Multiplying and dividing

Short Multiplication

$$2543 \times 7 = 17\ 801$$

	2	5	4	3
×				7
1	7	8	0	1
	1	3	3	2

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

Long Multiplication

$$2543 \times 67 = 170\ 381$$

		2	5	4	3
×				6	7
	1	7	8	0	1
		1	3	3	2
1	5	2	5	8	0
	1	3	2	1	
1	7	0	3	8	1
		1	1		

Before multiplying by the number in the tens column, remember to use zero as a placeholder because the 6 in 67 is 6 tens (60).

Division

$$136 \div 4 = 34$$

		3	4	
4	1	3	6	
−	1	2	0	→ 30 × 4
		1	6	
−		1	6	→ 4 × 4
			0	

Short Division

		3	8
4	1	¹5	³2

15 ÷ 4 = 3 remainder 3

Remember to regroup any remainders and move them into the next column.

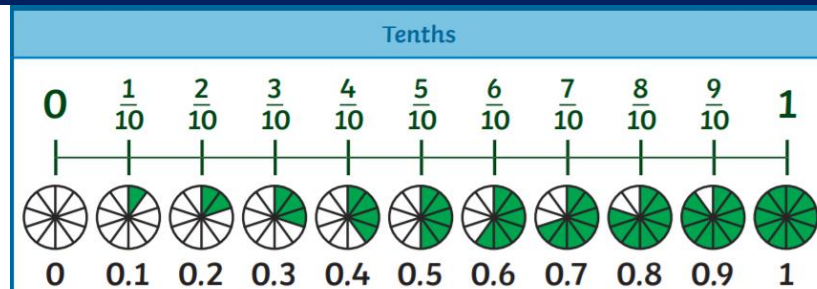|		4	5	5	r	3
5	2	2	²7	²8		

28 ÷ 5 = 5 remainder 3

If your calculation has a remainder, remember to record it in the answer using the letter r.

Fractions

Recognising Fractions

$\dfrac{3}{8}$

Numerator — How many equal parts of the whole are needed?

Denominator — How many equal parts are in the whole?

Comparing Fractions

$\dfrac{1}{3}$ Less than $\dfrac{2}{3}$

$\dfrac{4}{5}$ Greater than $\dfrac{3}{5}$

Tenths

| 0 | $\frac{1}{10}$ | $\frac{2}{10}$ | $\frac{3}{10}$ | $\frac{4}{10}$ | $\frac{5}{10}$ | $\frac{6}{10}$ | $\frac{7}{10}$ | $\frac{8}{10}$ | $\frac{9}{10}$ | 1 |

| 0 | 0.1 | 0.2 | 0.3 | 0.4 | 0.5 | 0.6 | 0.7 | 0.8 | 0.9 | 1 |

Fractions of Amounts

$\dfrac{1}{4}$ of $24 = 6$

$\dfrac{1}{3}$ of $72 = 24$

$\dfrac{2}{5}$ of $40 = 16$

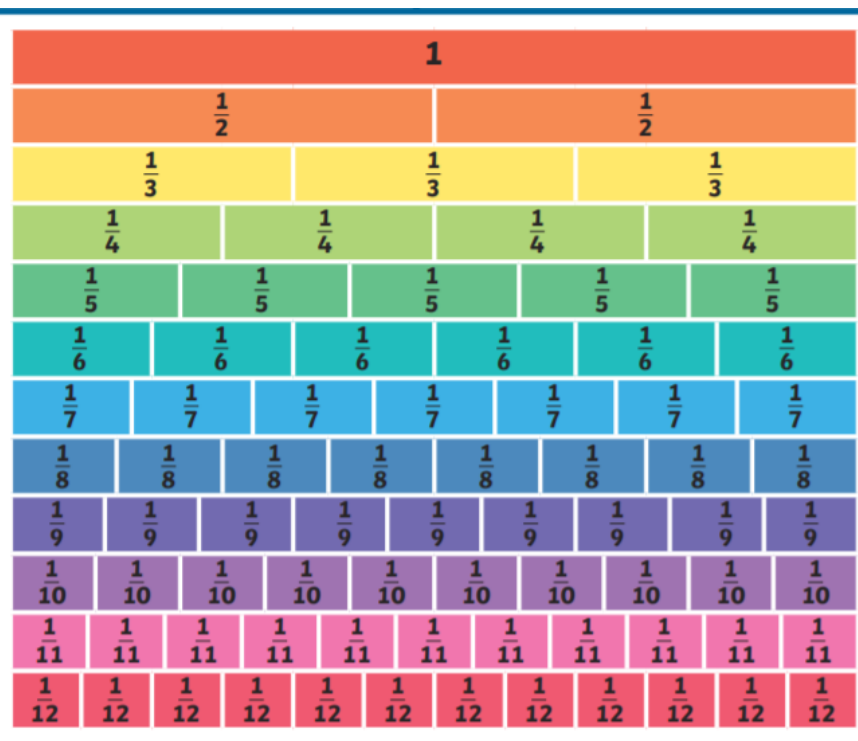### Equivalent Fractions

$\dfrac{1}{2}$ is equal to...

$\dfrac{1}{2} = \dfrac{2}{4} = \dfrac{3}{6} = \dfrac{4}{8} = \dfrac{5}{10} = \dfrac{6}{12}$

$\dfrac{1}{4}$ is equal to...

$\dfrac{1}{4} = \dfrac{2}{8} = \dfrac{3}{12} = \dfrac{4}{16} = \dfrac{5}{20}$

Fraction wall: 1; $\frac{1}{2}$, $\frac{1}{2}$; $\frac{1}{3}$, $\frac{1}{3}$, $\frac{1}{3}$; $\frac{1}{4} \times 4$; $\frac{1}{5} \times 5$; $\frac{1}{6} \times 6$; $\frac{1}{7} \times 7$; $\frac{1}{8} \times 8$; $\frac{1}{9} \times 9$; $\frac{1}{10} \times 10$; $\frac{1}{11} \times 11$; $\frac{1}{12} \times 12$

Add and Subtract Fractions

$\dfrac{2}{5} + \dfrac{1}{5} = \dfrac{3}{5}$

$\dfrac{3}{7} + \dfrac{2}{7} = \dfrac{5}{7}$

Finding a Percentage of an Amount

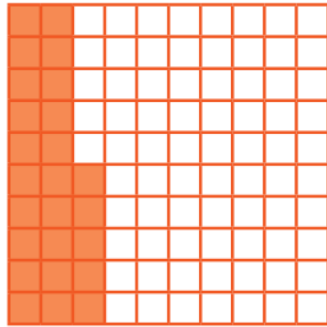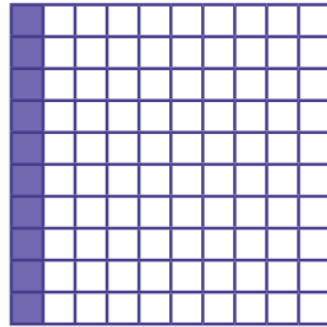|	
50% = $\frac{1}{2}$ so we can divide by 2	10% = $\frac{1}{10}$ so we can divide by 10
25% = $\frac{1}{4}$ so we can divide by 4	1% = $\frac{1}{100}$ so we can divide by 100

Equivalent Fractions, Decimals and Percentages
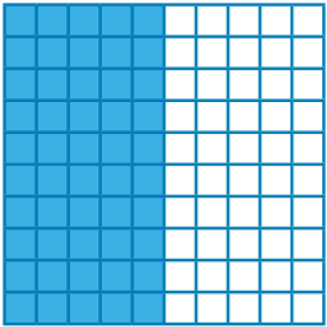
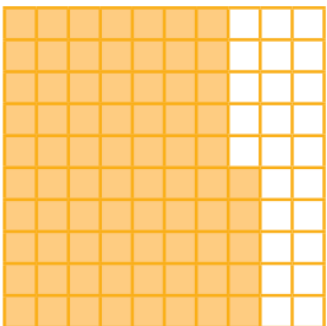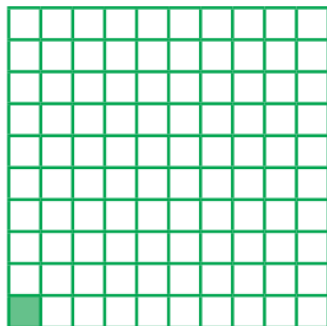$\frac{50}{100} = \frac{1}{2} = 0.5 = 50\%$

$\frac{25}{100} = \frac{1}{4} = 0.25 = 25\%$
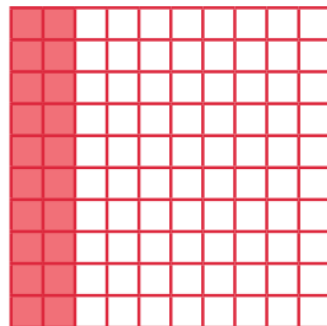
$\frac{10}{100} = \frac{1}{10} = 0.1 = 10\%$
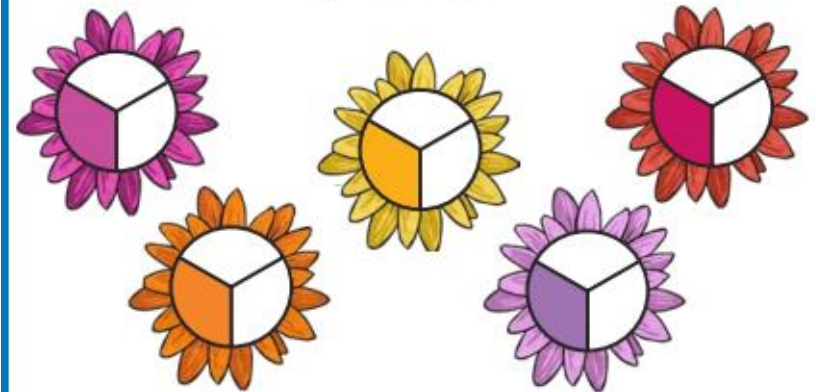
$\frac{75}{100} = \frac{3}{4} = 0.75 = 75\%$

$\frac{1}{100} = 0.01 = 1\%$
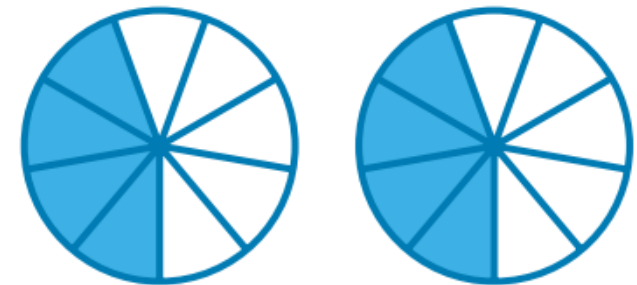
$\frac{20}{100} = \frac{2}{10} = 0.2 = 20\%$

Multiply Unit Fractions by an Integer

$$\frac{1}{3} \times 5 = \frac{5}{3}$$

Multiply Non-Unit Fractions by an Integer

$$2 \times \frac{4}{9} = \frac{8}{9}$$

Quiz 1

Work out the following multiplications:

82 x 10 =

66 x 100 =

14 x 1000 =

10 x 46 =

100 x 58 =

93 x 1000 =

37 x 10 =

488 x 100 =

179 x 1000 =

302 x 10 =

440 x 100 =

816 x 1000 =

Quiz 2

Work out the following multiplications:

```
  7 2 5
x     3
_____
```

```
  9 7 3
x     2
_____
```

```
  5 7 5
x     2
_____
```

```
  8 9 7
x     4
_____
```

```
  3 4 4
x     4
_____
```

```
  2 2 6
x     3
_____
```

```
  9 1 9
x     3
_____
```

```
  8 4 3
x     5
_____
```

Quiz 3

Work out the following multiplications:

541 × 34 =

✖	500	40	1
30			
4			

438 × 91 =

✖	400	30	8
90			
1			

801 × 21 =

✖	800	00	1
20			
1			

Quiz 4

Work out the following divisions:

1. $1047 \div 3 =$

2. $2456 \div 4 =$

3. $3295 \div 5 =$

4. $2784 \div 4 =$

5. $1011 \div 3 =$

6. $2780 \div 5 =$

7. $1564 \div 2 =$

8. $2244 \div 4 =$

Quiz 5

Work out the following divisions:

$240 \div 16 =$

$234 \div 18 =$

$364 \div 26 =$

$490 \div 35 =$

$304 \div 19 =$

$203 \div 29 =$

$168 \div 14 =$

Quiz 6

Work out the following:

$\frac{2}{5} + \frac{1}{5} = \underline{\quad}$

$\frac{1}{3} + \frac{2}{3} = \underline{\quad}$

$\frac{1}{3} + \frac{1}{3} = \underline{\quad}$

$\frac{2}{4} + \frac{1}{4} = \underline{\quad}$

$\frac{3}{5} + \frac{2}{5} = \underline{\quad}$

$\frac{3}{5} + \frac{1}{5} = \underline{\quad}$

$\frac{3}{8} - \frac{2}{8} = \underline{\quad}$

$\frac{5}{9} - \frac{3}{9} = \underline{\quad}$

$\frac{6}{10} - \frac{3}{10} = \underline{\quad}$

$\frac{3}{10} - \frac{1}{10} = \underline{\quad}$

$\frac{3}{8} - \frac{3}{8} = \underline{\quad}$

$\frac{5}{12} - \frac{1}{12} = \underline{\quad}$

$\frac{11}{12} - \frac{1}{12} = \underline{\quad}$

| Quiz 7 | Quiz 8 | Quiz 9 |

Quiz 7

Work out the following multiplications:

$\frac{1}{3} \times 5 =$

$\frac{1}{4} \times 3 =$

$\frac{1}{5} \times 2 =$

$\frac{1}{4} \times 4 =$

$\frac{1}{3} \times 3 =$

$\frac{1}{6} \times 5 =$

Quiz 8

Work out the following:

25% of 8 = _____

25% of 24 = _____

10% of 20 = _____

10% of 42 = _____

50% of 6 = _____

50% of 16 = _____

Quiz 9

Work out the following:

50% of 70 = _____

25% of 30 = _____

75% of 80 = _____

25% of 50 = _____

50% of 90 = _____

75% of 10 = _____

25% of 40 = _____