

## Key Vocabulary

multiply

groups of

lots of

times

divide

share

remainder

factor

multiple

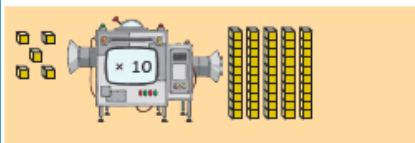
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## Multiply and Divide by 1, 10 and 100



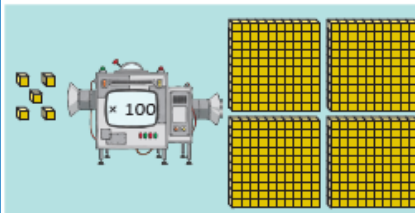
$5 \times 1 = 5$   
 $5 \div 1 = 5$

When we multiply a number by 1, the number stays the same.



$5 \times 10 = 50$   
 $50 \div 10 = 5$

When we multiply a number by 10, each digit gets 10 times bigger and moves up to the next place value column



$5 \times 100 = 500$   
 $500 \div 100 = 5$

When we multiply a number by 100, each digit gets 100 times bigger and moves up two place value columns.

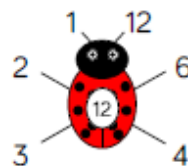
## Factor pairs



The factors of 20 are 1, 2, 4, 5, 10 and 20.

The factor pairs are:

1 and 20    2 and 10    4 and 5



Factor bug for 12

$1 \times 12$

$2 \times 6$

$3 \times 4$

Factor pairs using counters



## Multiplication and Division Facts

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

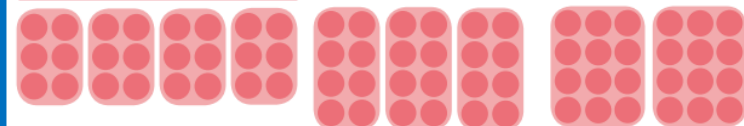
## Multiplying 3 numbers

When **multiplying 3 numbers**, it doesn't matter how numbers are grouped when multiplying.  $3 \times 2 \times 4 = 24$

$(2 \times 3) \times 4 = 24$

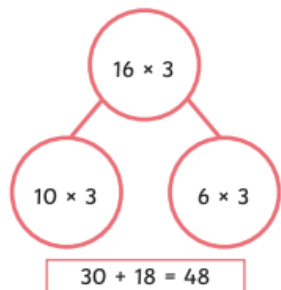
$(2 \times 4) \times 3 = 24$

$(3 \times 4) \times 2 = 24$

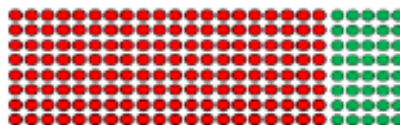


# Efficient multiplication

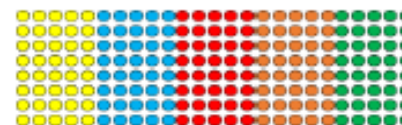
We can develop our mental multiplication skills by exploring different ways to multiply. We can **partition** two-digit numbers into tens and ones or into **factor pairs** in order to multiply one and two digit numbers. These methods can be used to make multiplication more flexible and efficient.



$25 \times 8$   
 $20 \times 8 + 5 \times 8 = 160 + 40 = 200$



$25 \times 8$   
 $5 \times 5 \times 8 = 5 \times 40 = 200$



## Written method for multiplication

Th	H	T	O
	5	4	3
$\times$			4
		1	2
	1	6	0
2	0	0	0
2	1	7	2

$(4 \times 3)$   
 $(4 \times 40)$   
 $(4 \times 500)$

Th	H	T	O
	5	4	3
$\times$			4
2	1	7	2
	1	1	

Remember to move any regrouped numbers into the next column. After the next multiplication, add the regrouped number to the answer.

## Written method for division

$69 \div 3 = 23$

		23
3	$\overline{) 69}$	
	69	
23	23	23

## Correspondence problems / Integer scaling problems

An ice-cream van has 4 flavours of ice-cream and 2 choices of toppings.

Ice-cream flavour	Toppings
Vanilla	Sauce
Chocolate	Flake
Strawberry	
Banana	

How many different combinations of ice-cream and toppings can be made?

### Combinations

- VS VF
  - CS CF
  - SS SF
  - BS BF
- $4 \times 2 = 8$

There are 8 combinations

75g



$75g \times 2 = 150g$

