

### Multiplication Table:

x	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

Order of Operations
Parentheses
Exponents
Multiplication & Division
Addition & Subtraction

### Long Multiplication: Standard Algorithm

$$\begin{array}{r}
 \phantom{00}846 \times \phantom{0}21 \\
 \phantom{00}1692 \phantom{0} \\
 \phantom{00}16920 \phantom{0} \\
 \hline
 17766
 \end{array}$$

+1  
 8 4 6 → Factor  
 x 2 1 → Factor  
 +1  
 8 4 6 } Partial Products  
 + 1 6 9 2 0  
 1 7, 7 6 6 → Product

### Algebraic Expressions & Variables:

An **Algebraic Expression** is a math phrase which can contain numbers, operators (+, -, x, or ÷) & at least one variable.

**Variable** is a symbol or letter that stands for a number.

Example:  $16(n + 20) = 544$   $n = 14$

### Function Tables / Table of x & y Values:

Function:  $p = g(12 + 1)$

g	p	g	Function	p
7	?	7	$7(12+1)$	91
8	104	8	$8(12+1)$	104
9	?	9	$9(12+1)$	117
10	?	10	$10(12+1)$	120

### Place Value with Decimals:

DECIMALS	HUNDREDTHS	
	TENTHS	
.		
ONES	ONES	
	TENS	
	HUNDREDS	
THOUSANDS	THOUSANDS	
	TEN THOUSANDS	
	HUNDRED THOUSANDS	

### Properties of Multiplication

**Zero Property**  
 $A \times \text{zero} = \text{zero}$

**Identity Property**  
 $A \times 1 = A$

**Commutative Property**  
 $A \times B = B \times A$

**Distributive Property**  
 $A \times (B + C) = (A \times B) + (A \times C)$

**Associative Property**  
 $(A \times B) \times C = A \times (B \times C)$