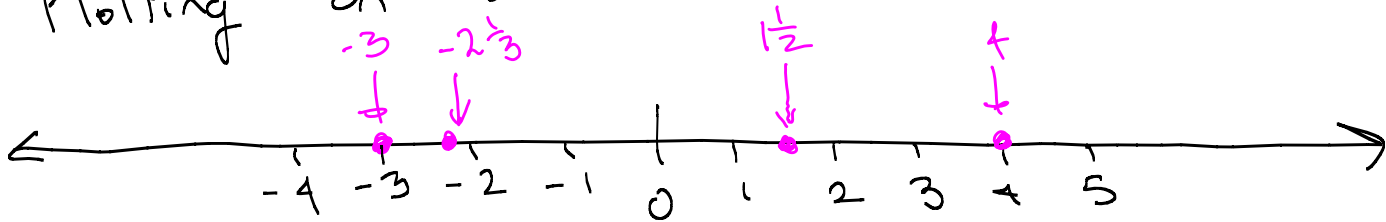


1.1: Intro to Algebra and the set of real numbers.

Note Title

6/5/2017

Plotting on a number line:



Plot -3 , 4 , $1\frac{1}{2}$, $-\frac{7}{3}$

↑ Change to mixed number

$$3\overline{) \frac{7}{6}}$$

$$-\frac{7}{3} = -2\frac{1}{3}$$

$$\text{Note: } -2.33 \neq -2\frac{1}{3}$$

$$-2\frac{1}{3} \approx -2.33$$

$\approx$ approximately equal $\downarrow -2\frac{1}{3} = -2.\bar{3}$

$$\text{Note: } 1\frac{1}{2} = 1.5$$

Opposite: Two numbers are opposite if their sum is 0.

Ex: what is the opposite of -17 ? 17

what is the opposite of $\frac{5}{4}$? $-\frac{5}{4}$

Rational numbers: can be written as the ratio of two integers

$$\text{Ex: } \frac{1}{2}, \frac{2}{3}, -\frac{4}{3}, 5\frac{1}{4}, -2.75, 2.\bar{3}$$

Annotations for the examples above:

- $3 \leftarrow \frac{3}{1}$ (pointing to $\frac{1}{2}$)
- $\frac{2}{3}$ (pointing to $\frac{2}{3}$)
- $\frac{275}{100}$ (pointing to -2.75)
- $2\frac{1}{3} = \frac{7}{3}$ (pointing to $2.\bar{3}$)

Natural Numbers: (Counting Numbers): $1, 2, 3, 4, 5, \dots$

Whole Numbers: $0, 1, 2, 3, 4, 5, \dots$

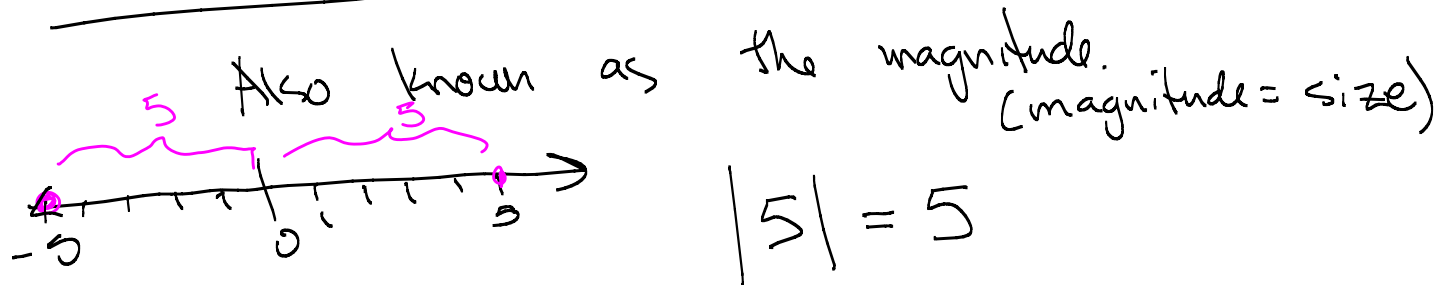
Integers: $\dots, -3, -2, -1, 0, 1, 2, 3, \dots$

Irrational Numbers: cannot write as the ratio of 2 integers:

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

(cannot be written as a decimal that ends or repeats)

Absolute Value: Distance from 0 on number line.



$$|-5| = 5$$

Order of Operations

Multiplication and division precede addition and subtraction.

Multiplication & division are done left to right.

Simplify.

Ex. $6 + (5 - 7(3))$

$$= 6 + (5 - 21)$$

$$= 6 + (-16)$$

$$= 6 - 16$$

$$= \boxed{-10}$$

Ex. $15 - 3^2 + 4(7)$

$$= 15 - 9 + 28$$

$$= 6 + 28$$

$$= \boxed{34}$$

Ex. $\frac{16 - 8 \div 4}{4 + 8 \div 4 - 2}$

$$= \frac{16 - 2}{4 + 2 - 2} =$$

$$\frac{14}{4 + 0} = \frac{14}{4}$$

$$= \frac{14 \div 2}{4 \div 2}$$

$$= \frac{7}{2} = \boxed{\frac{7}{2}}$$

1.3: Addition of Real Numbers

Ex: $4 + (-2) + 6 + (-3)$

$$= 4 - 2 + 6 - 3$$

$$= 2 + 3$$

$$= \boxed{5}$$

Ex: $-18 + 24$

$$= \boxed{6}$$

Ex: $-7 + (-12)$

$$= -7 - 12$$

$$= \boxed{-19}$$

Ex: Translate to an algebraic expression.

5 more than a number

Let x represent the unknown number.

x is a variable.

$$\boxed{5 + x}$$

Ex: 3 less than twice a number

$$2x - 3$$

End of 1.3