

Number Sets Practice

Number set	Definition	Examples	Non-Examples
Natural numbers	Whole numbers from 1 upward	1, 2	0, -1
Whole numbers	The numbers 0, 1, 2, ...	3, 4	-3, $\frac{1}{2}$
Integers	The whole numbers and their opposites	-2, 0, 2	$\frac{1}{4}$ , -3
Rational numbers	$a/b$ where a and b are integers	$\frac{1}{4}$ , $-\frac{3}{4}$ , 0.3	$\pi$ , $\sqrt{2}$
Irrational numbers	A decimal that goes on forever without repeating	$\pi$ , $\sqrt{5}$	1.5, 0.6

The set of rational numbers and the set of irrational numbers together make up the set of real numbers. The Venn diagram below shows the relationship among the real numbers.

## Real Numbers

Natural #s - N  
Whole #s - W  
Integers - Int  
Rational #s - Rat  
Irrational #s - Irr  
Real #s - Real

Identify all of the subsets of real number system to which each number belongs:

1) 15

N, W, Int,  
Rat, Real

2)  $\frac{-28}{7} = -4$

Int, Rat,  
Real

3) 0.3

Rat, Real

4) -81

Int, Rat,  
Real

5) 67

N, W, Int,  
Rat, Real

6)  $\sqrt{2}$

Irr, Real

7) 0.10110111....

Irr, Real

8) 0.235235

Rat, Real

9)  $-\sqrt{196} = -14$

Int, Rat, Real

Extra Practice:

Name all of the sets of numbers to which each real number belongs. Use natural numbers, whole numbers, integers, rational numbers, and irrational numbers.

1) 0.212121...

Rat, Real

2) -41

Int, Rat, Real

3)  $\frac{1}{4}$

Rat, Real

4)  $\frac{-42}{5}$

Rat, Real

5) 0.090090009...

Irr, Real

6) 2.31

Rat, Real

7) 45

N, W, Int, Rat, Real

8)  $\frac{36}{9} = 4$

N, W, Int, Rat, Real

Determine whether each statement is *sometimes*, *always*, or *never* true.

13) A decimal number is an irrational number. S

- 14) An integer is a whole number. S
- 15) A natural number is an integer. SA
- 16) An integer is a natural number. S

Choose the letter which best answers the question.

- 17) Which of the following is a whole number?  
 A) 3.6    B) 16    C) 8    D) Both B and C
- 18) Which category does 81 not belong to?  
A) Irrational #'s    B) Integers    C) Natural #'s    D) Whole numbers

Give an example and a non-example for each of the following subsets:

	Example	Non-example		Example	Non-example
Integer			Rational Number		
Whole Number			Irrational Number		

see above

Classify Numbers - Complete the chart. Place an "X" in the box for each correct classification.

Example	Natural	Whole	Integer	Rational	Irrational	Real
0		✓	✓	✓		✓
4	✓	✓	✓	✓		✓
-7			✓	✓		✓
$\sqrt{25}$	✓	✓	✓	✓		✓
$\sqrt{41}$					✓	✓
$\frac{3}{4}$				✓		✓
0.121212...				✓		✓
0.010110111...					✓	✓