LESSON MAKER PRO

Number Family Files

Classify real numbers by the groups they belong to.

GRADE 8 · 8.NS.2.c

8.NS.2.c "Describe each subset of the set of real numbers and include examples and non-examples."

NAME _____ DATE _____

REAL NUMBER GROUPS

Natural numbers are counting numbers starting with 1. Whole numbers include 0 and the natural numbers, and integers also include negative whole numbers. Rational numbers can be written as a/b, where a and b are integers and b is not 0, while irrational numbers cannot be written that way. Every rational or irrational number is a real number.

WORKED EXAMPLE

List every subset of the real numbers that -15/4 belongs to.

1. -15/4 is a ratio of two integers with a nonzero denominator.
2. Therefore, -15/4 is rational.
3. Every rational number is real.
4. -15/4 is not an integer, so it is not whole or natural.

Answer: rational number, real number

PRACTICE 6 problems

1 List every subset of the real numbers that 14 belongs to.

ANSWER _____

2 Is -9 a whole number? Name every subset of the real numbers it does belong to.

ANSWER _____

3 Is 5/6 rational or irrational? Is it real?

ANSWER _____

4 List every subset of the real numbers that -3.8 belongs to.

ANSWER _____

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

ANSWER _____

6 List every subset of the real numbers that 0.272727... belongs to.

ANSWER _____

APPLY IT Show your work

1 After a penalty, Devin's tournament score is -21 points. List every subset of the real numbers that -21 belongs to.

WORK SPACE

ANSWER _____

2 A video takes 2.75 minutes to upload. List every subset of the real numbers that 2.75 belongs to.

WORK SPACE

ANSWER _____

CHALLENGE One step up

A classmate says that every rational number is an integer. Is the statement true? Use 7/9 as an example or non-example, and list every subset that includes 7/9.

WORK SPACE AND ANSWER

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	List every subset of the real numbers that 14 belongs to.	**natural number, whole number, integer, rational number, real number**
2	Is -9 a whole number? Name every subset of the real numbers it does belong to.	**No. It is an integer, rational number, and real number.**
3	Is 5/6 rational or irrational? Is it real?	**rational, real**
4	List every subset of the real numbers that -3.8 belongs to.	**rational number, real number**
5	Is sqrt(2) rational or irrational? Is it real?	**irrational, real**
6	List every subset of the real numbers that 0.272727... belongs to.	**rational number, real number**

PART 2 · APPLY IT

1. **integer, rational number, real number** -21 is an integer. It can be written as -21/1, so it is rational, and every rational number is real.
2. **rational number, real number** 2.75 is a terminating decimal, so it is rational. Every rational number is real.

CHALLENGE

False. 7/9 is a rational number and a real number, but it is not an integer, whole number, or natural number.

Accept equivalent wording such as "counting number" for natural number. Use the convention stated in the concept box, natural numbers begin with 1, so 0 is not natural.