

# Decimals

# Knowledge Organiser

## Key Vocabulary

## Place Value

## Fractions to Decimals

decimal place

decimal fraction

recurring decimal

equivalent fraction

tenth

sharing

partitioning

exchanging

rounding to 3d.p.

hundredth

thousandth

equal to

remainder

grouping

| 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<br>0.001 0.001 |

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

|       |       |       |       |       |       |       |       |       |
|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 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 |

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

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

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

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

When the denominator is not a factor or multiple of 100

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

|   |   |   |   |   |   |
|---|---|---|---|---|---|
|   | 0 | 8 | 7 | 5 |   |
| 8 | 7 | 0 | 6 | 4 | 0 |

## Dividing Decimals by Integers

$$8.12 \div 4$$

|   |   |   |                |
|---|---|---|----------------|
|   |   |   |                |
|   | 2 | . | 0 3            |
| 4 | 8 | . | <del>1</del> 2 |

$$6.93 \div 3 = 2.31$$

| 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       |

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## Multiplying and Dividing by 10, 100 and 1000

| Thousands | Hundreds | Tens   | Ones | tenths | hundredths | thousandths |
|-----------|----------|--------|------|--------|------------|-------------|
|           |          |        | 2    | 0      | 8          |             |
|           |          | ← × 10 | 2    | 0      | 8          |             |
|           |          |        |      | ← ÷ 10 |            |             |
|           |          |        | 2    | 0      | 8          |             |

| Thousands | Hundreds | Tens | Ones | tenths  | hundredths | thousandths |
|-----------|----------|------|------|---------|------------|-------------|
|           |          | 4    | 3    | 5       |            |             |
| ← × 100   |          | 4    | 3    | 5       |            |             |
|           |          |      |      | ← ÷ 100 |            |             |
|           |          | 4    | 3    | 5       |            |             |

| Thousands | Hundreds | Tens | Ones | tenths   | hundredths | thousandths |
|-----------|----------|------|------|----------|------------|-------------|
|           |          |      | 1    | 3        | 5          | 1           |
| ← × 1000  |          |      | 1    | 3        | 5          | 1           |
|           |          |      |      | ← ÷ 1000 |            |             |
|           |          |      | 1    | 3        | 5          | 1           |

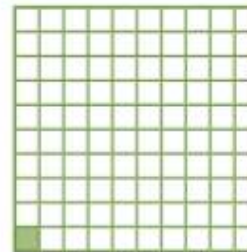
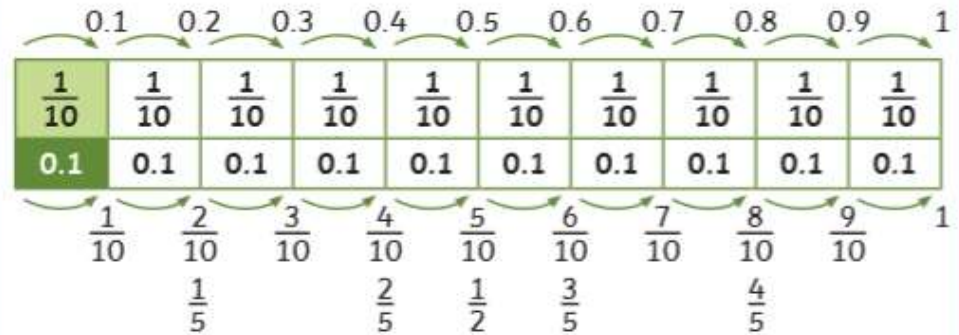
## Multiplying Decimals by Integers

|   |   |   |   |   |
|---|---|---|---|---|
|   | 3 | . | 4 | 5 |
| × |   |   |   | 3 |
| 1 | 0 | . | 3 | 5 |
|   | 1 |   | 1 |   |

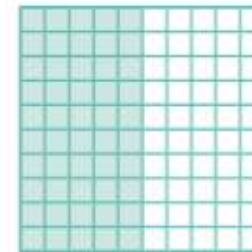
$$3.21 \times 3 = 9.63$$

| 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     |

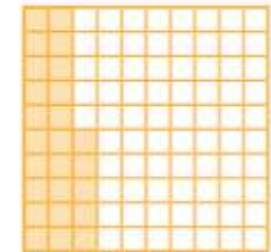
## Decimal Numbers as Fractions



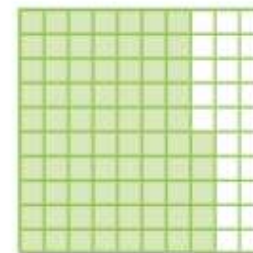
$$\frac{1}{100} = 0.01$$



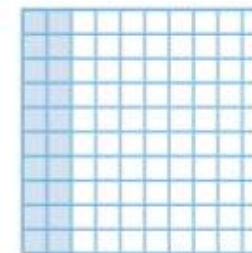
$$\frac{50}{100} = \frac{1}{2} = 0.5$$



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



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



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

$$\frac{1}{3} = 0.33$$

$$\frac{1}{8} = 0.125$$

$$\frac{1}{1000} = 0.001$$