W-A2 Algebra 2 Week 2

1-1 Properties of Real Numbers

opposite
change sign

$8 \xrightarrow[\text{opposite}]{} -8$

add opposites = 0

$8 + (-8) = 0$

$-12 \xrightarrow[\text{opposite}]{} 12$

reciprocal (inverse)

$\frac{3}{4} \xrightarrow{\text{reciprocal}} \frac{4}{3}$

$\frac{5}{1} \xrightarrow{\text{reciprocal}} \frac{1}{5}$

$\frac{7}{3} \xrightarrow{\text{reciprocal}} \frac{3}{7}$

multiply two reciprocals

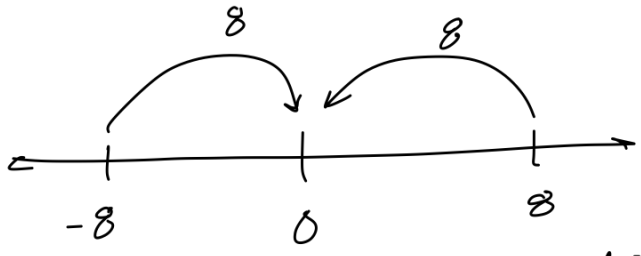
$\frac{7}{3} * \frac{3}{7} = \frac{21}{21} = 1$

$-\frac{6}{5} \xrightarrow{\text{opposite}} \frac{6}{5} \xrightarrow{\text{inverse}} \frac{-5}{6}$ find the slope of the perpendicular line.

absolute value

$|8|$

$|-8|$



$\{|10-16|$

$|-6| = 6$

Absolute value indicates the distance from a number to zero on the number line

$|(10-16)| = |10-6|$

Groups of Numbers

Rational — Ratio

Rational number can be put into a fraction

Irrational Numbers cannot be put into a fraction

Rational

Counting Numbers: 1, 2, 3, 4, 5...

Whole Numbers: 0, 1, 2, 3, 4, 5....

Integers ...-4, -3, -2, -1, 0, 1, 2, 3, 4, 5...
all whole numbers and their opposites.

Terminal decimals $0.36 = \frac{36}{100} = \frac{9}{25}$

Repeating decimals single $0.2222\ldots\ 0.\overline{2} = \frac{2}{9}$

group $0.\overline{142857}142857\ldots = \frac{1}{7}$

$0.8\overline{1}8\overline{2}8\overline{3}\ldots$ no repeat
irrational

$\pi = \frac{C}{d}$?

$\pi = 3.1415925$
irrational ?

Perfect Square $\sqrt{25} = \pm 5$

$\sqrt{0}\ \sqrt{1}\ \sqrt{4}\ \sqrt{9}\ \sqrt{16}\ \sqrt{25}\ \sqrt{36}\ \sqrt{49}\ \sqrt{64}\ldots$

+1 +3 +5 +7 +9 +11 +13 +15

Nonperfect squares ⟶ irrational

Properties of Real Numbers

$28 + 37 + 72 = 137$

$28 + 72 + 37$

$100 + 37 = 137$

$28 + 37 = 37 + 28$

Commutative Property → in Add & Mult order does not matter

Commute Home work write home

$a + b = b + a$

$a * b = b * a$

Associative Property (Add & Mult)

$5 * (20 * 17) = 1700$

$5 * (20 * 17) = (5 * 20) * 17$

$a * (b * c) = (a * b) * c$

Identity Property

$8 + 0 = 8$

$8 * 1 = 8$

$a - 4 = 9$

$+4 \quad +4$

$a + 0 = 13$

$a = 13$

$4\left(\frac{1}{4}\right)b = (3)4$

$b * 1 = 12$

$b = 12$

Inverse Property

Addition $= 0$

$3 + (-3) = 0$

opposite

$a + (-a) = 0$

Multiplication $= 1$

$\frac{3}{1} * \frac{1}{3} = 1$

$\frac{c}{1} * \frac{1}{c} = 1$

Distributive Property

$3(2a + 4) = 3*2a + 3*4$

$6a + 12$

$a(b + c) = ab + ac$

Name all sets of numbers

-5 rational integer

0 rational whole number integer

9 rational integer whole counting

$\sqrt{81}$ rational perfect square

$\sqrt{5}$ irrational

$0.\overline{98}$ rational repeating decimal

$0.723\square$ rational terminal decimal

$0.131619\ldots$ irrational

$\pi + 3 = 3 + \pi$ → commutative property switch order

$(2 + x) + 3 = 2 + (x + 3)$ → associative property

$16(3t + 4v) = 48t + 64v$ → distributive property

$0.01 * 1 = 0.01$ → identity

$7 + (-7) = 0$ → inverse property

opposite

1-2 Algebraic Expressions

$2x = 2 * x$

1.) $(4x+1) + 2x$ $\quad x = 3$

$(4(3)+1) + 2(3)$

$(12+1) + 6$

$13 + 6 = \boxed{19}$

$3y + 4z + 6y - 9z \quad y = 2 \quad z = 1$

$3(2) + 4(\ ) + 6(2) - 9(1)$

$6 + 4 + 12 - 9$

$10 + 12 - 9 = 22 - 9 = \boxed{13}$

$2(m - n^2) - 6(n^2 + 3m)$

combine like terms

$2m - 2n^2 - 6n^2 - 18m$

$2m - 18m \qquad -2n^2 - 6n^2$

$\boxed{-16m - 8n^2}$

HW Ch 1.1 evens
1.2 evens

Quiz 1 due 9/23

HW #2 due Fri 9/30

Quiz 2 due 9/30