

Properties of numbers

- Describe the real number system by recognising, defining and distinguishing properties of:
 - natural numbers, whole numbers, integers, rational numbers, irrational numbers

Calculations using whole numbers

- Revise:
Calculations using all four operations on whole numbers, estimating and using calculators where appropriate

Natural numbers: $\mathbb{N} = \{ 1;2;3;4;5;6;7;\dots\}$

Whole numbers $\mathbb{N}_0 = \{ 0;1;2;3;4;5;6\dots\}$

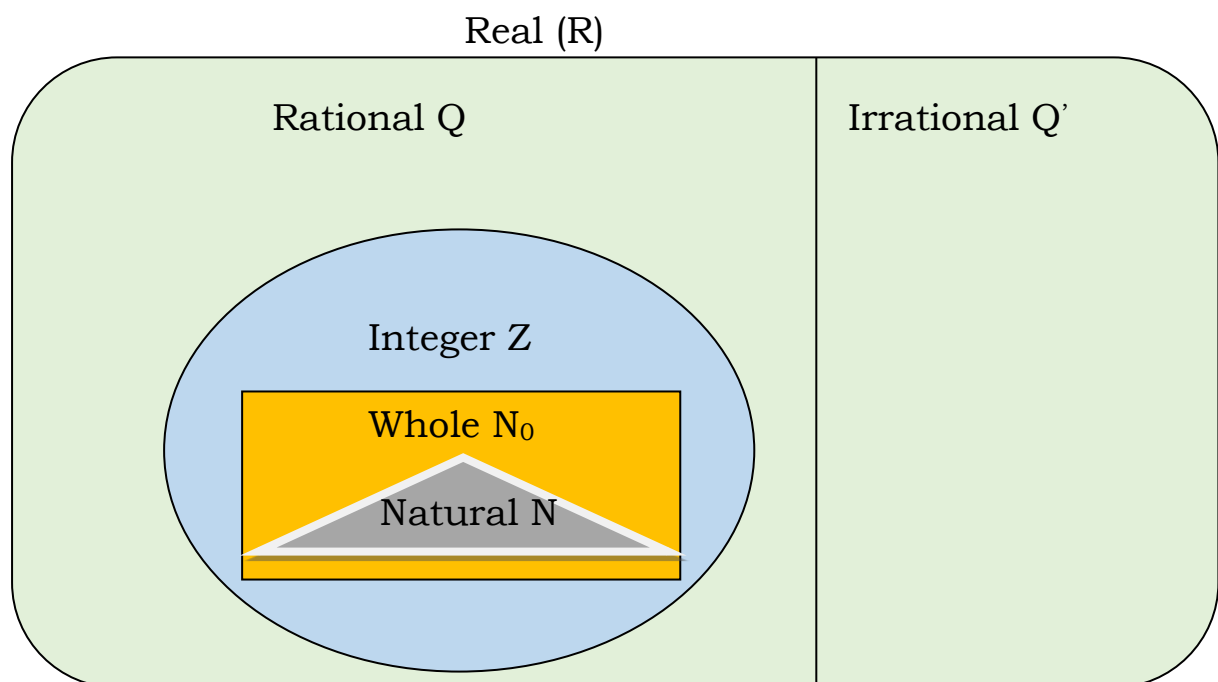
Integers $\mathbb{Z} = \{ \dots;-4;-3;-2;-1;0;1;2;\dots\}$

Rational numbers $\mathbb{Q} = \{ x / x = \frac{a}{b} ; a,b \in \mathbb{Z} \text{ and } b \neq 0\}$

(All terminating and recurring numbers are rational numbers)

Irrational numbers $\mathbb{Q}' =$ cannot be written as a fraction like rational numbers.

Real numbers $\mathbb{R} =$ Rational – and irrational numbers



Rational numbers:

$$\begin{aligned}6 &= \frac{6}{1} \\ -12 &= \frac{-12}{1} \\ -0,3 &= \frac{-3}{10} \\ 2,34141\dots &= \frac{2318}{990} \\ 3,142857\dots &= \frac{22}{7}\end{aligned}$$

Irrational numbers:

$$\begin{aligned}\sqrt{2} \\ \sqrt[3]{4} \\ \pi \\ \frac{1+\sqrt{5}}{2}\end{aligned}$$

[NB: $\pi = 3,1415926535897932384626433832795028841971\dots$]

Examples:

Write the following numbers in the form $\frac{a}{b}$ and $a, b \in \mathbb{Z}; b \neq 0$
(Converting decimal numbers to fractions)

- 1) 0,231
- 2) 7,12
- 3) 0,000 1
- 4) $0,\dot{7}$
- 5) $0,\dot{5}\dot{8}$
- 6) $0,31\dot{6}$
- 7) $5,9\dot{2}\dot{7}$

Exercise 1.1 p5 no 1 and 2

Exercise 1.2 p6 no 1 and 2