

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

$$23 \times 8 =$$

$$(20+3) \times 8$$

$$\underline{\quad} + \underline{\quad}$$

$$14 \times 8 =$$

$$(10+4) \times 8$$

$$\underline{\quad} + \underline{\quad}$$

$$27 \times 8 =$$

$$\underline{\quad} + \underline{\quad}$$

$$12 \times 25 =$$

$$\underline{\quad} + \underline{\quad}$$

$$14 \times 55 =$$

$$\underline{\quad} + \underline{\quad} + \underline{\quad}$$

$$20 \times 9 =$$

$$2 \times 10$$

$$2 \times \underline{\quad} \times 9$$

$$\underline{\quad} \times \underline{\quad} \times 10$$

$$30 \times 8 =$$

$$3 \times 10$$

$$3 \times \underline{\quad} \times 8$$

$$\underline{\quad} \times \underline{\quad} \times 10$$

$$90 \times 6 =$$

$$40 \times 7 =$$

$$80 \times 8 =$$

$$20 \times 8 =$$

$$300 \times 7 =$$

$$200 \times 6 =$$

DISTRIBUTIVE LAW of MULTIPLICATION

Groups of the same number can be split into parts.

$$\begin{array}{l} \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \\ \text{XXXXX X} \end{array} \quad \begin{array}{l} 12 \times 6 \\ \\ \\ \\ \\ 10 \times 6 \\ \\ \\ \\ 2 \times 6 \end{array}$$

$$12 \times 6$$

The 12 groups can be split into:

10 groups + **2 groups**

so

$$12 \times 6 =$$

$$(10 \times 6) + (2 \times 6)$$

$$60 + 12$$

Build Up Strategy

$$\begin{array}{l} \text{If } 4 \times 5 = 20 \\ \text{then } 5 \times 5 = 25 \\ \text{and } 6 \times 5 = 30 \end{array} \quad \begin{array}{l} +5 \\ +5 \end{array}$$

We add 1 group of 5 as we build up.

Try these:

Try Building Down

$$5 \times 6 = 30$$

$$20 \times 6 = 120$$

$$10 \times 8 =$$

$$6 \times 6 =$$

$$21 \times 6 =$$

$$9 \times 8 =$$

$$7 \times 6 =$$

$$22 \times 6 =$$

$$8 \times 8 =$$

$$10 \times 7 = 70$$

$$20 \times 7 = 140$$

$$20 \times 7 = 140$$

$$11 \times 7 =$$

$$21 \times 7 =$$

$$19 \times 7 =$$

$$12 \times 7 =$$

$$22 \times 7 =$$

$$18 \times 7 =$$