

Year 4 Multiplication and Division

Key Vocabulary
array
odd
even
inverse
commutative
mathematical statements
scaling
integer
correspondence
exchange
derived facts
factor pairs
formal written layout
distributive law
remainders

X	0	1	2	3	4	5	6	7	8	9	10	11	12
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10	11	12
2	0	2	4	6	8	10	12	14	16	18	20	22	24
3	0	3	6	9	12	15	18	21	24	27	30	33	36
4	0	4	8	12	16	20	24	28	32	36	40	44	48
5	0	5	10	15	20	25	30	35	40	45	50	55	60
6	0	6	12	18	24	30	36	42	48	54	60	66	72
7	0	7	14	21	28	35	42	49	56	63	70	77	84
8	0	8	16	24	32	40	48	56	64	72	80	88	96
9	0	9	18	27	36	45	54	63	72	81	90	99	108
10	0	10	20	30	40	50	60	70	80	90	100	110	120
11	0	11	22	33	44	55	66	77	88	99	110	121	132
12	0	12	24	36	48	60	72	84	96	108	120	132	144

Multiplying and Dividing by 10 and 100 Mentally Using Place Value

$$7 \times 1 = 7$$

$$7 \times 10 = 70$$

$$7 \times 100 = 700$$

With multiplication the amount of zeros tells you how many places you need to move to the left.

$$9 \times 100$$

Thousands	Hundreds	Tens	Ones
			9
	9	0	0

Visualising a place value chart can help.

$$800 \div 1 = 800$$

$$800 \div 10 = 80$$

$$800 \div 100 = 8$$

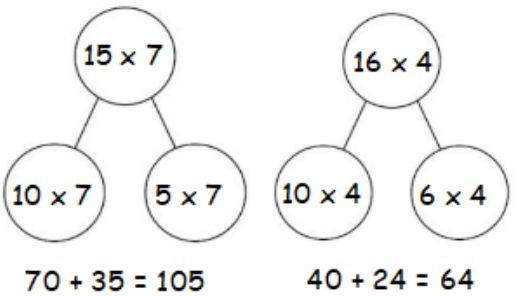
With division the amount of zeros tells you how many places you need to move to the right.

$$600 \div 10 = 60$$

Thousands	Hundreds	Tens	Ones
	6	0	0
		6	0

Partitioning to Multiply Mentally

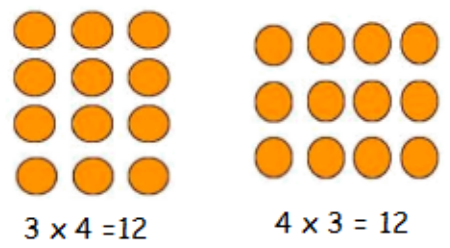
Partitioning 2-digit numbers can help make mental multiplication more manageable.



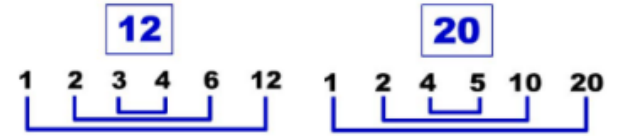
Commutativity



Commutativity in multiplication means you can multiply numbers in any order and get the same answer.



Factor Pairs



The factors for 12 are 1, 2, 3, 4, 6 and 12.

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

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Multiplying 3 Numbers

$$(3 \times 2) \times 5 = 30$$



$$6 \times 5 = 30$$

$$4 \times (2 \times 5) = 40$$



$$4 \times 10 = 40$$

The 'Associative Law' means that it doesn't matter how we group numbers when we multiply, we still get the same answer.



Formal Written Multiplication

Th	H	T	O
	4	6	2
x			4
		8	(4 × 2 = 8)
	2	4	0 (4 × 60 = 240)
1	6	0	0 (4 × 400 = 1600)
1	8	4	8

Th	H	T	O
	4	6	2
x			4
			8
1	8	4	8
1	2		

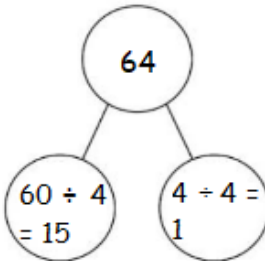
Remember to move regrouped numbers into the next column. For instance, $4 \times 60 = 240$ so the 4 goes into the tens column and the 2 goes underneath the hundreds column. You then need to add the regrouped numbers to the answer.



Without Exchange

Tens	Ones
10 10	1 1 1
10 10	1
10 10	

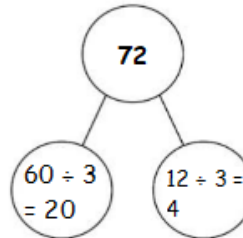
$$64 \div 4 = 16$$



With Exchange

Tens	Ones
10 10	1 1 1 1
10 10	1 1 1 1
10 10	1 1 1 1
10	

$$72 \div 3 = 24$$



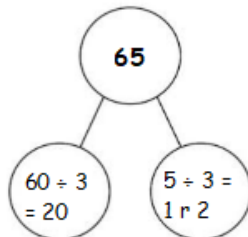
Exchange one ten for 10 ones so you can do $60 \div 3 = 20$ and $12 \div 3 = 4$.

Division

With Remainders

Tens	Ones
10 10	1
10 10	1 1
10 10	

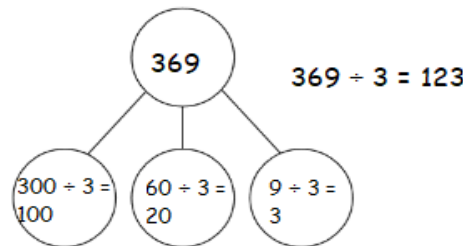
$$65 \div 3 = 21 \text{ r } 2$$



Remember that the remainder can never be bigger than the number you are dividing by.

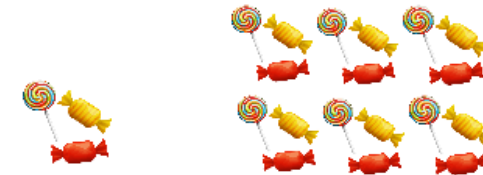
3- digits by 1-digit

Hundreds	Tens	Ones
100 100	10 10 10	1 1 1
100	10 10 10	1 1 1



Integer Scaling Problems

Bags of sweets weigh 25 grams. If I buy 6 bags, how much will it weigh in total.



25g

$$25g \times 6 = 150g$$

Correspondence Problems

A sandwich shop has 2 types of bread and 5 choices of filling. How many different combinations of sandwich can be made?

Bread	Fillings
White	Cheese
Wholemeal	Tuna
	Chicken Mayo
	Prawn
	Ham

$$2 \times 5 = 10$$

There are 10 combinations.