Topic: Multiply and divide 4 digit numbers	Year: Five	Theme: Multiplication and Division

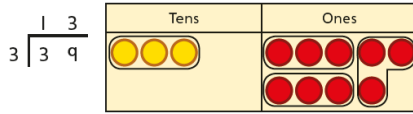## Key concepts and questions

What is a factor?

- Use division and place value grids to check for remainders, if there is no remainder then the divisor is a factor of the whole. For example, $39 \div 3 = 13$, there are no remainders so 3 (the divisor) is a factor of 39.

What is a prime factor?

- Use a factor tree to find the prime factor each branch stops when it reaches a prime number. These prime numbers a the prime factors of the whole.
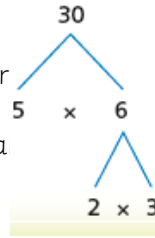
Key Vocabulary

multiply	divide	multiple	place value
commutative	Multiplication can be done in any order e.g. 6x4=24 and 4x6=24	composite number	Divides by itself, one and other integers
		prime number	Divides by itself and one
remainder	A left over part	square	Multiply a number by itself , $8 \times 8 = 8^2$
multiple	The numbers in a times table e.g. 2, 4, 6, 8 are multiples of 2	square number	The product of a number multiplied by itself
factor	Divides a whole with no remainders e.g. 3 is a factor of 6 as $6 \div 3 = 2$	cube	Multiply a number by itself twice, $8 \times 8 \times 8 = 8^3$
prime factor	A factor that is a prime number.	cube number	The product of a number multiplied by itself 3 times

Making connections

Place Value Ensure columns are lined up accurately.

Partitioning For example, this is a 20 not a 2. so there needs to be a place holder when multiplying by it.

	3	4	
×	2	7	
2 3	8		34 × 7
+ 6 8	0		34 × 20
9 1	8		34 × 27

Column Addition When you have multiplied, you will need to use column addition to find the answer.
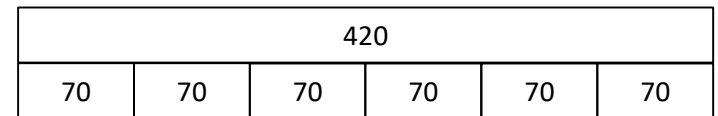
Efficient methods

Use known multiplication and division facts.

2 x 8 = 16 so 20 x 8 = 160 and 200 x 8 = 1,600

6 ÷ 2 = 3 so 60 ÷ 2 = 30 and 60 ÷ 20 = 3

Representations

Arrays

This array shows 3x5, 5x3, 15÷3 and 15÷5. They can be made with concrete resources or drawn.

420					
70	70	70	70	70	70

Bar models 70x6=420 and 420 ÷ 6 = 70

Multiplication grids Help with identifying common factors, common multiples and square numbers.

×	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