1.2 Properties of Real Numbers

Objectives: Classify Real Numbers
Use the properties of real numbers to evaluate expressions

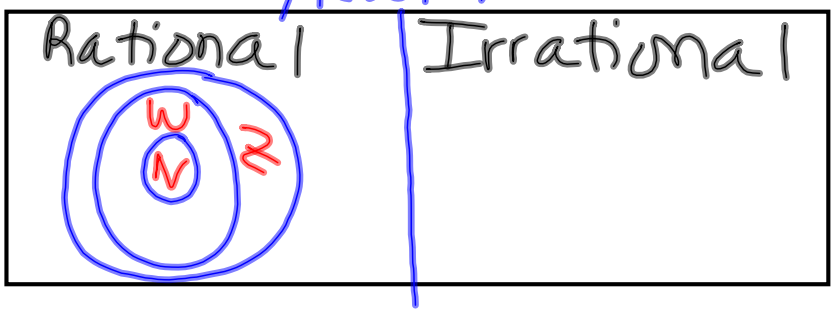
I. Sets of Numbers:

N = natural numbers = 1, 2, 3, 4, 5, . . .
W = whole #s = 0, 1, 2, 3, 4, . . .
Z = integers = . . . -2, -1, 0, 1, 2, 3 . . .
Q = rational #s = any # that can be written as a fraction
I = irrational = π, $\sqrt{3}$, $\sqrt{5}$
R = real numbers = any real #

1.53
$\frac{2}{3}$, 5
$\frac{1}{1.3}$

Rational versus Irrational

Real #s



Ex 1) Name the set to which it belongs...there may be more than one set...

A) -4 Z, Q, R
B) 6.23232323... Q, R
C) -2/3 Q R
D) $\sqrt{6}$ R, I

Properties

Property	Addition	Multiplication
Communtative	$3+2=2+3$	$3\cdot2=2\cdot3$
Associative	$(5+3)+2=5+(3+2)$	$(5\cdot3)2=5(3\cdot2)$
Identity	$7+0=7$	$7\cdot1=7$
Inverse	$7+-7=0$	$7\cdot\frac{1}{7}=1$
Distributive	$a(b+c)=ab+ac$	

Name the property.

Ex 2) (-8 + 8) + 15 = 0 + 15 additive inverse
Ex 3) 5(8 - 6) = 5(8) - 5(6) distributive
Ex 4) 9 + 0 = 9 identity
Ex 5) 4 · ¼ = 1 inverse
Ex 6) 7 · 1 = 7 identy

Find the additive and multiplicative inverse for each number.

	additive $=0$	multiplicative $=1$
Ex 7) $-2\frac{1}{4} = -\frac{9}{4}$	$2\frac{1}{4}$	$-4/9$
Ex 8) -5	5	$-\frac{1}{5}$
Ex 9) 1.5	-1.5	$\frac{2}{3}$
$1\frac{1}{2} = \frac{3}{2}$		

Simplify.

Ex 10) $2(5m + n) + 3(2m - 4n)$

$10m + 2n + 6m - 12n$

$16m + -10n$

Ex 11) $\frac{1}{2}(16 - 4a) - \frac{3}{4}(12 + 20a)$

$8 - 2a - 9 - 15a$

$-1 - 17a$

$\frac{1}{2} \cdot \frac{16}{1} = 8$

$\frac{1}{2} \cdot \frac{4a}{1} = 2a$

$\frac{3}{4} \cdot \frac{12}{1} = 9$

$\frac{3}{4} \cdot \frac{20a}{1} = 15a$