

1.2 The Real Number System

Wednesday, September 25, 2019 12:21 PM

1.2 THE REAL NUMBER SYSTEM

Name: _____ Blk: _____

Recall:


Classify the following numbers as rational or irrational...


$\frac{51}{52}$, $\sqrt{2}$, $\sqrt{\frac{1}{2}}$, $0.\bar{7}$, $(\frac{1}{2})^3$, $\sqrt[6]{128}$, $\sqrt[3]{-9}$, $\sqrt{0.2}$, π , $\sqrt[3]{-27}$, 3.2 , $\sqrt{\frac{4}{9}}$, $\sqrt[7]{128}$, $\sqrt{4.75}$, $\sqrt[3]{\frac{54}{16}}$, $\sqrt{0.16}$, $\sqrt{64}$, $\sqrt[3]{\frac{64}{16}}$


Rational Numbers	Irrational Numbers

The Real Number System:

- Natural Numbers - \mathbb{N} counting numbers $\{1, 2, 3, 4, \dots\}$


- Whole numbers - \mathbb{W} counting numbers and zero

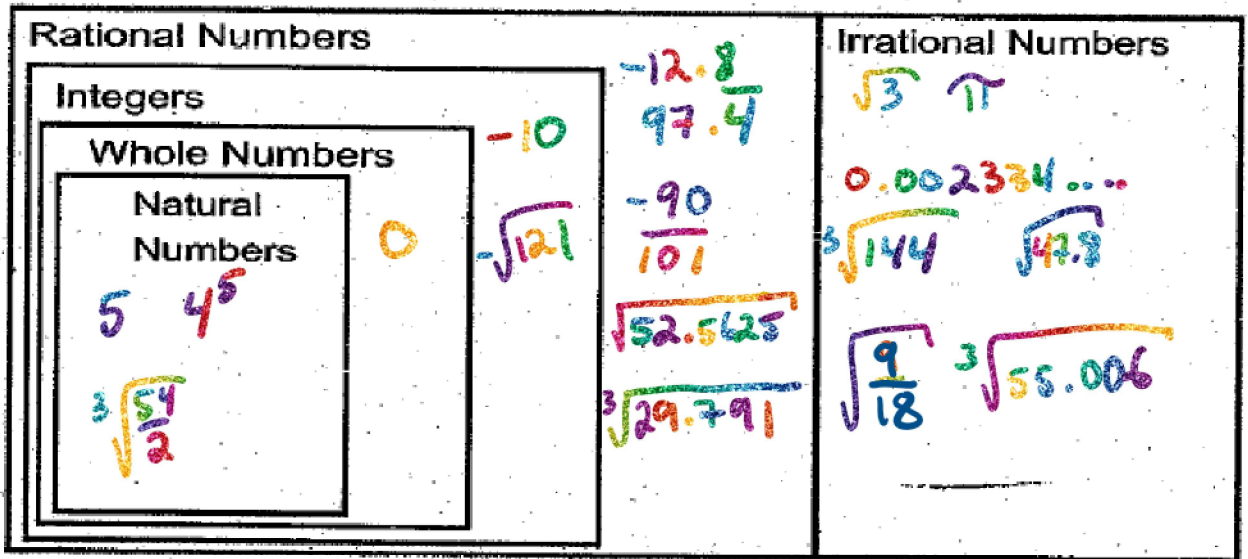

- Integers - \mathbb{Z} whole numbers and negative.


- Rational numbers - \mathbb{Q} can be written as fractions decimal that repeats or stops
- Irrational numbers - $\bar{\mathbb{Q}}$ not rational, cannot be written as a fraction.
- Real numbers - \mathbb{R} all rational and irrational numbers.

Example 1: Classify the following numbers by putting them in the correct box

$0, 5, \sqrt{3}, -12.8, 97.\bar{4}, \pi, -\frac{90}{101}, \sqrt[3]{144}, -\sqrt{121}, 0.002334816254 \dots, -10, \sqrt{\frac{9}{18}}, 4^5, \sqrt[3]{\frac{54}{2}}, \sqrt{52.5625},$
 $\sqrt{47.8}, \sqrt[3]{29.791}, \sqrt{55.006}$

Real Numbers:



2. Identifying Radicals as Rational or Irrational

- We can determine a radical as rational or irrational by changing the decimal to a fraction or checking whether it is a perfect square.

Example 1: Identify whether the following represents a rational or irrational number

a) $\sqrt{0.5625}$ 1) change to a fraction

$$\frac{5625}{10000} \div 25$$

$$= \frac{225}{400}$$

} these are perfect squares

\therefore **Rational**

b) $\sqrt{45}$

Not a perfect square!

Irrational

c) $\sqrt[3]{1.728}$

$$\frac{1728}{1000} \div 8$$

$$\frac{216}{125} \div 8$$

$$= \frac{216}{125} \left. \vphantom{\frac{216}{125}} \right\} \text{perfect cubes}$$

Rational

you try?

e) $\sqrt{5.8}$

Irrational

d) $\sqrt[3]{42}$

Irrational

Not a perfect cube.

f) $\sqrt{0.0016}$

R

$$\frac{16}{10000} \left. \vphantom{\frac{16}{10000}} \right\} \text{p. squares}$$

g) $\sqrt[3]{0.512}$

R.

h) $\sqrt[3]{1.006}$

I

Assignment: 🍬 p. 17-21

🍬 Quiz Wednesday on sections 1.1-1.3