9.5 Rational Numbers

Numbers (such as -1.5, -0.5, 0.5, 1, and 3.5) are considered to be rational numbers.

A **RATIONAL NUMBER** is a number you can write in the form $\frac{a}{b}$ or $-\frac{a}{b}$, where a and b are whole numbers and b ≠ 0.
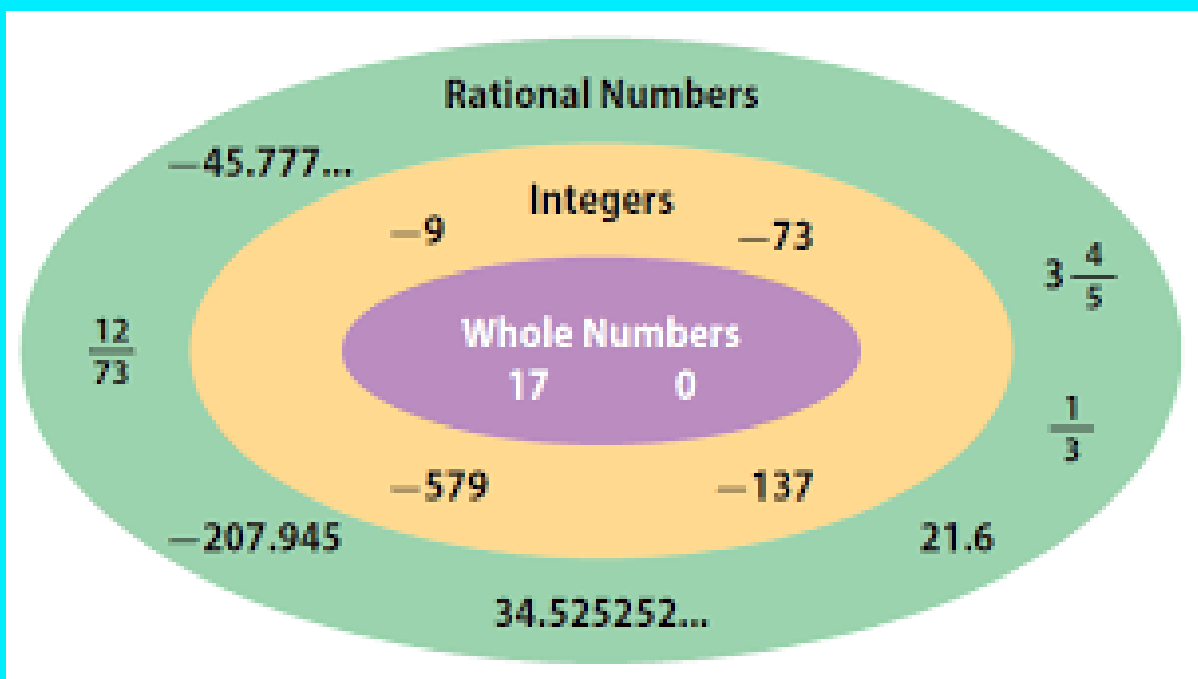
All integers including 0 are rational numbers.
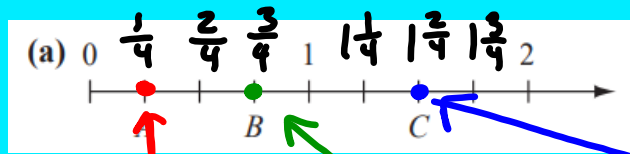
All whole numbers are integers and rational numbers.

numbers
0 & above

✳ We can rewrite whole numbers & integers as rational numbers.
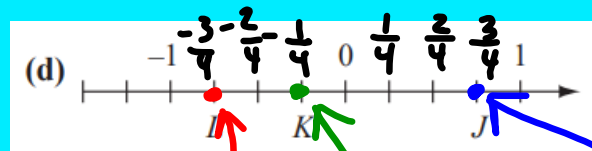
Ex) $\frac{12}{4} = 3$ $\frac{15}{3} = 5$

Rational Numbers

−45.777...

Integers

−9   −73

$\frac{12}{73}$

Whole Numbers

17   0

$3\frac{4}{5}$

$\frac{1}{3}$

−579   −137

−207.945   21.6

34.525252...

Example: Identify the rational number that corresponds to the point.

(a) 0 $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ 1 $1\frac{1}{4}$ $1\frac{2}{4}$ $1\frac{3}{4}$ 2

B C

$\frac{1}{4} = 0.25$ $\frac{3}{4} = 0.75$ $1\frac{2}{4} = 1\frac{1}{2} = 1.5$

(d) -1 $\frac{-3}{4}$ $\frac{-2}{4}$ $\frac{-1}{4}$ 0 $\frac{1}{4}$ $\frac{2}{4}$ $\frac{3}{4}$ 1

I K J

$\frac{-3}{4} = -0.75$ $\frac{-1}{4} = -0.25$ $\frac{3}{4} = 0.75$

You can write any rational number as a decimal and as a fraction.

$$\frac{1}{2} = 0.5$$

Example: Write each rational number as a decimal.

1.) $-4\frac{3}{4} = \frac{-19}{4}$

$\boxed{-4.75}$

$$4\overline{)19.00}$$
-16
$\ \ 30$
-28
$\ \ \ 20$
-20

2.) $-\frac{3}{4}$

$\boxed{-0.75}$

$$\ \ \ \ 0.75$$
$$4\overline{)3.00}$$
-28
$\ \ 20$
-20

3.) $5\frac{12 \div 4}{16 \div 4} = 5\frac{3}{4}$

$\boxed{5.75}$