

Rational Point Quest

Place positive and negative fractions on lines and grids.

GRADE 6 • 6.NS.C.6

CCSS.Math.Content.6.NS.C.6 "Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates."

NAME _____

DATE _____

POINTS HAVE DIRECTION

On a number line, numbers to the left of 0 are negative and numbers to the right of 0 are positive. On a coordinate plane, the first number tells left or right movement, and the second number tells up or down movement.

WORKED EXAMPLE

A point is $2\frac{1}{3}$ units left of the y-axis and $1\frac{1}{2}$ units above the x-axis. Write its ordered pair.

1. Left of the y-axis means the x-coordinate is negative.
2. $2\frac{1}{3} = 7/3$, so $x = -7/3$.
3. Above the x-axis means the y-coordinate is positive.
4. $1\frac{1}{2} = 3/2$, so the ordered pair is $(-7/3, 3/2)$.

Answer: $(-7/3, 3/2)$

PRACTICE 6 problems

- 1** Point M is $3/5$ unit left of 0 on a number line. Write its coordinate.

ANSWER _____

- 2** Point N is $1\frac{1}{2}$ units right of 0 on a number line. Write its coordinate.

ANSWER _____

- 3** Point R is $5/6$ unit left of the y-axis and $3/4$ unit above the x-axis. Write its ordered pair.

ANSWER _____

- 4** Point S is $7/8$ unit right of the y-axis and $2/5$ unit below the x-axis. Write its ordered pair.

ANSWER _____

- 5** Point T is located at $(-9/10, -1/3)$. In which quadrant is T?

ANSWER _____

- 6** Point U is located at $(0, -11/12)$. On which axis is U located?

ANSWER _____

APPLY IT Show your work

- 1** The map for a multiplayer game uses a coordinate grid. A recharge station is $1\frac{1}{4}$ units left of the y-axis and $\frac{3}{8}$ unit below the x-axis. Write the station's ordered pair.

WORK SPACE

ANSWER _____

- 2** During a science club dive simulation, 0 meters means sea level. Your avatar is $2\frac{2}{5}$ meters below sea level. What rational number represents the avatar's position?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Three points are placed on the same number line: $A = -\frac{5}{4}$, $B = -\frac{7}{6}$, and $C = -\frac{9}{8}$. List the points from left to right. Explain your reasoning using equivalent fractions with a common denominator.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Point M is $\frac{3}{5}$ unit left of 0 on a number line. Write its coordinate.	$-\frac{3}{5}$
2	Point N is $1\frac{1}{2}$ units right of 0 on a number line. Write its coordinate.	$\frac{3}{2}$
3	Point R is $\frac{5}{6}$ unit left of the y-axis and $\frac{3}{4}$ unit above the x-axis. Write its ordered pair.	$(-\frac{5}{6}, \frac{3}{4})$
4	Point S is $\frac{7}{8}$ unit right of the y-axis and $\frac{2}{5}$ unit below the x-axis. Write its ordered pair.	$(\frac{7}{8}, -\frac{2}{5})$
5	Point T is located at $(-\frac{9}{10}, -\frac{1}{3})$. In which quadrant is T?	Quadrant III
6	Point U is located at $(0, -\frac{11}{12})$. On which axis is U located?	y-axis

PART 2 • APPLY IT

- $(-\frac{5}{4}, -\frac{3}{8})$** Moving left makes the x-coordinate negative, and moving below makes the y-coordinate negative. Convert $1\frac{1}{4}$ to $\frac{5}{4}$.
- $-\frac{12}{5}$** A position below 0 is negative. Convert $2\frac{2}{5}$ to $\frac{12}{5}$ and use a negative sign.

CHALLENGE

A, B, C. Using a denominator of 24, A = $-\frac{30}{24}$, B = $-\frac{28}{24}$, and C = $-\frac{27}{24}$. The least number is farthest left.

Accept equivalent fraction forms, including mixed numbers where appropriate. For ordered pairs, require the coordinates in x-coordinate, y-coordinate order with correct signs.