LESSON MAKER PRO

Beyond the Line

Classify numbers and find where they belong.

HIGH SCHOOL · GDA.NQ.A

GDA.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."

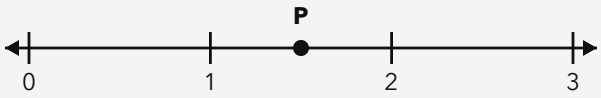
NAME _____ DATE _____

THE REAL NUMBER LINE

A rational number can be written as a fraction of integers. An irrational number cannot. Both are real numbers and have places on the number line. The square root of a negative number is not real; i = sqrt(-1).

WORKED EXAMPLE

Classify point P as rational or irrational. Is it real?



1. P is at 1.5, which equals 3/2.
2. 3/2 is a fraction of integers, so P is rational.
3. Every rational number is real.

Answer: P is rational and real.

PRACTICE 4 problems

1 Is -7/4 rational or irrational? Is it real?

ANSWER _____

2 Is sqrt(3) rational or irrational? Is it real?

ANSWER _____

3 Is sqrt(36) rational or irrational? Is it real?

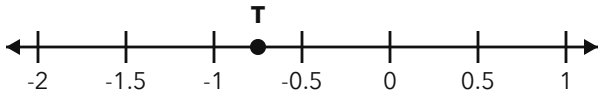
ANSWER _____

4 Write sqrt(-25) using i.

ANSWER _____

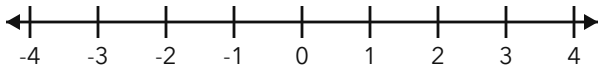
APPLY IT Show your work

1 A weather app plots a temperature at T. Write T as a fraction and classify it as rational or irrational.



ANSWER _____

2 An audio app uses sqrt(-16) in a sound model. Could it mark this value on the real number line shown? Write the value using i.



ANSWER _____

CHALLENGE One step up

Between which two consecutive integers is sqrt(10)? Is it rational or irrational? Explain briefly.

WORK SPACE AND ANSWER

Beyond the Line

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Is -7/4 rational or irrational? Is it real?	**Rational; real.**
2	Is sqrt(3) rational or irrational? Is it real?	**Irrational; real.**
3	Is sqrt(36) rational or irrational? Is it real?	**Rational; real.**
4	Write sqrt(-25) using i.	**5i**

PART 2 · APPLY IT

1. **-3/4; rational.** T is at -0.75, which equals -3/4. A fraction of integers is rational.
2. **No; sqrt(-16) = 4i.** Since sqrt(-16) = 4i is not real, it has no point on the real number line.

CHALLENGE

3 < sqrt(10) < 4 because 9 < 10 < 16. It is irrational because 10 is not a perfect square.

Accept equivalent fractions for T. Students may describe 4i as a complex number that is not real.