

## 1.1 REAL NUMBERS & NUMBER OPERATIONS

Whole Numbers	0, 1, 2, 3...
Integers	...-3, -2, -1, 0, 1, 2, 3...
Rational Numbers	<ul style="list-style-type: none"> <li>Numbers that can be written in the form of a fraction <math>\frac{12}{7}</math></li> <li>Decimals that are repeating or terminating <math>.5</math> <math>.75</math> <math>.612895</math></li> </ul>
Irrational Numbers	<ul style="list-style-type: none"> <li>Numbers that are not rational</li> <li>Decimals that neither repeat nor terminate</li> </ul>

## 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)  $14 + 7 = 7 + 14$   
comm. prop.

b)  $5 \cdot \frac{1}{5} = 1$   
inverse prop.

c)  $-8 + 8 = 0$   
inverse prop.

d)  $4 + 5 = 9$   
closure prop.

e)  $9 = 0 + 9$   
identity prop.

SUBTRACTION RULE: Add the opposite.

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

Example 2

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

$$32 + (-7) = 25$$

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

$$-5 - 8 = -13$$

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

$$9 \cdot -4 = -36$$

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

$$-5 \div -\frac{1}{2}$$

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