

### 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

$$24 \times 6 =$$

$$(20+4) \times 6$$

$$(\underline{\quad} \times \underline{\quad}) + (\underline{\quad} \times \underline{\quad})$$

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

$$63 \times 6 =$$

$$(60+3) \times 6$$

$$(\underline{\quad} \times \underline{\quad}) + (\underline{\quad} \times \underline{\quad})$$

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

### Half and Double to simplify

$$18 \times 5 =$$

$$\times 10 =$$

$$14 \times 5 =$$

$$\times 10 =$$

$$22 \times 5 =$$

$$\times 10 =$$

$$46 \times 5 =$$

$$\times 10 =$$

$$16 \times 35 =$$

$$\times 70 =$$

$$48 \times 25 =$$

$$\times 50 =$$

$$\times 100 =$$

$$88 \times 25 =$$

$$\times 50 =$$

$$\times 100 =$$

$$50 \times 9 =$$

$$\begin{array}{c} x \\ \times \\ x \end{array}$$

$$4 \times 40 =$$

$$7 \times 70 =$$

$$8 \times 80 =$$

$$6 \times 30 =$$

### DISTRIBUTIVE LAW of MULTIPLICATION

Groups of the same number can be split into parts.

$$6 \times 4$$

XXXX XXXX XXXX XXXX XXXX XXXX

$$3 \times 4 + 3 \times 4 = 6 \times 4$$

(3 groups of 4) + (3 groups of 4) = 6 groups of 4

(6 groups of 4) is the same as (3 groups of 4) + (3 groups of 4)

$$3 \text{ groups of } 4 + 3 \text{ groups of } 4 = 6 \text{ groups of } 4$$

so .....  $6 \times 4 =$

$$3 \times 4 + 3 \times 4$$

$$12 \times 35$$

12 groups of 35 = (10 groups of 35) + (2 groups of 35)

$$12 \times 35 =$$

$$(10 + 2) \times 35 = 10 \times 35 + 2 \times 35$$

$$= 350 + 70$$

Area Model  $47 \times 36 =$



$$58 \times 26 =$$

