

COMMUTATIVE LAW of MULTIPLICATION

This means numbers can be multiplied in any order.

$$3 \times 10 \times 5 = 3 \times 5 \times 10$$

We can rearrange the order in which we multiply to make combinations that are easier to multiply.

Is it easier to solve $3 \times 10 \times 6$ or is it easier to solve $3 \times 6 \times 10$

X	1	2	3	4	5	6	7	8	9	10
1	1	2	3	4	5	6	7	8	9	10
2	2	4	6	8	10	12	14	16	18	20
3	3	6	9	12	15	18	21	24	27	30
4	4	8	12	16	20	24	28	32	36	40
5	5	10	15	20	25	30	35	40	45	50
6	6	12	18	24	30	36	42	48	54	60
7	7	14	21	28	35	42	49	56	63	70
8	8	16	24	32	40	48	56	64	72	80
9	9	18	27	36	45	54	63	72	81	90
10	10	20	30	40	50	60	70	80	90	100

$$13 \times 5 =$$

$$(10+3) \times 5$$

$$(\text{ } \times \text{ }) + (\text{ } \times \text{ })$$

$$\text{ } + \text{ }$$

$$24 \times 4 =$$

$$(20+4) \times 4$$

$$(\text{ } \times \text{ }) + (\text{ } \times \text{ })$$

$$\text{ } + \text{ }$$

$$12 \times 13 =$$

$$(10+2) \times 13$$

$$(\text{ } \times \text{ }) + (\text{ } \times \text{ })$$

$$\text{ } + \text{ }$$

$$22 \times 35 =$$

$$(20+2) \times 35$$

$$(\text{ } \times \text{ }) + (\text{ } \times \text{ })$$

$$\text{ } + \text{ }$$

$$40 \times 6 =$$

$$4 \times 10$$

$$\text{ } \times \text{ } \times 6$$

$$\text{ } \times \text{ } \times 10$$

$$50 \times 7 =$$

$$5 \times 10$$

$$\text{ } \times \text{ } \times 7$$

$$\text{ } \times \text{ } \times 10$$

$$30 \times 9 =$$

$$40 \times 4 =$$

$$80 \times 3 =$$

$$60 \times 9 =$$

$$400 \times 5 =$$

$$600 \times 8 =$$

DISTRIBUTIVE LAW of MULTIPLICATION

Groups of the same number can be split into parts.

XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX XXXXXX

$$4 \times 6 + 2 \times 4 = 6 \times 6$$

$$(4 \text{ groups of } 6) + (2 \text{ groups of } 6) = 6 \text{ groups of } 6$$

$$(6 \text{ groups of } 6) \text{ is the same as } (4 \text{ groups of } 6) + (2 \text{ groups of } 6)$$

$$(4 \text{ groups of } 6) + (2 \text{ groups of } 6) = 6 \text{ groups of } 6$$

$$\text{so } \dots\dots\dots 6 \times 6 = (4 \times 6) + (2 \times 6)$$

$$22 \times 35$$

$$22 \text{ groups of } 35 = (20 \text{ groups of } 35) + (2 \text{ groups of } 35)$$

$$22 \times 35 =$$

$$(20 + 2) \times 35 =$$

$$(20 \times 35) + (2 \times 35)$$

$$= 350 + 70$$

$$= 420$$

Build Up Strategy

$$\text{If } 4 \times 5 = 20$$

$$\text{then } 5 \times 5 = 25$$

$$\text{and } 6 \times 5 = 30$$

$$+5$$

$$+5$$

We add 1 group of 5 as we build up.

Try these:

Try Building Down

$$2 \times 7 = 14$$

$$20 \times 4 = 80$$

$$40 \times 4 = 160$$

$$3 \times 7 =$$

$$21 \times 4 =$$

$$39 \times 4 =$$

$$4 \times 7 =$$

$$22 \times 4 =$$

$$38 \times 4 =$$

$$10 \times 6 = 60$$

$$30 \times 6 = 180$$

$$40 \times 5 = 200$$

$$11 \times 6 =$$

$$31 \times 6 =$$

$$19 \times 5 =$$

$$12 \times 6 =$$

$$32 \times 6 =$$

$$18 \times 5 =$$