Rational Numbers on the Number Line

Lesson 9-4

Name: _____ Date: _____ Class: _____

Key Vocabulary

Level 1 support

Picture first, then the word, then a plain-language meaning. Say each word out loud.

1/2 = 0.5, -3/4 = -0.75, 6 = 6/1 — all rational numbers

Rational number

Any number you can write as a fraction. This includes fractions, decimals, and integers.

3/4 means 3 out of 4 equal parts — like 3 slices of a pizza cut into 4

Fraction

A number that shows part of a whole, like 3/4.

0.5 = 1/2 (halfway between 0 and 1 on the number line)

Decimal

A number with a dot, like 0.5, that shows a part less than one.

A line with marks at -2, -1.5, -1, -0.5, 0, 0.5, 1, 1.5, 2

Number line

A straight line with numbers spaced out evenly.

1/2 = 0.5 = 2/4 — all name the same point on the number line

Equivalent

Having the same value, just written a different way.

..., -3, -2, -1, 0, 1, 2, 3, ...

Integer

Whole numbers and their opposites, like -2, -1, 0, 1, 2.

Key Ideas & Notes

- Captain Vega's advanced treasure map uses precise coordinates — not just whole numbers!
- One clue says the treasure is at -2.5 on the map (halfway between -2 and -3).
- Another clue points to 3/4 of the way from 0 to 1.
- A third clue leads to -1 1/2.
- Plot each rational number at its precise location on the number line.

Think About It

- Where would -2.5 fall on a number line between -3 and -2?
- How is plotting 3/4 different from plotting a whole number?
- Can a negative number be a fraction or decimal?

My Notes

Guided Examples

Example 1

Which point is located between -1 and -2 on the number line?

Solution: -1.5 is between -1 and -2 because it is 0.5 units to the left of -1 (or 0.5 units to the right of -2).

Answer: B. -1.5

Example 2

Which fraction is equivalent to 0.25?

Solution: 0.25 means 25 hundredths = 25/100 = 1/4.

Answer: A. 1/4

Example 3

Where is -3/4 located on the number line?

Solution: -3/4 = -0.75, which is between 0 and -1. It is 3/4 of the way from 0 toward -1.

Answer: A. Between 0 and -1

Write About the Math

The Writing Revolution

I can explain my reasoning using the words rational number, fraction, decimal, and number line.

1. Kernel Sentence

subject + verb

Model: Rational number is any number you can write as a fraction. This includes fractions, decimals, and integers.
Número racional es cualquier número que puedes escribir como fracción. Incluye fracciones, decimales y enteros.

Write a kernel sentence about rational number. Use a subject and a verb.
Escribe una oración base sobre número racional. Usa un sujeto y un verbo.

_____

_____

2. Sentence Expansion

because · but · so

Kernel: Rational number matters in math
Número racional importa en matemáticas

Expand the kernel three ways. Add a reason, a contrast, and a result.

because *porque*

Rational number matters in math because ____.
Número racional importa en matemáticas porque ____.

_____

but *pero*

Rational number matters in math, but ____.
Número racional importa en matemáticas, pero ____.

_____

so *entonces*

Rational number matters in math, so ____.
Número racional importa en matemáticas, entonces ____.

_____

3. Sentence Types

4 ways to write a math idea

Statement
Afirmación

Tell one true fact about rational number.
Di un hecho verdadero sobre rational number.

Rational number ____.

Question
Pregunta

Ask a question about rational number.
Haz una pregunta sobre rational number.

How does ____ ?
¿Cómo ____ ?

Exclamation
Exclamación

Show excitement about rational number.
Muestra entusiasmo sobre rational number.

Wow, ____ !
¡Guau, ____ !

Command
Mandato

Tell a partner what to do with rational number.
Dile a un compañero qué hacer con rational number.

First, ____ .
Primero, ____ .

---

4. Explain Your Reasoning

use a sentence starter

I placed ____ between ____ and ____.
Coloqué ____ entre ____ y ____.

I knew because ____.
Lo supe porque ____.

I see this when ____.
Veo esto cuando ____.

Try It

Solve on your own. Check the answer key when you are done.

1. Where is -3/4 located on the number line?

A. Between 0 and -1

B. Between -3 and -4

C. Between -1 and -2

D. Between 0 and 1

Show your work:

2. Which rational number is closest to 0 on the number line?

A. -1/4

B. 0.5

C. -2

D. 1.75

Show your work:

Stretch Your Thinking

Level 2 enrichment

Challenge task — explain your reasoning in full sentences.

Name three different rational numbers between -1 and 0. Write each as both a fraction and a decimal. Explain how you know they are between -1 and 0.

Sentence starter: Three rational numbers between -1 and 0 are: ____ = ____, ____ = ____, and ____ = ____. I know they are between -1 and 0 because ____.

Show your work:

Reflect — Exit Ticket

Which rational number is located between -2 and -3 on the number line?

A. -1.5

B. -2.75

C. -3.5

D. 2.5

Your answer:

Answer Key & Teacher Guide

1. **Try It 1:** A. Between 0 and -1 — *-3/4 = -0.75, which is between 0 and -1. It is 3/4 of the way from 0 toward -1.*
2. **Try It 2:** A. -1/4 — *|-1/4| = 0.25, |0.5| = 0.5, |-2| = 2, |1.75| = 1.75. Since 0.25 is the smallest absolute value, -1/4 is closest to zero.*
3. **Exit Ticket:** B. -2.75 — *-2.75 is between -2 and -3 because it is 0.75 units to the left of -2. -1.5 is between -1 and -2, and -3.5 is between -3 and -4.*

Writing (TWR) — what to look for

- **Kernel sentence:** A complete sentence needs a subject and a verb. Example: Rational number is any number you can write as a fraction. This includes fractions, decimals, and integers.
- **Expansion:** *because* gives a reason, *but* shows a contrast or exception, *so* shows a result. Answers vary; each must keep the kernel idea and add the correct kind of detail.
- **Sentence types:** Statement ends with a period, question with "?", exclamation with "!", and a command starts with an action verb (a "bossy" verb).