

Name: Key  
4<sup>th</sup> Grade Notes 3.5 Multiplication Properties and Division Rules  
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A.) commutative (comm.) property of multiplication

-numbers can switch places and the product stays the same (the product is the answer to a multiplication problem)

\*this doesn't work for division

\*each side has to have the same numbers

Ex:  $4 \times 2 = 8$   
 $2 \times 4 = 8$  > same answer  
when #s switched

B.) associative (assoc.) property of multiplication

-how numbers are grouped doesn't matter; the product stays the same (\*the numbers stay in the same order; only the parentheses move or you can make your own parentheses)

\*this doesn't work for division

\*each side has to have the same numbers

\*solve what's in the parentheses first

Ex:  $(2 \times 4) \times 3$   
 $8 \times 3 = 24$   
 $2 \times (4 \times 3)$   
 $2 \times 12 = 24$   
Same answer  
when grouped  
differently

C.) identity property of multiplication

-the product of any number and one is that number

Ex:  $5 \times 1 = 5$   
 $1 \times 100 = 100$

*(Arrows labeled "same" point from the first number to the result in both equations.)*

D.) zero property of multiplication (multi)

-the product of any number and zero is zero

Ex:  $60 \times 0 = 0$

E.) divisibility (divis) rules of one

-any number divided by one equals itself

Ex:  $10 \div 1 = 10$

*(An arrow labeled "same" points from the dividend to the quotient.)*

-any number divided by itself equals one

(except zero )

Ex:  $7 \div 7 = 1$

*(An arrow labeled "same" points from the dividend to the divisor.)*

F.) divisibility rules of zero

- zero divided by any number equals zero

Ex:  $0 \div 10 = 0$

-you cannot divide any number by zero

Ex:  ~~$5 \div 0$~~  doesn't work