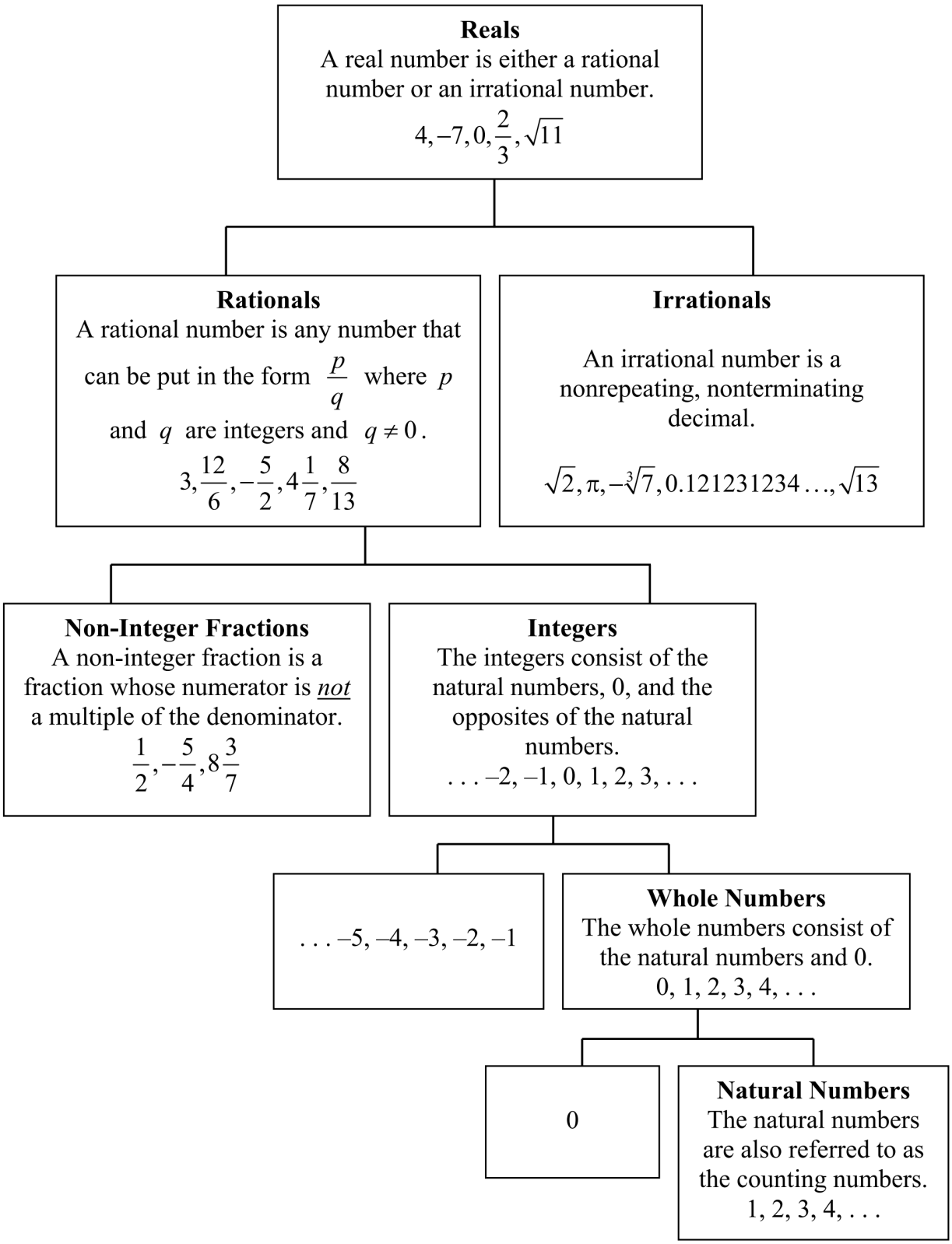
Sets of Numbers in the Real Number System



Real Number System Answer Key

1. How are the natural and whole numbers different? *The whole numbers contain 0.*

2. How are the integers and rational numbers different? *The integers are whole numbers while the rational numbers include fractions and decimals.*

3. How are the integers and rational numbers the same? *The rational numbers include all the integers.*

4. How are integers and whole numbers the same? *Both sets of numbers contain the negative and positive whole numbers, and zero.*

5. Can a number be both rational and irrational? Use the diagram to explain your answer. *No. The diagram illustrates this by having the irrational and rational numbers separated.*

Answer **True** or **False** to the statements below. If the statement is False, explain why.

6. -5 is a rational number. — 6. True

7. 0 is an integer. — 7. True

8. $\sqrt{16}$ is a natural number — 8. True

9. $-3.\overline{25}$ is an integer — 9. False; the integers are negative whole numbers.

10. $\sqrt{8}$ is rational — 10. False, the square root of 8 is not a repeating or terminating decimal

11. $\sqrt{7}$ is a Real number — 11. True

12. 18 is a whole number — 12. True

13. $-\frac{2}{3}$ is an integer — 13. False, integers do not include fractions or decimals

14. 2.434434443… is a rational number — 14. False, rational decimals must terminate or repeat

15. 6.57 is an integer — 15. False, integers do not include decimals or fractions

16. $5.\overline{7}$ is rational. — 16. True

17. All fractions are rational numbers. — 17. True

18. All integers are whole numbers. — 18. False, integers include negative whole numbers which are not part of the whole number set.

19. All irrational numbers are Real numbers. — 19. True

20. All negative numbers are integers. — 20. False, negative fractions and decimals are not integers

The Number System

Identify the sets to which each of the following numbers belongs by marking an "X" in the appropriate boxes.

	Number	Natural Numbers	Whole Numbers	Integers	Rational Numbers	Irrational Numbers	Real Numbers
1.	$-\sqrt{17}$						
2.	-2						
3.	$-\frac{9}{37}$						
4.	0						
5.	-6.06						
6.	$4.5\overline{6}$						
7.	$3.050050005\ldots$						
8.	18						
9.	$\frac{-43}{0}$						
10.	π						
11.	$\overline{.634}$						
12.	$\sqrt{225}$						
13.	$.634$						
14.	$\sqrt{\frac{4}{49}}$						
15.	$-\sqrt{64}$						

	Number	Natural Numbers	Whole Numbers	Integers	Rational Numbers	Irrational Numbers	Real Numbers
16.	$\sqrt{13}$						
17.	-5						
18.	$\frac{2}{3}$						
19.	-0.083						
20.	27						
21.	$2.6\overline{47}$						
22.	$3.0\overline{505}$						
23.	-198						
24.	$-\frac{1}{2}$						
25.	10						

ANSWERS

1. IN, R **3.** RN, R **5.** RN, R **7.** IN, R **9.** None **11.** RN, R **13.** RN, R **15.** I, RN, R
17. I, RN, R **19.** RN, R **21.** RN, R **23.** I, RN, R **25.** N, W, I, RN, R