

Multiplication and Division

Year 4

Multiplying and Dividing by 10 and 100

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

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 one hundred times the size of 8
 8 is one-hundredth the size of 80.

$8 \times 1 = 8$
 $8 \times 1 \text{ ten} = 8 \text{ tens}$
 $8 \times 1 \text{ hundred} = 8 \text{ hundreds}$

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 is made ___ times bigger/smaller then the product will be ten times bigger/smaller

8 made ___ times the size is ___.

ten times the size
x10

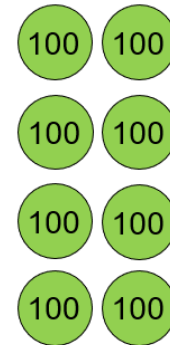
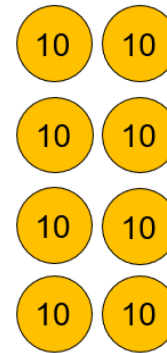
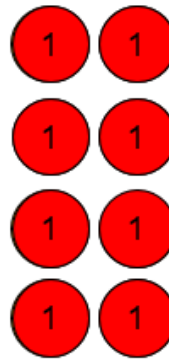
one hundred times the size
x100

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

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

+10
one-tenth of the size

+100
one-hundredth of the size



$8 \times 1 = 8$ $8 \times 10 = 80$ $8 \times 100 = 800$

8 groups of ___ is ___.

Multiplication and Division

Year 5

Multiplying and Dividing by 10 and 100 (1)

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

$$8 \div 10 =$$

$$0.8 \div 10 =$$

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

$$0.08 \times 10 =$$

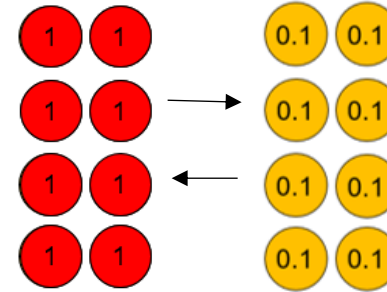
$$0.8 \times 10 =$$

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

$$8 \div 10 = 0.8$$

one-tenth of the size



$$0.8 \times 10 = 8$$

ten times the size

We can multiply and divide a number by 10.

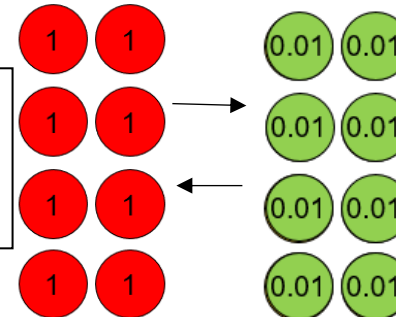
8, made one-tenth the size is 0.8.

8 divided by 10 is 0.8.

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

$$8 \div 100 = 0.08$$

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

$$0.08 \times 100 = 8$$

one hundred times the size

Multiplication and Division

Year 5

Multiplying and Dividing by 10 and 100 (2)

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

$$3.6 \times 10 = 36$$

$$36 \div 10 = 3.6$$

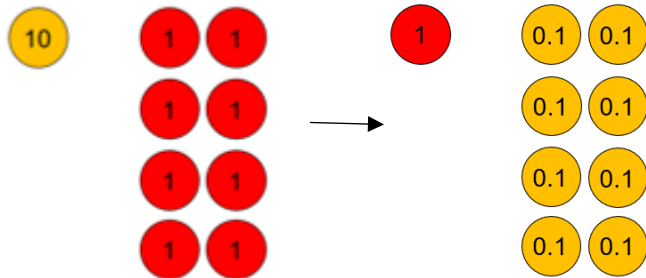
1,000	2,000	3,000	4,000	5,000	6,000	7,000	8,000	9,000
100	200	300	400	500	600	700	800	900
10	20	30	40	50	60	70	80	90
1	2	3	4	5	6	7	8	9
0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

$$18 \div 10 = 1.8$$

one-tenth of the size

1.8 is one-tenth the size of 18

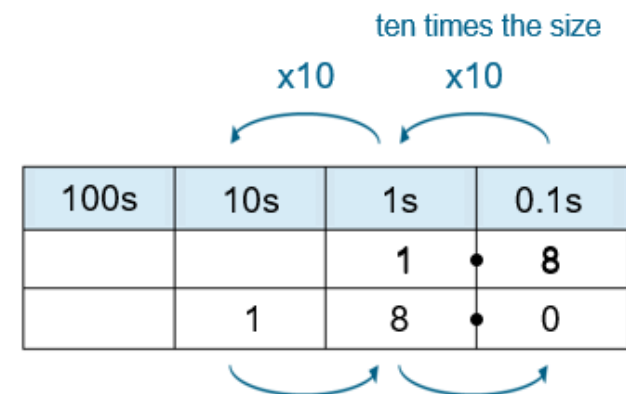
18 divided by 10 is 1.8.



__ 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.

Multiplication and Division

Year 5

Multiplying and Dividing by 10 and 100 (3).

Vocabulary:

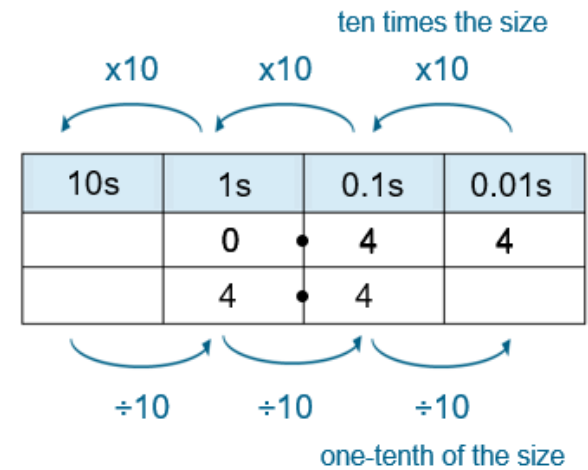
Multiply Divide Unitise Ten/Hundred times Bigger Smaller One-tenth the size
 One-hundredth the size Gattegno chart Factor Product Multiple Groups of
 Inverse Ones Tens Hundreds Tenths Hundredths

$0.27 \times 10 = 2.7$

$2.7 \div 10 = 0.27$

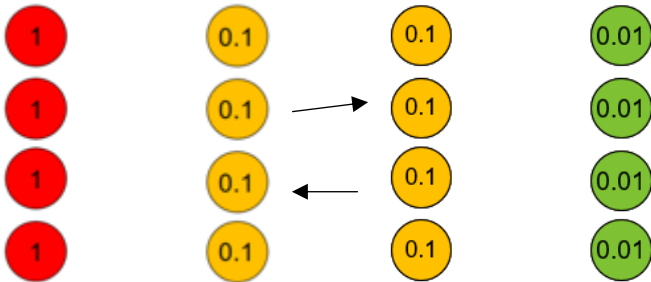
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0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9
0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09

0.27 is one-tenth the size of 2.7
2.7 divided by 10 is 0.27.



$4.4 \div 10 = 0.44$

one-tenth of the size



$0.44 \times 10 = 4.4$

ten times 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 __.

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.