NUMBER SYSTEMS

Worksheet – Natural Numbers, Whole Numbers, Integers, Rational & Irrational Numbers

Name: _____ Date: _____

Class: _____ Roll No.: _____

A. Basic Number Sets

1. Write the first eight natural numbers.

2. Write the first eight whole numbers.

3. Write five integers less than 0.

4. Write five integers greater than 0.

5. Fill in the blanks: Natural numbers are denoted by _____, whole numbers by _____, and integers by _____.

6. Is 0 a natural number? Give a reason.

7. Is every natural number a whole number? Explain.

8. Is every integer a rational number? Give a reason.

B. Rational Numbers

9. Define a rational number in your own words.

10. Write each of the following as p/q, where p and q are integers and $q \neq 0$: (a) 7 (b) –12 (c) 0.

11. Are the following rational numbers? Give a reason: (a) 3/5 (b) –8 (c) 0 (d) 11/0.

12. Write four equivalent rational numbers for 1/2.

13. Write four equivalent rational numbers for –3/4.

14. Find five rational numbers between 1 and 2.

15. Find six rational numbers between 3 and 4.

16. Find five rational numbers between 3/5 and 4/5.

17. Arrange in ascending order: 1/2, 3/4, 2/3, 5/6.

18. True or False? Give a reason: Every integer is a rational number.

19. True or False? Give a reason: Every rational number is an integer.

20. True or False? Give a reason: Every whole number is a natural number.

C. Irrational Numbers

Recall: A number is called irrational if it cannot be written in the form p/q, where p and q are integers and $q \neq 0$.

21. Write the definition of an irrational number.

22. State whether each number is rational or irrational: (a) 4 (b) 7/9 (c) $\sqrt{2}$ (d) $\sqrt{9}$ (e) π (f) -11.

23. Which of the following can be written in the form p/q? (a) 5 (b) $\sqrt{2}$ (c) $-7/3$ (d) 0.

24. Is $\sqrt{9}$ rational or irrational? Explain.

25. Is $\sqrt{2}$ rational or irrational? Explain briefly.

26. Give two examples of rational numbers and two examples of irrational numbers.

27. Complete the statement: Rational numbers and irrational numbers together form the set of _____ numbers.

28. Circle the irrational numbers: 1/3, $\sqrt{2}$, 0, $\sqrt{5}$, -8, π, 7/2, $\sqrt{16}$.

D. Mixed Practice

29. Write the smallest whole number and the smallest natural number (according to the definition used in your textbook).

30. Give one rational number between 2 and 3, and then give three more rational numbers between 2 and 3.

31. A student says, “All rational numbers are integers.” Is the statement correct? Use an example to justify your answer.

32. A student says, “Every integer can be written as p/q.” Is the statement correct? Demonstrate with an example.

33. Find five rational numbers between 7/6 and 4/3.

34. Challenge: Can there be infinitely many rational numbers between any two different rational numbers? Explain in one or two sentences.

Teacher's Remarks: _____

Score: _____ / 34