1.2 Real Number System

REAL ($\mathbb{R}$)

RATIONAL (Q)

- numbers that can be written as $\frac{a}{b}$, $b \neq 0$, a, b integers

INTEGERS (I)

$-2, -1, 0, 5, 21$

WHOLE (W)

$0, 5, 21$

NATURAL (N)

$1, 2, 3 \ldots$

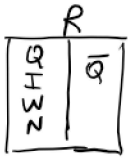
IRRATIONAL ($\bar{Q}$)

- does not end
- does not repeat

π

$\sqrt{2}$ (NOT a perfect square)

$\sqrt[3]{2}$ (NOT a perfect cube)



Classify

1. 12 — N, W, I, Q, R
2. -5 — I, Q, R
3. 9.12 — Q, R
4. $\sqrt[3]{43}$ — $\bar{Q}$, R
5. $\sqrt{\frac{9}{16}} = \frac{3}{4}$ — Q, R

$\sqrt{16}$ 4

(6) $\sqrt{5.8}$ no calc. $5.8 = 5\frac{8}{10} = 5\frac{4}{5} = \sqrt{\frac{29}{5}}$ NOT a perfect sq. $\overline{Q}$, R

(7) $\sqrt{0.0016} = \sqrt{\frac{16}{10000}} = \frac{4}{100}$ perfect square Q, R

ex. 1 Without finding the value, identify as rational or irrational.

a) $\sqrt{45}$ $\overline{Q}$, not a perfect square

b) $\sqrt[3]{42}$ $\overline{Q}$, " " " cube

c) $\sqrt{0.5625} = \sqrt{\frac{5625}{10000}} \div 25 \div 25 = \sqrt{\frac{225}{400}} \div 25 \div 25 = \sqrt{\frac{9}{16}}$

$25\overline{)5625}$ → 225

-50

62

50

125

125

0

Q, is a perfect square

p17 # 3-5, 7, 12, 13