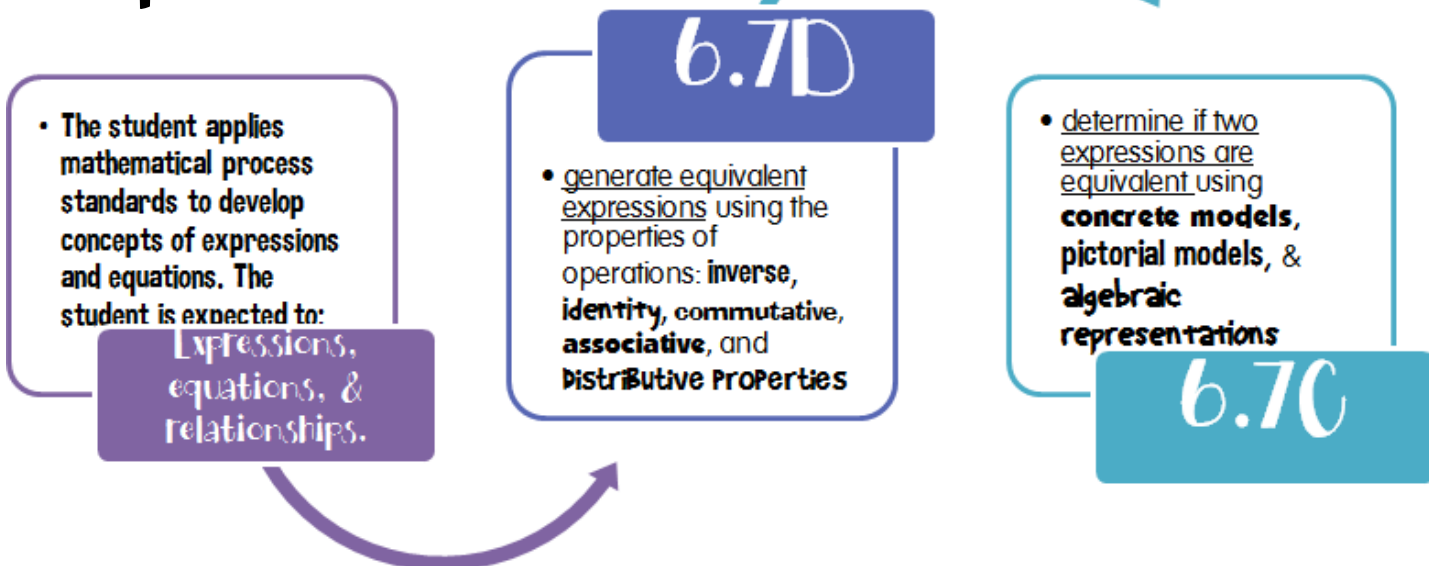


Properties of Numbers



My teacher's learning goals for me are that I will be able to:

- generate **equivalent expressions**
 - using the
 - **inverse** number property.
 - **identity** number property.
 - **commutative** number property.
 - **associative** number property.
- determine if expressions are equivalent and justify my reasoning using the number properties.

I will master the **learning goals** for Properties of Numbers with at least _____ mastery by:

- 1) Asking questions when I'm not sure of something and answering questions when I know the answer.
- 2) _____
- 3) _____

Equivalent Expressions Using Properties

Commutative Properties The order in which two numbers are added or multiplied does not change their sum or product.

$$7 + 9 = 9 + 7 \quad 4 \cdot 6 = 6 \cdot 4$$

$$a + b = b + a \quad a \cdot b = b \cdot a$$

Associative Properties The way in which three numbers are grouped when they are added or multiplied does not change their sum or product.

$$3 + (9 + 4) = (3 + 9) + 4 \quad 8 \cdot (5 \cdot 7) = (8 \cdot 5) \cdot 7$$

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

Identity Properties The sum of an addend and 0 is the addend. The product of a factor and 1 is the factor.

$$13 + 0 = 13 \quad 7 \cdot 1 = 7$$

$$a + 0 = a \quad a \cdot 1 = a$$

Inverse Properties The sum of an addend and its additive inverse is 0. The product of a factor and its multiplicative inverse is 1.

$$6 + (-6) = 0 \quad 6 \cdot \frac{1}{6} = 1$$

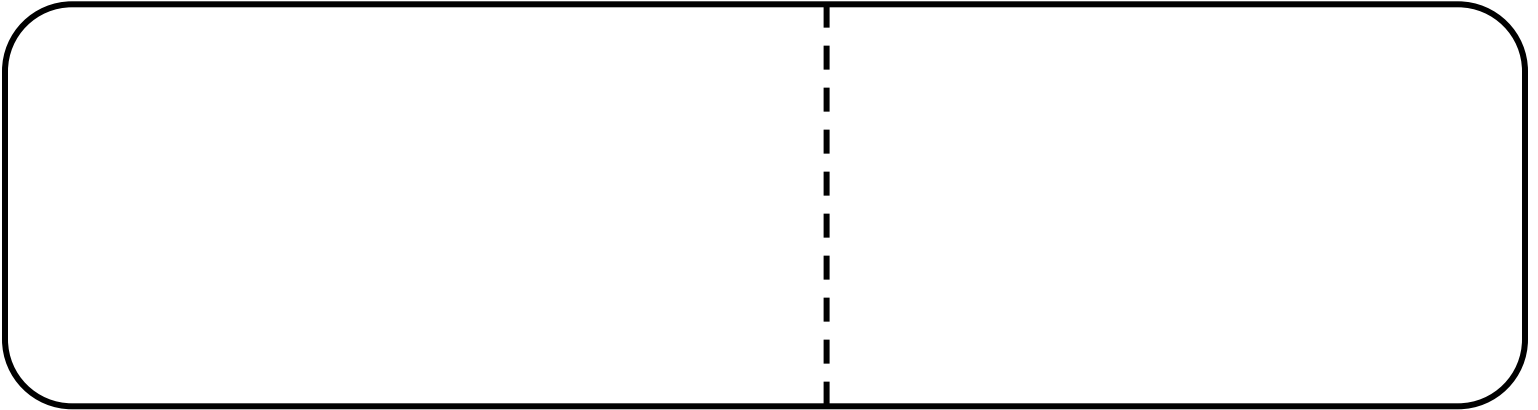
$$a + (-a) = 0 \quad a \cdot \frac{1}{a} = 1$$

The two operations we use with the Properties of Numbers are _____ and _____.

TERM: Commutative Properties My level of understanding: 1 2 3 4

My DESCRIPTION of this term: _____

My PICTURE to help me remember this term:

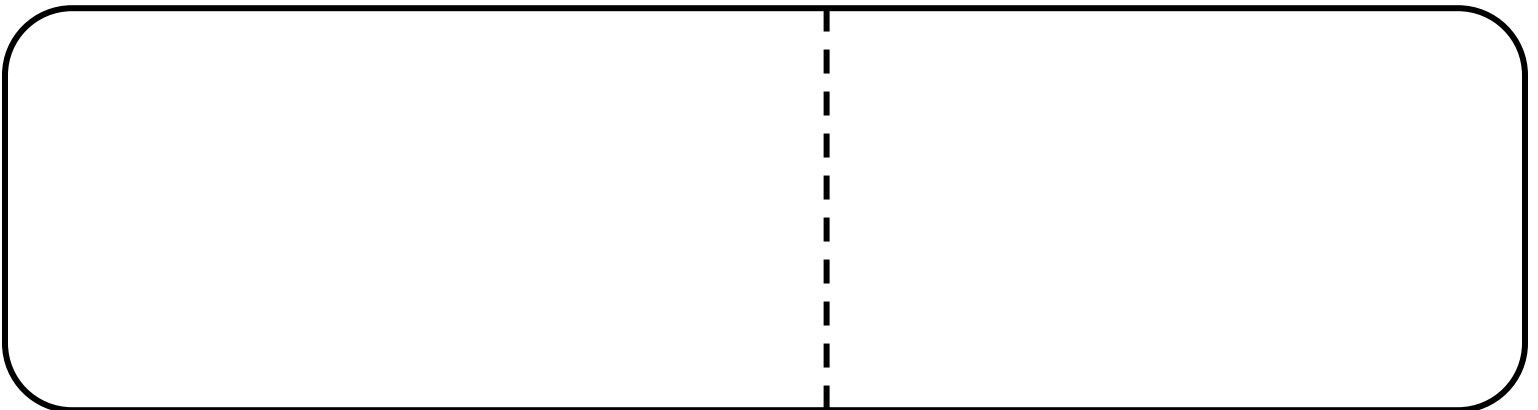


<http://education-portal.com/academy/lesson/the-commutative-property-definition-and-examples.html>

TERM: Associative Properties My level of understanding: 1 2 3 4

My DESCRIPTION of this term: _____

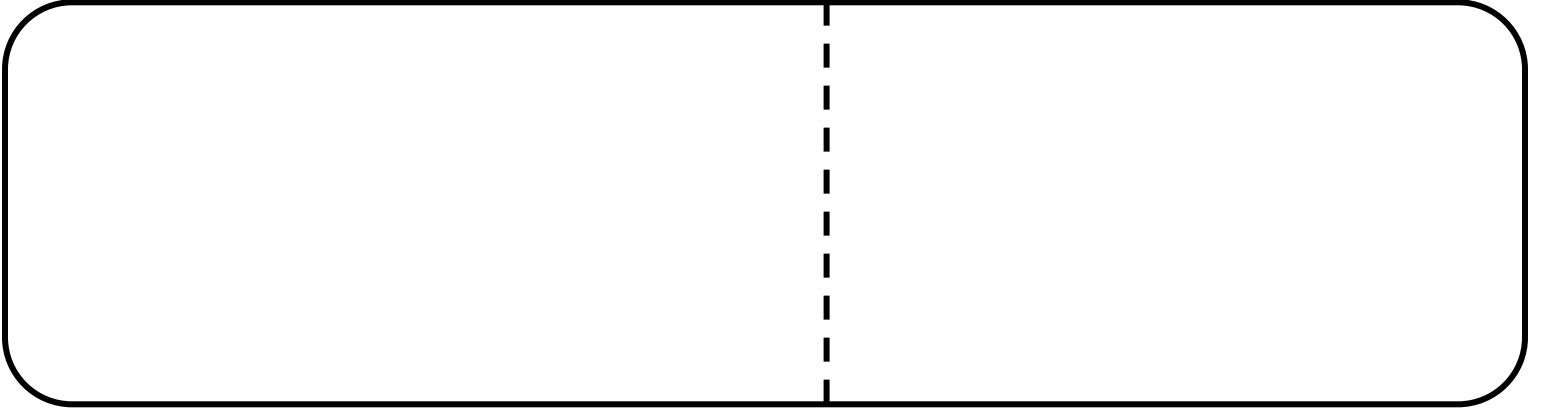
My PICTURE to help me remember this term:



TERM: Identity Properties My level of understanding: 1 2 3 4

My DESCRIPTION of this term: _____

My PICTURE to help me remember this term:



TERM: Inverse Properties My level of understanding: 1 2 3 4

My DESCRIPTION of this term: _____

My PICTURE to help me remember this term:



Properties of Numbers I do...and you follow along and process

Part I: Identity and Inverse Properties

Use either + or × symbol to complete the equation. Then identify the property used as either identity or inverse.

A. $2 \square 0 = 2$

Property:

B. $5 \square \frac{1}{5} = 1$

Property:

C. $2 \square (-2) = 0$

Property:

C. $\frac{1}{10} \square 10 = 1$

Property:

D. $0 \square 8 = 8$

Property:

E. $1 \square 12 = 12$

Property:

Part II: Commutative and Associative Properties

The equations in each problem are equivalent. Fill in the missing number and write the property used.

F.
 $5 + \underline{\hspace{2cm}} = 11$
 $6 + 5 = \underline{\hspace{2cm}}$

Property:

G.
 $4 \times (7 \times 2) = \underline{\hspace{2cm}}$
 $(4 \times 7) \times \underline{\hspace{2cm}} = 56$

Property:

H.
 $11 + 7 = \underline{\hspace{2cm}}$
 $7 + \underline{\hspace{2cm}} = 18$

Property:

I.
 $(\underline{\hspace{2cm}} + 8) + 3 = 15$
 $4 + (8 + 3) = \underline{\hspace{2cm}}$

Property:

J.
 $2 \times 5 = \underline{\hspace{2cm}}$
 $\underline{\hspace{2cm}} \times 2 = 10$

Property:

K.
 $(7 \times 5) \times 8 = \underline{\hspace{2cm}}$
 $7 \times (5 \times \underline{\hspace{2cm}}) = 280$

Property:

Part III: Identify the Property

Name which property is modeled in the equation: identity, inverse, associative or commutative.

L. $4 + 9 = 9 + 4$

Property:

M. $2 \times \frac{1}{2} = 1$

Property:

N. $11 \times (7 \times 5) = (11 \times 7) \times 5$

Property:

O. $2 + 0 = 2$

Property:

P. $6 \times 4 = 4 \times 6$

Property:

Q. $(9 + 2) + 6 = 9 + (2 + 6)$

Property:

R. $5 \times 1 = 5$

Property:

S. $-3 + 3 = 0$

Property: