Multiplication and Division

Year 2

Multiplication as Repeated Addition

Understand the difference between equal and unequal groups.

The ___ have been grouped.

We can represent equal groups as repeated addition.

There are 3 groups of 5.

5 + 5 + 5

3 × 5

5 + 5 + 5 = 3 × 5

We can represent repeated addition using a multiplication expression.
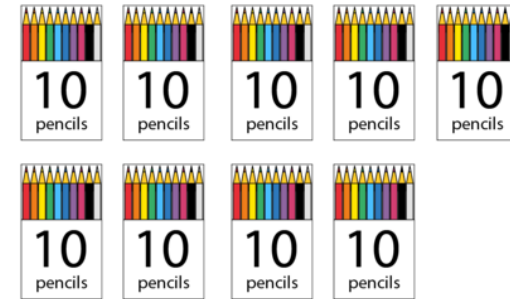
The 3 represents the number of groups.

The 5 represents the number of eggs in each group.

15 represents the total number of eggs.

The ___ represents the number of groups.

The __ represents the number of ___ in each group.

___ represents the total number of ___.

9 × 10

We can skip count in multiples of __ to work out the total amount.

10, 20, 30, 40 … there are 90 pencils altogether.

7 × 2

Notice how the representations allow the children to see each of the numbers (i.e. 10 pencils and 9 packets).

Multiplication and Division

Year 2

Grouping problems: missing factors and division

$3 \times 5 = 15$
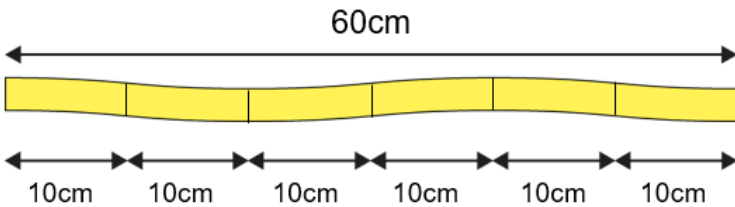
$15 \div 5 = 3$

We can solve division problems by finding missing factors.

The 15 represents the number of biscuits.

The 5 represents the number of biscuits in each bag (group).
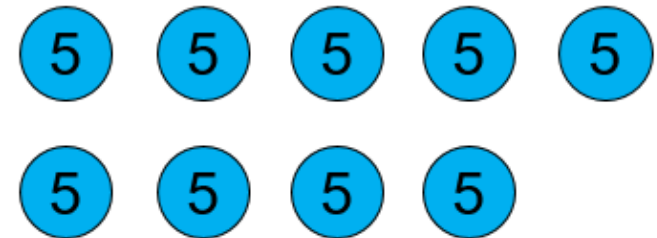
The 3 represents the number of bag (groups).

We can use ÷ to mean 'divided by'

We can use our knowledge of times tables to help solve division problems.

60cm

10cm 10cm 10cm 10cm 10cm 10cm

$6 \times 10 = 60$

$60 \div 10 = 6$

$45 \div 5 = 9$

The 60cm represents the length of the ribbon.

The 10 represents the size of each piece.

The 6 represents the number of pieces we can make.
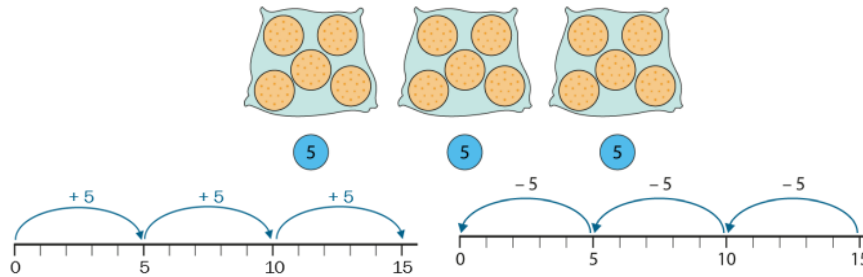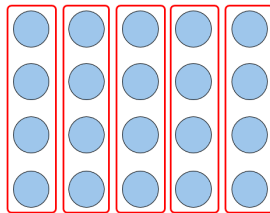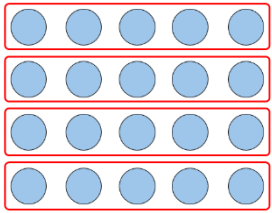
5 5 5 5 5

5 5 5 5

Multiplication and Division

Year 3

Multiplication and Division Structures

Identify that multiplication is commutative.

4 x 5 = 5 x 4

Factor times factor is equal to product.

The order of the factors does not affect the product.

Making groups of

Removing groups of
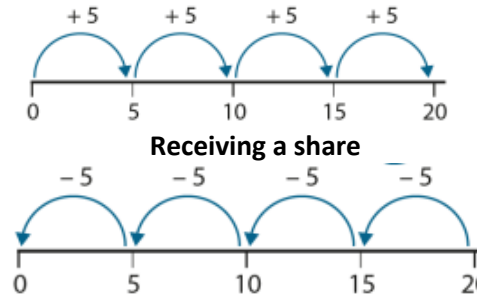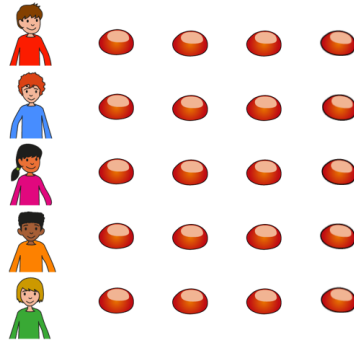
Receiving a share

Giving a share

Division equations can be used to represent 'grouping' problems.

We can use multiplication facts to find the number of groups.

(Quotitive division)

15 divided into groups of 5 is equal to 3.
5 + 5 + 5 = 15
15 − 5- 5 − 5 = 0
15 ÷ 5 = 3

Division equations can be used to represent 'sharing' problems.

We can use multiplication facts to find the size of groups.
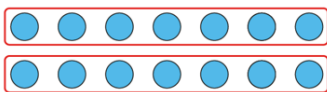
(Partitive division)

Four fives are four each.
20 divided between 5 is equal to 4 each.
20 ÷ 5 = 4

14 ÷ 2 = 7

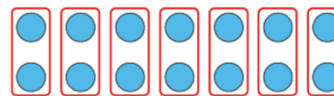| 14	
7	7

The same equation can be represented in both grouping and sharing contexts.

7 times 2 is 14, so 14 ÷ 2 = 7

14 ÷ 2 = 7

14						
2	2	2	2	2	2	2

Multiplication and Division

Year 4

Multiplying and Dividing by 10 and 100

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9

Develop language in order to multiply and divide by 10 or 100.

80 is ten times bigger than 8.
8 is ten times smaller than 80.
80 is ten times the size of 8
8 is one-tenth the size of 80.

800 is one hundred times bigger than 8.
8 is one hundred times smaller than 800.
800 is on hundred times the size of 8
8 is one-hundredth the size of 80.

$8 \times 1 = 8$
8 x 1 ten – 8 tens
8 x 1 hundred = 8 hundreds

Generalisations

All multiples of 10 have a ones digit of zero.

All multiples of 100 have both a tens and ones digit of zero.

To find the inverse of ___times as many, you divide by ____.

If one factor if made ___ times bigger/smaller then the product will be ten times bigger/smaller

8 made ___ times the size is ___.

ten times the size
x10

one hundred times the size
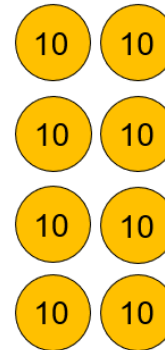x100

1,000s	100s	10s	1s
			8
		8	0

÷10
one-tenth of the size

1,000s	100s	10s	1s
			8
	8	0	0

÷100
one-hundredth of the size
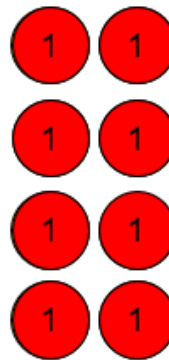
$8 \times 1 = 8$ $8 \times 10 = 80$ $8 \times 100 = 800$

8 groups of ___ is ___.

Vocabulary:

Multiply   Divide   Commutative   Groups of   Times   Equal to   Factors
Product   Quotient   Dividend   Divisor   Represents   Array
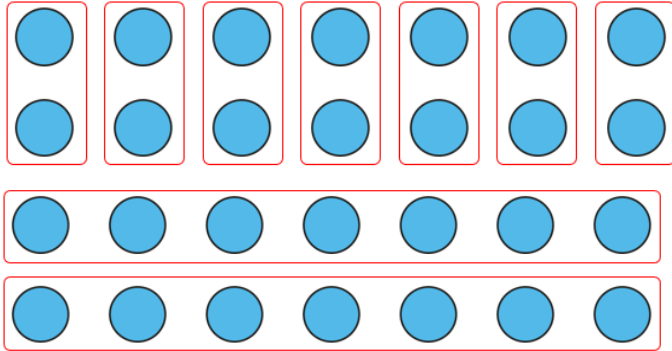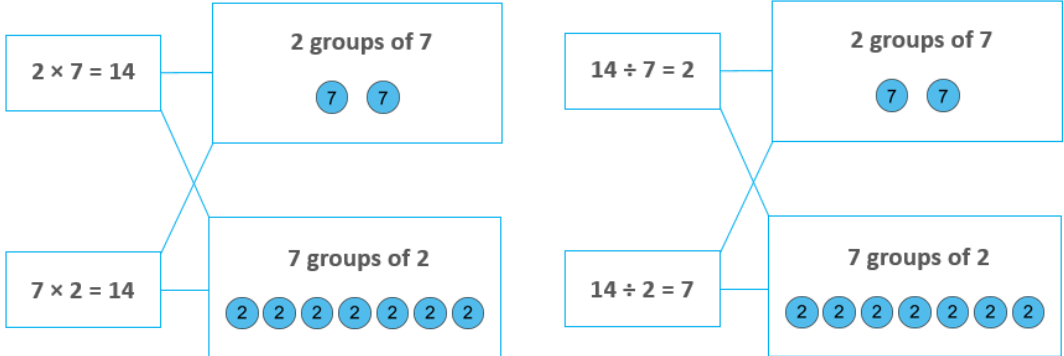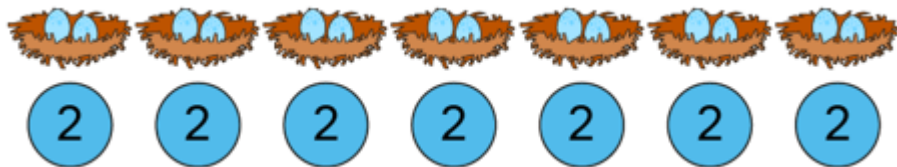
$$2 \times 7 = 7 \times 2$$

Understand that multiplication is commutative and the factors can be

2 groups of 7 is equal to 14.

2, 7 times is equal to 14.

2 groups of 7 is equal to 7, two times.

$$2 \times 7 = 14$$
$$7 \times 2 = 14$$

The 2 represents ___.

The 7 represents ___.

The 14 represents ___.

Match equations to representations and contexts.

$2 \times 7 = 14$

2 groups of 7
7   7

$14 \div 7 = 2$

2 groups of 7
7   7

$7 \times 2 = 14$

7 groups of 2
2 2 2 2 2 2 2

$14 \div 2 = 7$

7 groups of 2
2 2 2 2 2 2 2

$0 \times 6 = 0$	$6 \times 0 = 0$	$+6$
$1 \times 6 = 6$	$6 \times 1 = 6$	$+6$
$2 \times 6 = 12$	$6 \times 2 = 12$	$+6$
$3 \times 6 = 18$	$6 \times 3 = 18$	$+6$
$4 \times 6 = 24$	$6 \times 4 = 24$	$+6$
$5 \times 6 = 30$	$6 \times 5 = 30$	$+6$
$6 \times 6 = 36$	$6 \times 6 = 36$	
$7 \times 6 = 42$	$6 \times 7 = 42$	
$8 \times 6 = 48$	$6 \times 8 = 48$	
$9 \times 6 = 54$	$6 \times 9 = 54$	
$10 \times 6 = 60$	$6 \times 10 = 60$	
$11 \times 6 = 66$	$6 \times 11 = 66$	
$12 \times 6 = 72$	$6 \times 12 = 72$	

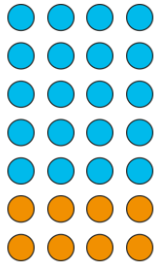**Adjacent multiples of ___ have a difference of ___.**

$$4 \times 6 + 6$$

Five sixes is one more six than four sixes.

5×6
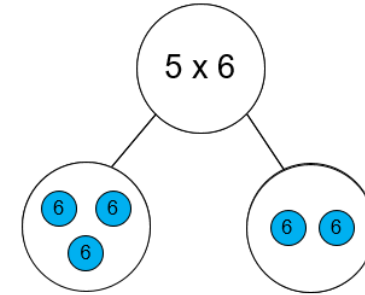
$$3 \times 6 + 2 \times 6 = 5 \times 6$$

5 is equal to 3 plus 2, so 5 sixes is equal to 3 sixes plus 2 sixes.

We can partition one of the factors to make calculations easier.

$7 = 5 + 2$

$7 \times 4 = 5 \times 4 + 2 \times 4$

$= 20 + 8$

$= 28$

$13 \times 7 = 91$

10   3

7
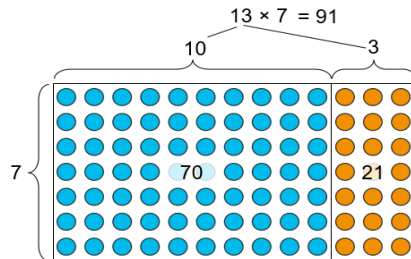
70   21

$13 \times 7 = 10 \times 7 + 3 \times 7$

$= 70 + 21$

$= 91$
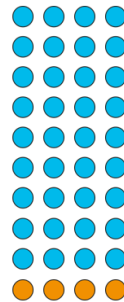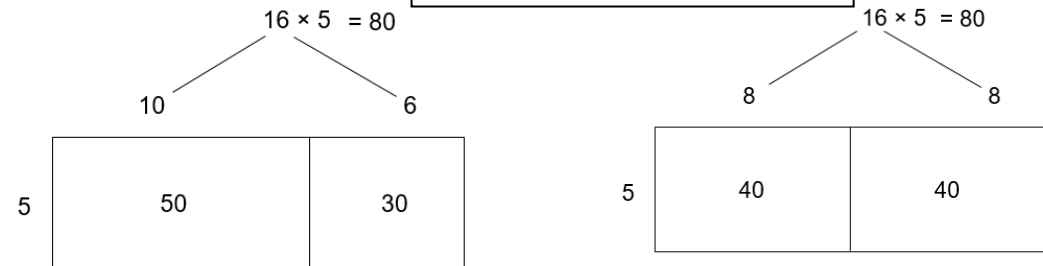
$9 = 10 - 1$

$9 \times 4 = 10 \times 4 - 1 \times 4$

$= 40 - 4$

$= 36$

We can partition the factors in different ways to make calculations easier.

$16 \times 5 = 80$

10   6

5   50   30

$16 \times 5 = 10 \times 5 + 6 \times 5$

$= 50 + 30$

$= 80$

$16 \times 5 = 80$

8   8

5   40   40

$16 \times 5 = 8 \times 5 + 8 \times 5$

$= 40 + 40$

$= 80$

Multiplication and Division

Year 5

Multiplying and Dividing by 10 and 100 (1)

8 ÷ 10 =

0.8 ÷ 10 =

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

÷ 10
÷ 10
one-tenth the size

We can multiply and divide a number by 10.

0.08 x 10 =

0.8   x 10 =

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

× 10
× 10
ten times the size

8, made one-tenth the size is 0.8.

8 divided by 10 is 0.8.

First we had 8 ones, now we have 8 tenths.

8 ÷ 10 = 0.8
one-tenth of the size
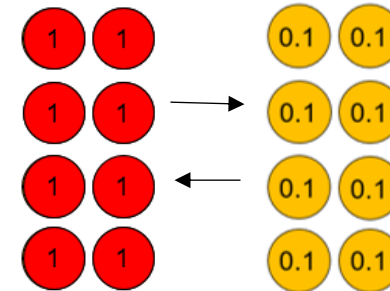
0.8 x 10 = 8
ten times the size

8 ÷ 100 = 0.08
one-hundredth of the size

We can multiply and divide a number by 100.
Multiplying by 100 is the same as multiplying/dividing by 10 twice.

8, made 100 times smaller is 0.08.

8 divided by 100 is 0.08.

First we had 8 ones, now we have 8 hundredths

0.08 x 100 = 8
one hundred times the size

Vocabulary:

Multiply   Divide   Unitise   Ten/Hundred times   Bigger   Smaller   One-tenth the size   One-hundredth the size   Gattegno chart   Factor   Product   Multiple   Groups of   Inverse   Ones   Tens   Hundreds   Tenths   Hundredths
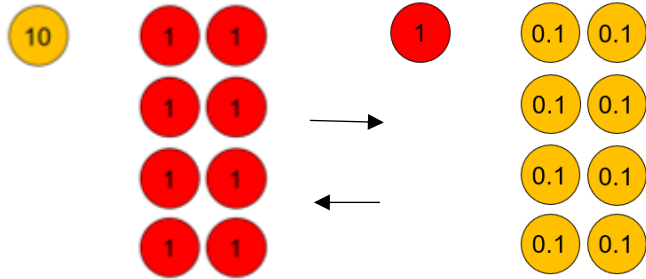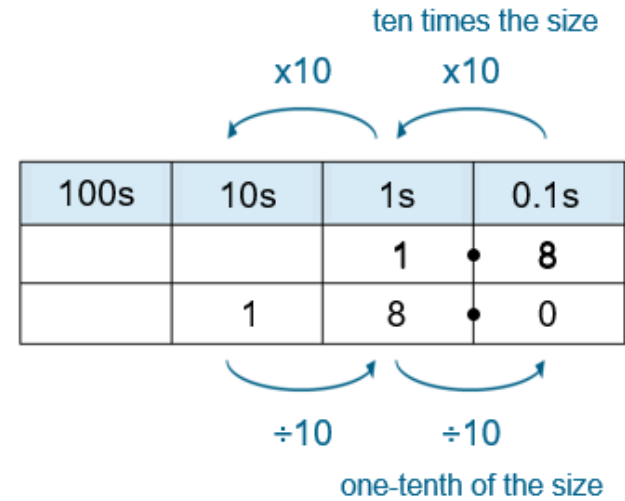
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

$3.6 \times 10 = 36$

$36 \div 10 = 3.6$

$18 \div 10 = 1.8$

one-tenth of the size

1.8 is one-tenth the size of 18

18 divided by 10 is 1.8.

ten times the size

x10   x10

100s	10s	1s	0.1s
		1	8
	1	8	0

÷10   ÷10

one-tenth of the size

__ divided by 10/100 is equal to__.

__ is one-tenth/hundredth the size of __.

__ multiplied by 10/100 is equal to__.

__ is 10/100 times the size of __.

$1.8 \times 10 = 18$

ten times the size

We can multiply and divide numbers with digits greater than 0 by 10 or 100.

Generalisation

To multiply by 10, move each digit one place to the left.

To multiply by 100, move each digit two places to the left.

To divide by 10, move each digit one place to the right.
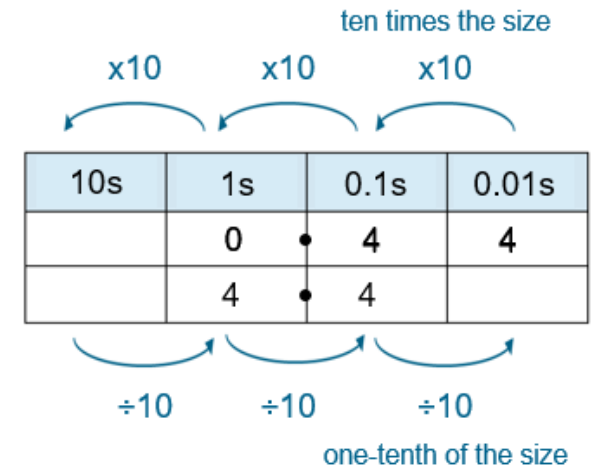
Vocabulary:

Multiply   Divide   Unitise   Ten/Hundred times   Bigger   Smaller   One-tenth the size   One-hundredth the size   Gattegno chart   Factor   Product   Multiple   Groups of   Inverse   Ones   Tens   Hundreds   Tenths   Hundredths

$0.27 × 10 = 2.7$

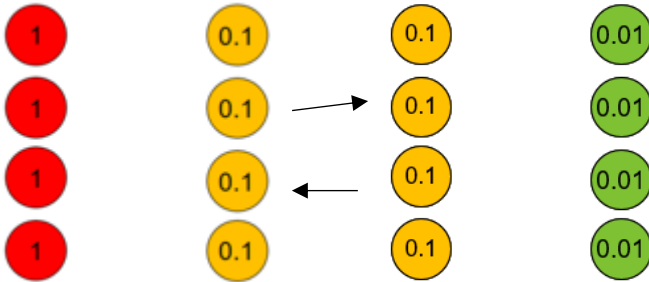$2.7 ÷ 10 = 0.27$

1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

0.27 is one-tenth the size of 2.7

2.7 divided by 10 is 0.27.

ten times the size

x10   x10   x10

10s	1s	0.1s	0.01s
	0 •	4	4
	4 •	4	

÷10   ÷10   ÷10

one-tenth of the size

$4.4 ÷ 10 = 0.44$

one-tenth of the size

__ divided by 10/100 is equal to__.

__ is one-tenth/hundredth the size of __.

__ multiplied by 10/100 is equal to__.

__ is 10/100 times the size of __.

$0.44 × 10 = 4.4$

ten times the size

We can multiply and divide numbers with digits greater than 0 by 10 or 100.

Generalisation

To multiply by 10, move each digit one place to the left.

To multiply by 100, move each digit two places to the left.

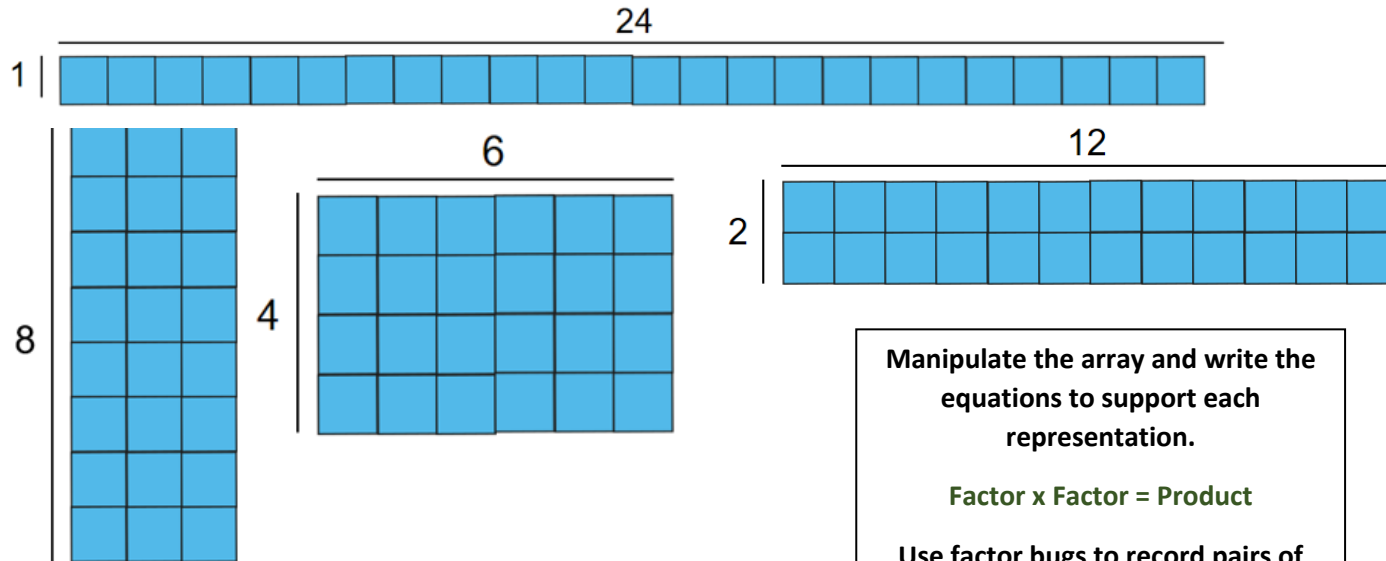*To divide by 10, move each digit one place to the right.*

Vocabulary:

Factor   Multiple   Composite   Square   Prime   Common Factor   Prime Factor

Factor Bug   Array   Positive Integer   Working Systematically

Factor x Factor = Product   Dividend ÷ Divisor = Quotient

$8 \times 3 = 24$

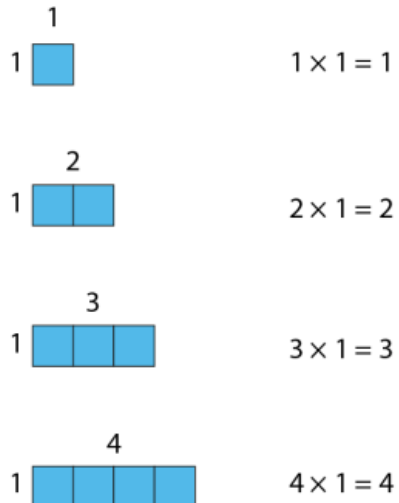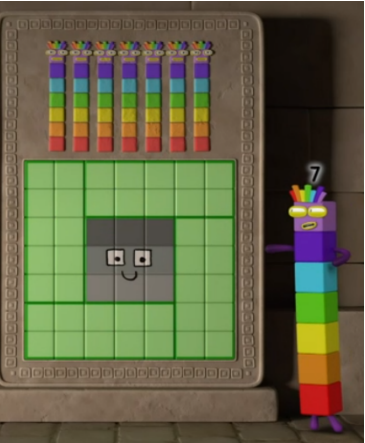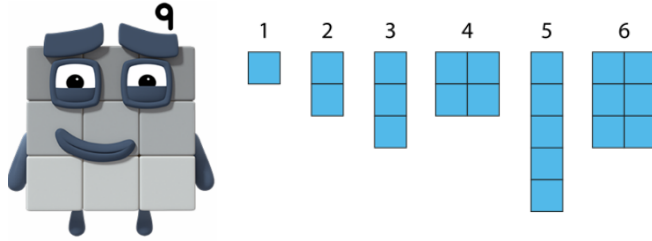$4 \times 6 = 24$

$2 \times 12 = 24$

$1 \times 24 = 24$

There are ___ tiles. There are ___ rows and ___ columns. So ___ and ___ are factors of ___.

Generalise: Numbers that have more than two factors are composite numbers.

Manipulate the array and write the equations to support each representation.

Factor x Factor = Product

Use factor bugs to record pairs of factors.

$1 \times 1 = 1$

$2 \times 1 = 2$

$3 \times 1 = 3$

$4 \times 1 = 4$

Generalise:

When one is a factor, the product is equal to the other factor.

All positive integers have a factor of 1.

Every positive integer is a factor of itself.

The smallest factor of a positive integer is always 1. The largest factor of a positive integer is always itself.

Multiplication and Division

Year 5

Find Factors and Multiples

Extend this to square numbers, and prime numbers recognising the number of factors.

Make connections with factors and times tables. Make connections with factors of factors

___ is a factor of ___ because it is in the ___ times table.

Nine is a factor of all of these numbers.

*Three is a factor of nine which means it is also a factor of all of these numbers.*

×	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

Is 9 a factor of 54?

54 ÷ 9 = 6

9 and 6 are factors of 54.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Use factor bugs to find

common factors   and   prime factors.
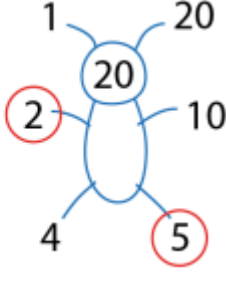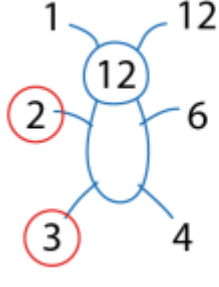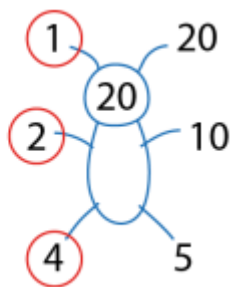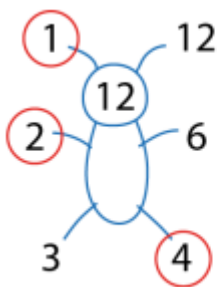
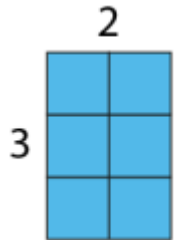# Multiplication and Division

Year 5
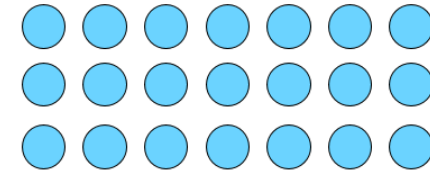
Find Factors and Multiples

Introduce Multiples

___ is a factor of ___ because ___ x ____ = ____.

___ is a multiple of ___ because ___ x ___ = ____

___ is a factor of ___ because ___ ÷ ____ = ____.

___ is a multiple of ___ because ___ ÷ ___ = ____

7 × 3 = 21

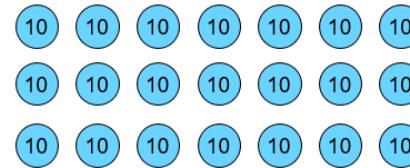**Make statements about factors and multiples whilst increasing the amount of each counter in the array.**

___ represents the number of counters in each row.

___ represents the total value of the counters in each column.

____ represents the total value of the counters.

3, 7, 10, 21 and 70 are factors of 210.

210 is a multiple of 3, 7, 10, 21 and 70.

7 × 30 = 210

70 × 3 = 210

10 x 21 = 210

Identify Common Multiples using a 100 square.

Factors of 100 can be applied to contexts

100
1 — 100
2 — 50
4 — 25
5 — 20
10 — 10

7 × 300 = 2,100

700 × 3 = 2,100

100 x 21 = 2,100

34 chairs

2 rows

Move between representations of dienes and expanded written multiplication.

10s	1s
3	4
×	2

Use dienes to represent context as repeated addition and move to multiplication.
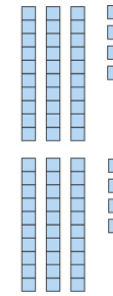
$34 = 30 + 4$
$34 \times 2 = 30 \times 2 + 4 \times 2$
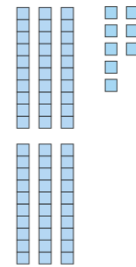
10s	1s
3	4
×	2
	8

$2 \times 4 \text{ ones} = 8 \text{ ones}$
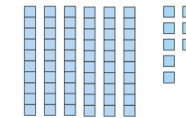
10s	1s
3	4
×	2
	8
6	0

$2 \times 4 \text{ ones} = 8 \text{ ones}$
$2 \times 3 \text{ tens} = 6 \text{ tens}$

$321 \times 3 = \boxed{963}$

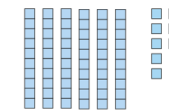| 100s	10s	1s
3	2	1
		3
		3
	6	0
9	0	0
9	6	3

$3 \times 1 \text{ ones} = 3 \text{ ones}$
$3 \times 2 \text{ tens} = 6 \text{ tens}$
$3 \times 3 \text{ hundreds} = 9 \text{ hundreds}$

	3	2	1
×			3
	9	6	3

Represent 3 digit by 1 digit multiplication without exchanges using dienes, moving from expanded layout to compact layout.

10s	1s
3	4
×	2
6	8

Move between representations of expanded layout and compact layout.

10s	1s
3	4
×	2
	8
6	0
6	8

$2 \times 4 \text{ ones} = 8 \text{ ones}$
$2 \times 3 \text{ tens} = 6 \text{ tens}$

Multiplication and Division

Year 5

Multiply using a Formal Written Method (2)

$367 \times 4 = \boxed{}$

1,000s	100s	10s	1s
	3	6	7
×			4

Represent 3 digit by 1 digit multiplication with exchanges using place value counters, moving from expanded layout to compact layout.

$367 \times 4 = \boxed{}$

1,000s	100s	10s	1s
	3	6	7
×			4
		2	8
	2	4	0
1	2	0	0

4×7 ones = 28 ones
= 2 tens + 8 ones
4×6 tens = 24 tens
= 2 hundreds + 4 tens
4×3 hundreds = 12 hundreds
= 1 thousand + 2 hundreds

$367 \times 4 = \boxed{}$

1,000s	100s	10s	1s
	3	6	7
×			4
		2	8
	2	4	0

4×7 ones = 28 ones
= 2 tens + 8 ones
4×6 tens = 24 tens
= 2 hundreds + 4 tens

$367 \times 4 = \boxed{}$

1,000s	100s	10s	1s
	3	6	7
×			4
		2	8

4×7 ones = 28 ones
= 2 tens + 8 ones

Move from expanded layout to compact layout.

$367 \times 4 = \boxed{1,468}$

	3	6	7
×			4
1	4	6	8
	2	2	

If there are 10 or more ones, we must regroup ones into tens and ones.

If there are 10 or more tens, we must regroup into hundreds and tens.

If there are 10 or more hundreds, we must regroup into thousands and hundreds.

Multiplication and Division

Year 5

Divide using a Formal Written Method (1)

Use sticks to represent partitive (sharing) context where the dividend is divisible (to give a whole number). Skip count in multiples of the divisor.

84 sticks shared equally between 4 children. How many sticks each?

$$84 \div 4 = \boxed{}$$

Step 1 – write the divisor and dividend:

10s 1s

4)8   4

Step 2 – share the 10s:

10s 1s

2

4)8   4

8 tens ÷ 4 = 2 tens

8 tens divided by 4 is equal to 2 tens.

Remove a group of 4 each time before sharing.

One four is one each. That's four.

Two fours is two each. That's eight.

Eight divided between 4 is equal to two each.

Each child gets two sticks.

Step 3 – share the 1s:

10s 1s

2   1

4)8   4

8 tens ÷ 4 = 2 tens

4 ones ÷ 4 = 1 one

Add the partial quotients to find the quotient.

2 tens + 1 one = 21

10s   1s

2   1

4)

8 tens ÷ 4 = 2 tens

4 ones ÷ 4 = 1 one

Multiplication and Division

Year 5

Divide using a Formal Written Method (2)

72 sticks shared equally between 3 children. How many sticks each?

$$72 \div 3 = \boxed{}$$

Step 1 – write the divisor and the dividend:
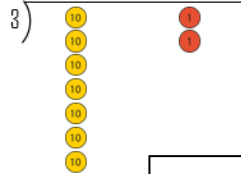
Step 2 – share the 10s:
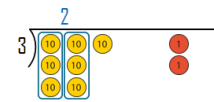
7 tens ÷ 3 = 2 tens r 1 ten

Step 3 – exchange:

7 tens ÷ 3 = 2 tens r 1 ten

$$72 \div 3 = \boxed{24}$$

Step 4 – share the 1s:

7 tens ÷ 3 = 2 tens r 1 ten

12 ones ÷ 3 = 4 ones
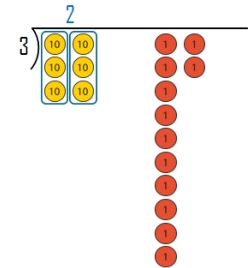
Use sticks and place value counters to represent partitive (sharing) context where the dividend is divisible (to give a whole number) though requires an exchange from the tens. Skip count in multiples of the divisor.

If dividing the tens gives a remainder of one or more ten, we must exchange the remaining tens for ones.

$$73 \div 3 = \boxed{24 \text{ r } 1}$$
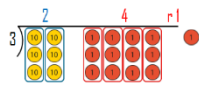
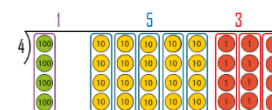7 tens ÷ 3 = 2 tens r 1 ten
13 ones ÷ 3 = 4 ones r 1 one

Apply the same representations though this time include a remainder.

Then extend to division of 3 digits by one digit and where there can be no hundreds cannot be shared.

If dividing the hundreds gives a remainder of one or more hundred, we must exchange the remaining hundreds for tens.

$$612 \div 4 = \boxed{153}$$

6 hundreds ÷ 4 = 1 hundred r 2 hundreds
2 hundreds = 20 tens
21 tens ÷ 4 = 5 tens r 1 ten
1 ten = 10 ones
12 ones ÷ 4 = 3 ones

Addition, Subtraction, Multiplication and Division

Year 6

Quantify additive and multiplicative relationships

1,000

250

750

250 + 750 = 1,000   1,000 – 750 = 250

1,000

250

250 x 4 = 1,000   1000 ÷ 4 = 250

The relationship between two numbers can be expressed both additively and multiplicatively.

+ ☐

250   1,000

− ☐

1000 is ___ more than 250.

250 is ____ less than 1000.

× ☐

250   1,000

÷ ☐

1000 is ___ times the size of 250.

250 is one-_____ of 1000.

To find one-quarter of a number, we divide by 4.

+ 0.4   + 0.4

☐   1.2   1.6   ☐

− 0.4   − 0.4

Finding the difference can help calculate the unknown terms in a sequence.

Finding the known multiplier can help calculate the unknown terms in a sequence.
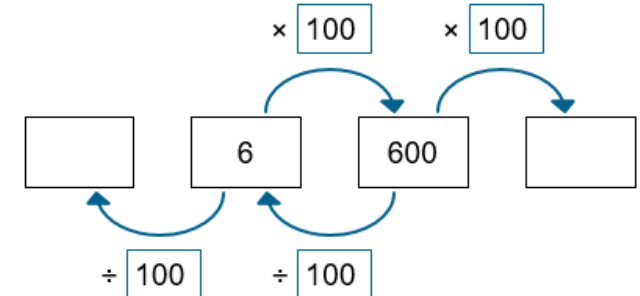
× 100   × 100

☐   6   600   ☐

÷ 100   ÷ 100

Addition, Subtraction, Multiplication and Division

Year 6

Quantify additive and multiplicative relationships

Vocabulary:

Additive   Multiplicative   Relationship   Represents   Compose   Combine   Total
More than   Less than   Plus +   Minus -   Equal to =   Addition   Subtraction   Divide ÷
Multiply x   One-_____ of   Equation   Expression   Bar Model   Whole   Part
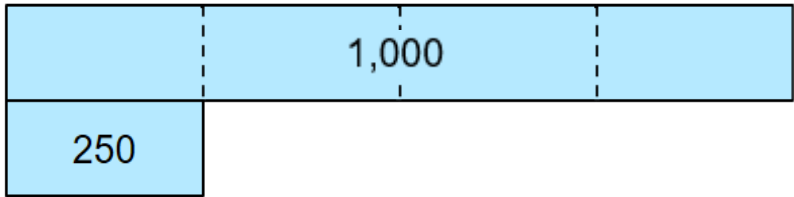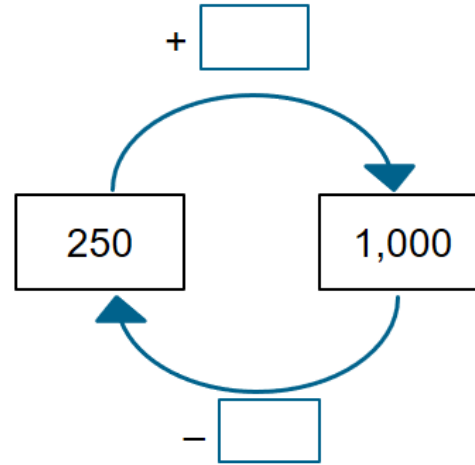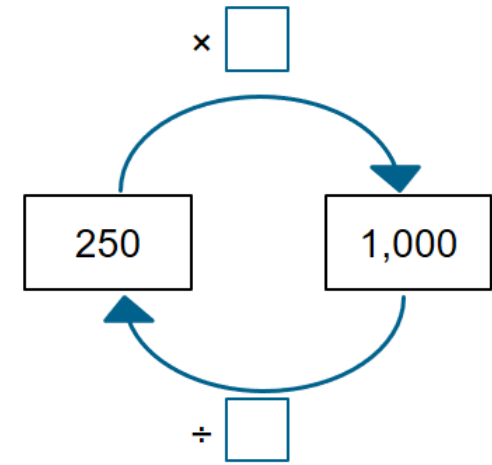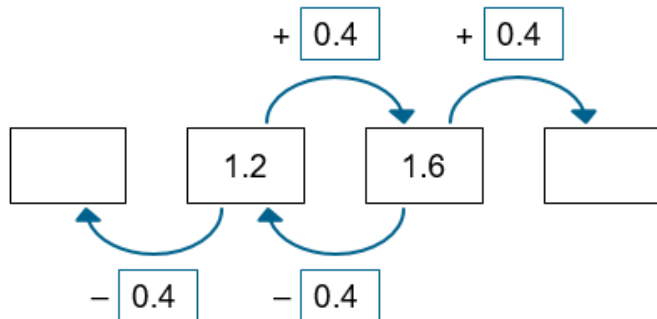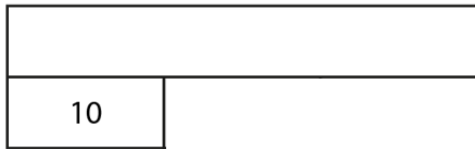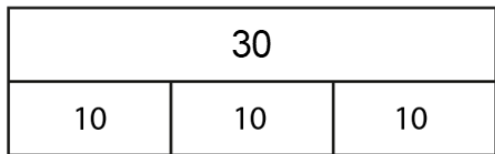Difference   Multiplier   Unknown   Sequence

Addend + Addend = Sum   Factor x Factor = Product (Multiplicand x Multiplier = Product)

Minuend – Subtrahend = Difference   Dividend ÷ Divisor = Quotient

$\frac{1}{3}$ of ? = 10

10

$\frac{1}{3}$ of ? = 10

30		
10	10	10

Calculate the unknown whole by recognising how many parts the whole has been divided into.

$\frac{1}{3}$ of 30 = 10

Addition and Subtraction

Year 6

Derive Related Calculations

$252 = 3 \times 84$

$252 = 3 \times 84$

$252 = 3 \times 84$

$2{,}520 = 30 \times \boxed{}$

$\boxed{} = 3 \times 85$

$252 = 3 \times 60 + 3 \times \boxed{}$

Manipulate an equation to solve another. Pupils could:

- rearrange the terms;
- rewrite using inverse operations;
- apply place value;
- use the properties of division that correspond to the commutative, associative or distributive property of multiplication;
- use the compensation property.
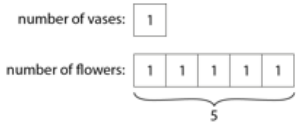
Additive examples

Multiplicative examples

$625 - 148 = 477$

$625 - 148 = 477$

$625 - 148 = 477$

$6{,}250 - 1{,}480 = \boxed{}$

$625 - 70 - \boxed{} = 477$

$625 - 248 = \boxed{}$

$14.8 + 7.6 = 22.4$

$14.8 + 7.6 = 22.4$

$14.8 + 7.6 = 22.4$

$1{,}480 + \boxed{} = 2{,}240$

$\boxed{} - 7.6 = 14.8$

$12.8 + \boxed{} = 22.4$

$4{,}800 \div 25 = 192$

$4{,}800 \div 25 = 192$

$4{,}800 \div 25 = 192$

$25 \times 192 = \boxed{}$

$4{,}800 \div 250 = \boxed{}$

$4{,}800 \div 5 \div 5 = \boxed{}$

Vocabulary:

Additive   Multiplicative   Relationship   Represents   Equation   Unknown   Scale-factor   Ratio   Ratio Table   ___ times the size   one-___ the size of   Vertical   Horizontal

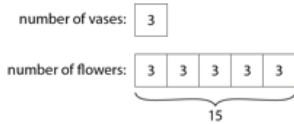Factor x Factor = Product (Multiplicand x Multiplier = Product)

Dividend ÷ Divisor = Quotient

number of vases: 1

number of flowers: 1 1 1 1 1

5

$1 × 5 = 5$

$5 ÷ 5 = 1$

$5 × \frac{1}{5} = 1$

number of vases: 3

number of flowers: 3 3 3 3 3

15

$3 × 5 = 15$

$15 ÷ 5 = 3$

$15 × \frac{1}{5} = 3$

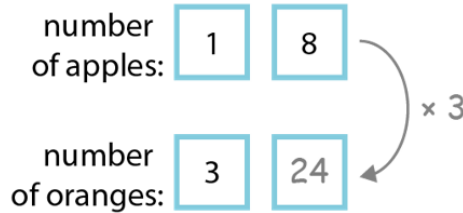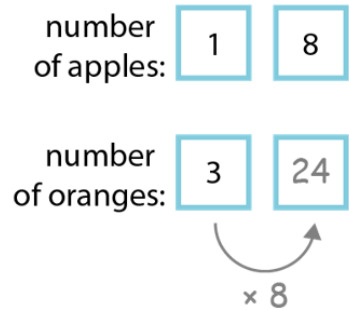**Ratio table to compare sets of information.**

For every ___, there are ___.

For every 1 litre of petrol, you can drive 7 miles.

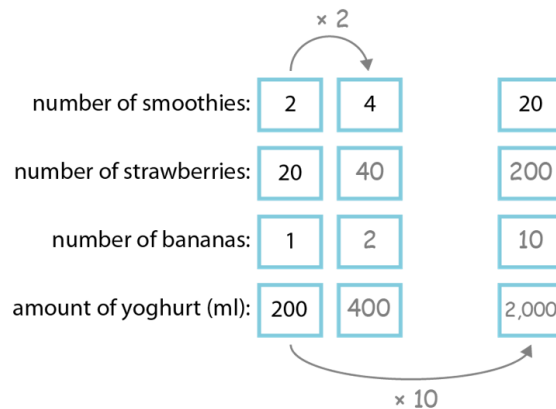**For every 7 miles you will drive, you need 1 litre of petrol.**

Extend sequences using knowledge of patterns based on ratio table.

Litres of petrol	1	2	3	4	5	6	7	8	9	10
Miles driven	7	14	21	28	35	42	49	56	63	70

number of apples: 1   8

number of oranges: 3   24

× 8

number of apples: 1   8

number of oranges: 3   24

× 3

Explore vertical and horizontal relationship between numbers.

For every ___, there are ___.

× 2

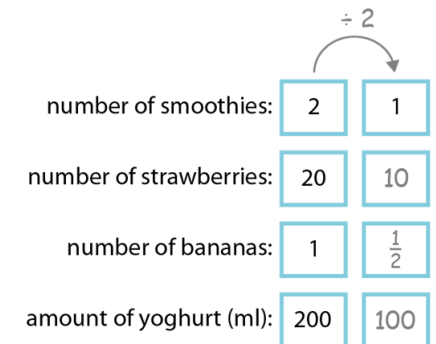| number of smoothies:	2	4		20
number of strawberries:	20	40		200
number of bananas:	1	2		10
amount of yoghurt (ml):	200	400		2,000

× 10

Identify the scale-factor in order to find unknown values.

___ is ___ times the size of ___.

Therefore I must multiply/divide by ___.

___ is one-__ the size of ___.

÷ 2

number of smoothies:	2	1
number of strawberries:	20	10
number of bananas:	1	$\frac{1}{2}$
amount of yoghurt (ml):	200	100

Addition and Subtraction

Year 6

Solve Problems with Two Unknowns

B

r | b

$$B = \boxed{r} + \boxed{b}$$
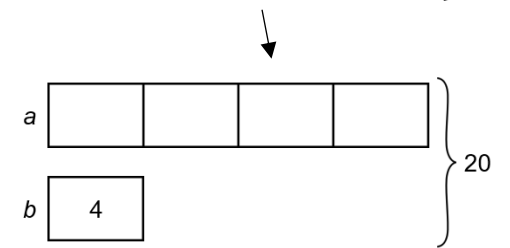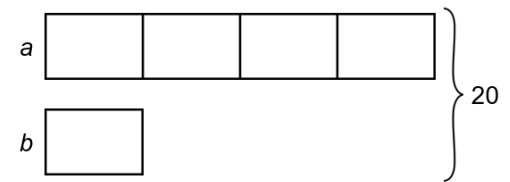
B

p | y

$$B = \boxed{p} + \boxed{y}$$

Use Cuisenaire to find 2 bars of total length that are equal to another.

There is more than one solution to the problem.

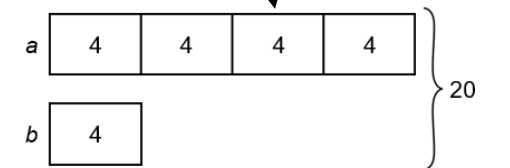**There can be infinite solutions to a problem.**

$$5 \times \boxed{} = 10 \times \boxed{}$$

Solve multiplicative problems with two unknowns when the total is known.

a

b } 20
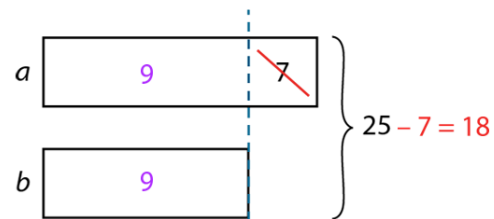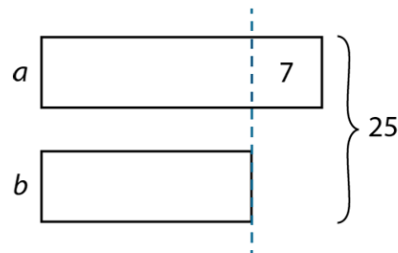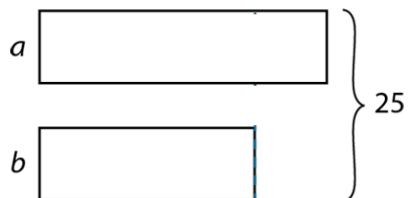
v

a

b 4 } 20

one part = 20 ÷ 5 = 4

b = 4

a 4 | 4 | 4 | 4

b 4 } 20

one part = 20 ÷ 5 = 4

b = 4

a = 4 × 4 = 16

The two numbers are 16 and 4.

Solve additive problems with two unknowns when the total is known.

a

b } 25

a 7

b } 25

a 9 7

b 9 } 25 – 7 = 18

b = 18 ÷ 2 = 9

a = 9 + 7 = 16

The two numbers are 9 and 16.