

# INTERMEDIATE ALGEBRA

Excellent! F2

GPS #1

1.1 Describing Data with Set of Numbers

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## Properties of Real Numbers:

- \* Identity (0): The identity for addition is 0;  $a + 0 = a$
- \* Identity (1): The identity for multiplication is 1;  $a \cdot 1 = a$
- \* Commutative:  $a + b = b + a$  and  $a \cdot b = b \cdot a$
- \* Associative:  $(a + b) + c = a + (b + c)$  and  $(a \cdot b) \cdot c = a \cdot (b \cdot c)$
- \* Distributive:  $a(b + c) = ab + ac$  and  $a(b - c) = ab - ac$

Note:  $a, b, c$  are real numbers.

20/10 Good Job!

1. Complete the sets of numbers for the following:

a) Natural Numbers  
= {1, 2, 3, ...}

b) Whole Numbers  
= {0, 1, 2, 3, ...}

c) Integers  
= {..., -2, -1, 0, 1, 2, 3, ...}

2. Classify each real number as one or more of the following: natural number, whole number, integer, rational number or irrational number.

$\left( -1, \frac{3}{2}, 0, \frac{7}{13}, 2, -10, -\sqrt{3}, -\pi, 8, \sqrt{9} = 3 \right)$  all Real number

Natural numbers: 2, 8,  $\sqrt{9} = 3$

Whole numbers: 0, 2, 8,  $\sqrt{9} (3)$

Integers: -1, -10, 0, 2, 8, 3

Rational numbers:  $\frac{3}{2}, \frac{7}{13}, -1, -10, 0, 2, 8, 3$

Irrational numbers:  $-\sqrt{3}, -\pi$

3. State the property of real numbers that justifies the following statements.

a)  $(2 \cdot 4) \cdot x = 2 \cdot (4 \cdot x)$   
Associative

b)  $3 + p = p + 3$   
Commutative

c)  $(1 \cdot 3) \cdot 6 = 3 \cdot 6$

~~A~~ Identity (multi)

d)  $(3 + 2) + 9 = 3 + (2 + 9)$

Associative

4. Apply the distributive property to the following:

a)  $2(x + 5) = 2x + 10$

b)  $7x - 3x + x = x(7 - 3 + 1)$   
Greatest common factor  
 $= 5x$

c)  $8 - 3(x + 3) = 8 - 3x - 9$   
 $= -3x - 1$

d)  $5 - 2(x - 2) = 5 - 2x + 4$   
 $= 9 - 2x$

5. Calculate the average of the list of numbers.

a) 2, 5, 11, 6

$$\frac{2 + 5 + 11 + 6}{4} = 6$$

b) 14, 15, 17, 18, 26

$$\frac{14 + 15 + 17 + 18 + 26}{5} = 18$$