1.1 REAL NUMBERS & NUMBER OPERATIONS

Whole Numbers	0, 1, 2, 3...
Integers	...-3, -2, -1, 0, 1, 2, 3...
Rational Numbers	• Numbers that can be written in the form of a fraction • Decimals that are repeating or terminating
Irrational Numbers	• Numbers that are not rational • Decimals that neither repeat nor terminate

PROPERTIES

	Addition	Multiplication
CLOSURE	$a+b$ is a real number	ab is a real number
COMMUTATIVE	$a+b = b+a$	$ab = ba$
ASSOCIATIVE	$(a+b)+c = a+(b+c)$	$(ab)c = a(bc)$
IDENTITY	$a+0 = a$	$a \cdot 1 = a$
INVERSE	$a+(-a) = 0$	$a \cdot \frac{1}{a} = 1$
DISTRIBUTIVE	$a(b+c) = ab + ac$	

Example 1: Identify the property shown.

a) $14 + 7 = 7 + 14$

Commutative prop of addition

b) $5 \cdot \frac{1}{5} = 1$

inverse prop. of multiplication

c) $-8 + 8 = 0$

inverse prop. of addition

d) $4 + 5 = 9$

Closure prop. of addition

e) $9 = 0 + 9$

identity prop. of addition

SUBTRACTION RULE: Add the opposite.

Ex: $5 - 12 \longrightarrow 5 + -12 = -7$

Example 2

a) What is the sum of 32 and -7?

addition

$32 + -7 = 25$

b) What is the difference of -5 and 8?

subtract

$-5 - 8 = -5 + -8 = -13$

c) What is the product of 9 and -4?

multiply

$9 \cdot -4 = -36$

d) What is the quotient of -5 and $-\frac{1}{2}$?

divide

$-5 \div -\frac{1}{2} = -5 \cdot -2 = 10$