Decimals

Key Vocabulary

- decimal place
- decimal fraction
- recurring decimal
- equivalent fraction
- tenth
- sharing
- partitioning
- exchanging
- rounding to 3d.p.
- hundredth
- thousandth
- equal to
- remainder
- grouping

Place Value

Tens	Ones	.	tenths	hundredths	thousandths
	1 1 1		0.1 0.1 0.1 0.1	0.01 0.01	0.001 0.001 0.001 0.001 0.001 0.001

$$3 + \frac{4}{10} + \frac{2}{100} + \frac{6}{1000} \quad \longleftrightarrow \quad 3.426 \quad \longleftrightarrow \quad 3 + 0.4 + 0.02 + 0.006$$

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
0.001	0.002	0.003	0.004	0.005	0.006	0.007	0.008	0.009

Fractions to Decimals

$$\frac{7}{20} \xrightarrow{\times 5} = \frac{35}{100} \text{ or } 0.35$$

$$\frac{7}{25} \xrightarrow{\times 4} = \frac{28}{100} \text{ or } 0.28$$

$$\frac{7}{50} \xrightarrow{\times 2} = \frac{14}{100} \text{ or } 0.14$$

$$\frac{8}{200} \xrightarrow{\div 2} = \frac{4}{100} \text{ or } 0.04$$

When the denominator is not a factor or multiple of 100

$$\frac{7}{8} = 7 \div 8$$

	0	.	8	7	5
8	7	.	7 0	6 0	4 0

Dividing Decimals by Integers

8.12 ÷ 4

	2	.	0	3
4	8	.	1̶ ¹1	2

6.93 ÷ 3 = 2.31

Ones	.	tenths	hundredths
1 1		0.1 0.1 0.1	0.01
1 1		0.1 0.1 0.1	0.01
1 1		0.1 0.1 0.1	0.01

Decimals

Multiplying and Dividing by 10, 100 and 1000

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
			2	0	8	
		2	0	8		
			2	0	8	

× 10
÷ 10

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
		4	3	5		
4	3	5	0			
		4	3	5		

× 100
÷ 100

Thousands	Hundreds	Tens	Ones	tenths	hundredths	thousandths
			1	3	5	1
1	3	5	1			
			1	3	5	1

× 1000
÷ 1000

Multiplying Decimals by Integers

	3	.	4	5
×				3
1	0	.	3	5

1   1

3.21 × 3 = 9.63

Ones	tenths	hundredths
1 1 1	0.1 0.1	0.01
1 1 1	0.1 0.1	0.01
1 1 1	0.1 0.1	0.01

Decimal Numbers as Fractions

0.1 0.2 0.3 0.4 0.5 0.6 0.7 0.8 0.9 1

$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$	$\frac{1}{10}$
0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

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

$\frac{1}{5}$ $\frac{2}{5}$ $\frac{1}{2}$ $\frac{3}{5}$ $\frac{4}{5}$

$\frac{1}{100} = 0.01$

$\frac{50}{100} = \frac{1}{2} = 0.5$

$\frac{25}{100} = \frac{1}{4} = 0.25$

$\frac{75}{100} = \frac{3}{4} = 0.75$

$\frac{20}{100} = \frac{1}{5} = 0.2$

$\frac{1}{3} = 0.33$ $\frac{1}{8} = 0.125$ $\frac{1}{1000} = 0.001$