

Introduction to Basic Number Systems for Eighth Grade Mathematics

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1 Introduction

Here is an overview of the basic number systems you should be aware of for this course.

Natural Numbers = \mathbb{N}

For the purpose of this course natural numbers will be defined to be the counting numbers from one to infinity:

$$1, 2, 3, 4, 5, 6 \dots \infty$$

Whole Numbers

For the purpose of this course whole numbers will be defined to be the counting numbers from zero to infinity:

$$0, 1, 2, 3, 4, 5, 6 \dots \infty$$

Integers = \mathbb{Z}

For the purpose of this course natural numbers will be defined to be the counting numbers from negative infinity to zero and then to positive infinity:

$$-\infty \dots -6, -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5, 6 \dots + \infty$$

Rational Numbers = \mathbb{Q}

For the purpose of this course rational numbers will be defined the set of all numbers such that $\frac{n}{d}$ with n being an integer in the numerator and d being an integer in the denominator.

$$-\infty \dots -\frac{5}{7}, -\frac{1}{3}, \frac{0}{13}, \frac{7}{7}, \frac{14}{7} \dots + \infty$$

Irrational Numbers

For the purpose of this course irrational numbers will be defined the set of all numbers that can not be written as rational numbers. Some famous irrational numbers are:

$$\pi, e, \sqrt{2}$$

Real Numbers = \mathbb{R}

For the purpose of this course real numbers will be defined the set of all numbers that includes rational numbers and irrational numbers.

2 References

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