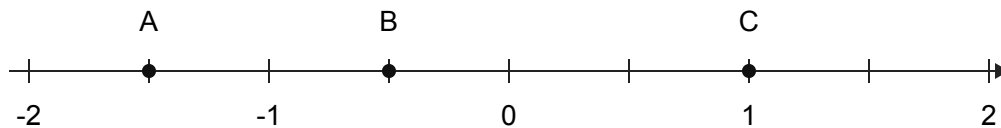
A student says $-\frac{5}{8} > -\frac{3}{5}$ because $\frac{5}{8} > \frac{3}{5}$. Is the student correct? Compare the negative fractions using a common denominator and explain their order.

WORK SPACE AND ANSWER

Accept equivalent rational forms. Student plotting lines are blank; completed points appear only in this key. On the hiking line, estimates between ticks are expected. For negative values, greater magnitude does not mean greater value. Require comparison symbols and preserve equality between equivalent positive forms.

PRACTICE 1

$$-1.5 < -0.5 < 1.0.$$



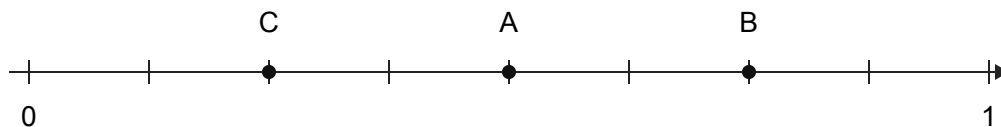
Each small interval: $1/2$

PRACTICE 2

$$-3/4 < -2/3 < 1/2.$$

PRACTICE 3

$$A = 0.5; B = 0.75; C = 0.25. 25\% < 1/2 < 0.75.$$



Each small interval: $1/8$

PRACTICE 4

$$\text{Examples: } -3 = -3/1; 0.6 = 3/5; 25\% = 1/4.$$

PRACTICE 5

$$-0.875 > -0.9; -0.875 \text{ is closer to zero and farther right.}$$

PRACTICE 6

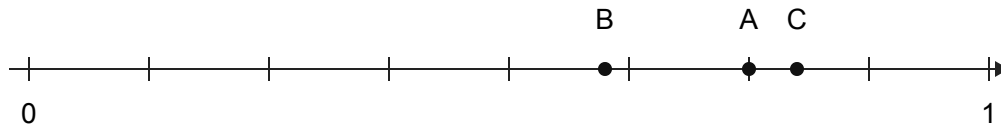
$$1 \frac{3}{8} < 1.4 = 140\%.$$

APPLY IT 1

$-1.25 < -1.20$; 7:00 a.m. was colder.
Farther left means lower temperature.

APPLY IT 2

$0.6 < \frac{3}{4} < 80\%$; Beau, Ari, Chen. Chen is farthest along.
Convert to decimals: 0.6, 0.75 and 0.8. B is between $\frac{1}{2}$ and $\frac{5}{8}$; C is between $\frac{3}{4}$ and $\frac{7}{8}$.



Each small interval: $\frac{1}{8}$

CHALLENGE

No. $-\frac{5}{8} = -\frac{25}{40}$ and $-\frac{3}{5} = -\frac{24}{40}$. Thus $-\frac{5}{8} < -\frac{3}{5}$; $-\frac{25}{40}$ lies farther left.