

Decimals

Knowledge Organiser

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 |



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

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

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

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

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

When the denominator is not a factor or multiple of 100

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

| | | | | |
|---|---|---|---|---|
| | 0 | 8 | 7 | 5 |
| 8 | 7 | 0 | 0 | 0 |

Dividing Decimals by Integers

$$8.12 \div 4$$

| | | | |
|---|---|--------------|----------------|
| | | | |
| | 2 | 0 | 3 |
| 4 | 8 | 1 | ¹ 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 |

Multiplying and Dividing by 10, 100 and 1000

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

| Thousands | Hundreds | Tens | Ones | • | tenths | hundredths | thousandths |
|-----------|----------|------|------|---|--------|------------|-------------|
| | | 4 | 3 | • | 5 | | |
| ← × 100 | | 4 | 3 | • | 5 | | |
| 4 | 3 | 5 | 0 | • | | | |
| | | 4 | 3 | • | 5 | | |
| | | 4 | 3 | • | 5 | | |
| | | 4 | 3 | • | 5 | | |

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

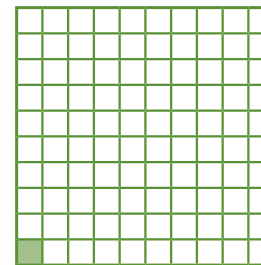
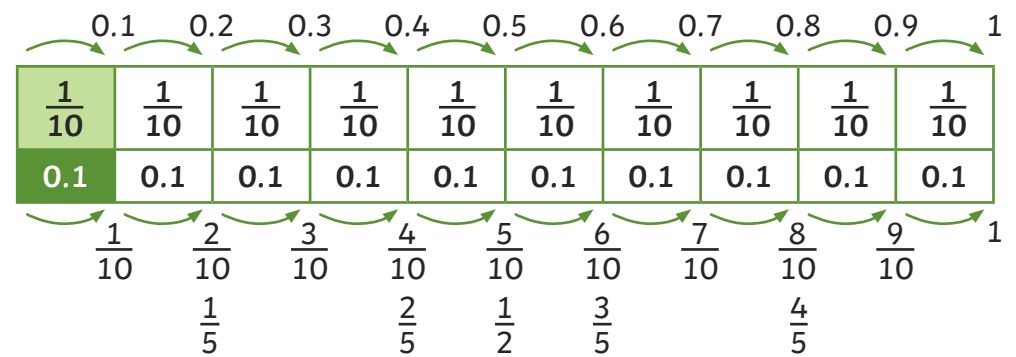
Multiplying Decimals by Integers

| | | | | |
|-------|---|---|---|---|
| | 3 | . | 4 | 5 |
| × | | | | 3 |
| <hr/> | | | | |
| 1 | 0 | . | 3 | 5 |
| | 1 | | 1 | |

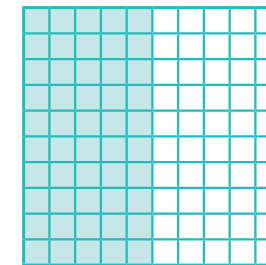
$$3.21 \times 3 = 9.63$$

| 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 |

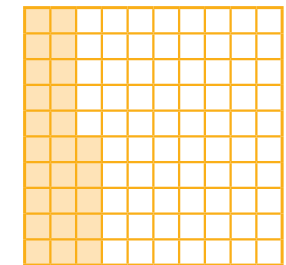
Decimal Numbers as Fractions



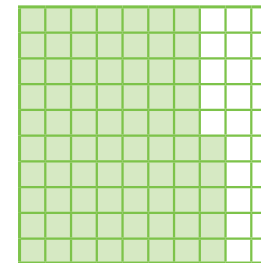
$$\frac{1}{100} = 0.01$$



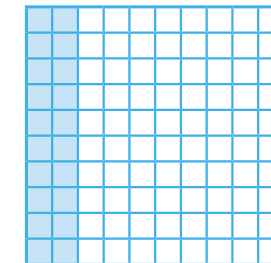
$$\frac{50}{100} = \frac{1}{2} = 0.5$$



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



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



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

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

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

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