LESSON MAKER PRO

Beyond the Line

Explore rational, irrational, and complex numbers.

HIGH SCHOOL · A1P.NQ.A

A1P.NQ.A "Together, irrational numbers and rational numbers complete the real number system, representing all points on the number line, while there exist numbers beyond the real numbers called complex numbers."

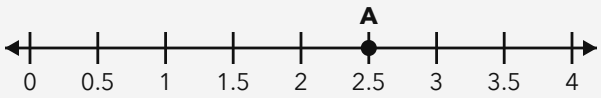
NAME _____ **DATE** _____

THE BIG IDEA

A rational number can be written as a fraction of integers. Rational and irrational numbers together fill the real number line. A square root of a negative number is complex, not real.

WORKED EXAMPLE

Write A as a fraction. Is A rational or irrational?



1. A is halfway between 2 and 3, so A = 2.5.
2. 2.5 = 5/2.
3. 5/2 is a fraction of integers.

Answer: A = 5/2, rational.

PRACTICE 4 problems

1 Is √49 rational or irrational?

ANSWER _____

2 Is √18 rational or irrational?

ANSWER _____

3 Write 0.125 as a fraction. Is it rational or irrational?

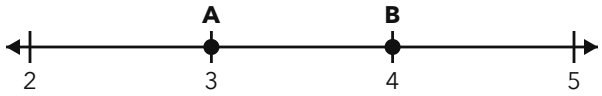
ANSWER _____

4 Is √(-9) real? If not, what kind of number is it?

ANSWER _____

APPLY IT Show your work

1 A game's target is at √10 on this number line. Which marked checkpoint is closer?



ANSWER _____

2 A music app stores a slider setting at P. Write P as a fraction and classify it as rational or irrational.



ANSWER _____

CHALLENGE One step up

A student says √36 and √(-36) are both real because 36 is a perfect square. Explain the error. Give each value and tell which one belongs on the real number line.

WORK SPACE AND ANSWER

Beyond the Line

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is √49 rational or irrational?	**Rational, because √49 = 7.**
2	Is √18 rational or irrational?	**Irrational.**
3	Write 0.125 as a fraction. Is it rational or irrational?	**1/8, rational.**
4	Is √(-9) real? If not, what kind of number is it?	**No. It is a complex number, 3i.**

PART 2 · APPLY IT

1. **A** √10 is between 3 and 3.5 because 9 < 10 < 12.25. It is closer to A.
2. **P = 7/4, rational.** P is 1 + 3/4 = 7/4. A fraction of integers is rational.

CHALLENGE

√36 = 6, which is real and belongs on the real number line. √(-36) = 6i, which is complex but not real, so it does not belong on the real number line.

Accept equivalent fractions for points on the number lines. For √(-9), accept "not real; complex" without requiring 3i.