

“First Ten”

- Take out your EOCT HW and pass it to the front.
- Get your Test from Ms. Oldham and finish it.
- No TALKING, please. We are in a test mode. 😊

Turn in your "Equal Sign Worksheet"

Put your new EOCT check in your binder. It will be due next Monday.

Common Algebraic Properties

How much does Hagrid weigh?



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Properties of Equality

- Properties are rules that allow you to **balance**, manipulate, and solve equations

The Addition Property

- If $a = b$, then $a + c = b + c$

EXAMPLE:

$6x - 5 = 13$	GIVEN
$6x - 5 + 5 = 13 + 5$	Addition Property

The Subtraction Property

- If $a = b$, then $a - d = b - d$

EXAMPLE:

$6x + 5 = 11$	GIVEN
$6x + 5 - 5 = 11 - 5$	Subtraction Property

The Multiplication Property

- If $a = b$, then $ac = bc$

EXAMPLE:

$\frac{x}{4} = 10$	GIVEN
$4 \cdot \left(\frac{x}{4}\right) = 10 \cdot 4$	Multiplication Property

The Division Property

- If $a = b$, then $\frac{a}{c} = \frac{b}{c}$

EXAMPLE:

$3x = 18$	GIVEN
$\frac{3x}{3} = \frac{18}{3}$	Division Property

Other Properties

Commutative Property

- Changing the order of addition or multiplication does not matter.
- “Commutative” comes from “commute” or “move around”, so the Commutative Property is the one that refers to moving stuff around.

Commutative Property

—Addition:

$$a + b = b + a$$

▪ Ex: $1 + 9 = 9 + 1$

Commutative Property

- Multiplication:

$$a \cdot b = b \cdot a$$

- Ex: $8 \cdot 6 = 6 \cdot 8$

The Commutative Property

- $a + b = b + a$
- $a \cdot b = b \cdot a$

EXAMPLE:

$6x - 5 = 13$	GIVEN
$6x - 5 + 5 = 13 + 5$	Addition Property

Associative Property

- The change in grouping of three or more terms/factors does not change their sum or product.
- “Associative” comes from “associate” or “group”, so the Associative Property is the one that refers to grouping.

Associative Property

—Addition:

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

▪ Ex: $1 + (7 + 9) = (1 + 7) + 9$

Associative Property

- Multiplication:

$$a \cdot (b \cdot c) = (a \cdot b) \cdot c$$

- Ex: $8 \cdot (3 \cdot 6) = (8 \cdot 3) \cdot 6$

The Associative Property

- $a + (b + c) = (a + b) + c$
- $a \cdot (b \cdot c) = (a \cdot b) \cdot c$

EXAMPLE:

$6x - 5 = 13$	GIVEN
$6x - 5 + 5 = 13 + 5$	Addition Property

Distributive Property

- The product of a number and a sum is equal to the sum of the individual products of terms.

Distributive Property

- $a \cdot (b + c) = a \cdot b + a \cdot c$

- Ex: $5 \cdot (x + 6) = 5 \cdot x + 5 \cdot 6$

The Distributive Property

- Given $a + x$ then $d(a + x) = da + dx$

EXAMPLE:

$4(2x + 3)$	GIVEN
$8x + 12$	Distributive Property

The Substitution Property

- If $a = b$, then you can replace a with b in ANY situation
- Substitution is what we do when we combine like terms

EXAMPLE:

$3x - 5 = 13$	GIVEN
$3x - 5 + 5 = 13 + 5$	Addition Property
$3x = 18$	SUBSTITUTION property

Notice how the $13 + 5 = 18$. THAT is substitution

Properties of Equality, Practice

1.

Equation	Steps
$x - 1.2 = 1.9$	Original equation
$x = 3.1$	

Properties of Equality Practice

2.

Equation	Steps
$5x = 37$	Original equation
$x = 7.4$	

Properties of Equality Practice

3.

Equation	Steps
$2x + 3 = 15$	Original equation
$2x = 12$	Subtraction property of equality
$x = 6$	

4.

Equation	Steps
$19 = 2x - 7$	Original equation
$26 = 2x$	
$13 = x$	Division property of equality
$x = 3$	Symmetric property of equality

5.

Equation	Steps
$x + (x - 0.6) = 2$	Original equation
$2x - 0.6 = 2$	Associative property of addition
	Addition property of equality
$x = 1.3$	

Prop 6.

Equation	Steps
$x + (4x + 32) = 12$	Original equation
$5x + 32 = 12$	Associative property of addition
$5x = -20$	
	Division property of equality

7.

Equation	Steps
$4(x - 6) = 40$	Original equation
$x - 6 = 10$	
$x = 16$	

8.

Equation	Steps
$1.4 - 0.3x + 0.7x = 9.4$	Original equation
$1.4 + 0.4x = 9.4$	
$0.4x = 8$	
$x = 20$	

How much does Hagrid weigh?



How much does Hagrid weigh?

Dear Ms. Wise,

Thank you for your inquiry.

I do so love riddles. I hope you do, too.

Sincerely,

J.K. Rowling

How much does Hagrid weigh?



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Identify the property of equality that justifies each missing step or equation.		
	Equation	Steps
a)	$2(2x + 125) = 4(125) + 10(500) - 250 - x$	
a)	$4x + 250 = 500 + 5,000 - 250 - x$	
a)	$4x + 250 = 5,250 - x$	
a)	$5x + 250 = 5,250$	
a)	$5x = 5,000$	
a)	$x = 1,000$	

Homework

Worksheet

