LESSON MAKER PRO

Number Nest Detectives

Sort numbers into nested number sets.

GRADE 6 · TEKS 6.2.A

6.2.A "classify whole numbers, integers, and rational numbers using a visual representation such as a Venn diagram to describe relationships between sets of numbers;"

NAME _____ DATE _____

NESTED NUMBER SETS

Whole numbers are 0 and counting numbers; integers also include negative whole numbers. Rational numbers can be written as a/b with b not 0. Before practice, on separate paper draw three large nested circles: label the innermost Whole numbers, the middle Integers and the outside Rational numbers. Use your diagram to classify the practice numbers.

WORKED EXAMPLE

Classify -12 in the nested sets: whole numbers, integers, and rational numbers.

1. -12 is negative, so it is not a whole number.
2. -12 has no fractional part, so it is an integer.
3. -12 can be written as -12/1, so it is rational.

Answer: -12 belongs to the integer and rational number sets. Its smallest set is integers.

PRACTICE 6 problems

1 Use the nested circles: whole numbers inside integers inside rational numbers. For 0, name every set that contains it.

ANSWER _____

2 For -7, name every set that contains it.

ANSWER _____

3 For 5/8, name every set that contains it.

ANSWER _____

4 For 3.25, name every set that contains it.

ANSWER _____

5 For -4.5, name every set that contains it.

ANSWER _____

6 For 14, name every set that contains it.

ANSWER _____

APPLY IT Show your work

1 Jalen's video game score changes by -18 points after one round. In the nested number sets, which sets contain -18?

WORK SPACE

ANSWER _____

2 Rosa eats 7/10 of a large pizza. In the nested number sets, which set contains 7/10?

WORK SPACE

ANSWER _____

3 On separate paper draw three large nested rectangles. Label the outside rectangle Rational numbers, the middle one Integers, and the innermost one Whole numbers. Place 0, −7, 5/8, 3.25, −4.5 and 14 in the smallest region each belongs to. Use your finished diagram to explain why every whole number is also an integer and rational number, but not every rational number is an integer.

WORK SPACE

ANSWER _____

CHALLENGE One step up

Kai places -1/4 in the integer circle because it is negative. Is Kai correct? Explain which set or sets should contain -1/4.

WORK SPACE AND ANSWER

ANSWER KEY # Number Nest Detectives

GRADE 6 · TEKS 6.2.A

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the nested circles: whole numbers inside integers inside rational numbers. For 0, name every set that contains it.	**whole numbers, integers, rational numbers**
2	For -7, name every set that contains it.	**integers, rational numbers**
3	For 5/8, name every set that contains it.	**rational numbers**
4	For 3.25, name every set that contains it.	**rational numbers**
5	For -4.5, name every set that contains it.	**rational numbers**
6	For 14, name every set that contains it.	**whole numbers, integers, rational numbers**

PART 2 · APPLY IT

1. **integers, rational numbers** -18 is negative and has no fractional part, so it is an integer. It can be written as -18/1, so it is also rational, but it is not whole.
2. **rational numbers** 7/10 is a fraction, so it is rational. It is not a whole number or an integer.
3. **0 and 14 in Whole numbers; −7 in Integers outside Whole numbers; 5/8, 3.25 and −4.5 in Rational numbers outside Integers.** Inspect the actual labeled nested diagram and all placements. Containment shows Whole ⊆ Integers ⊆ Rational; 5/8 is a counterexample to the reverse inclusion. Rectangles or circles are acceptable if nesting and labels are clear.

CHALLENGE

No. -1/4 is rational because it is a fraction, but it is not an integer or a whole number.

Accept equivalent wording such as "rational only" when a number belongs only to the rational number set. Terminating decimals are rational because they can be written as fractions.