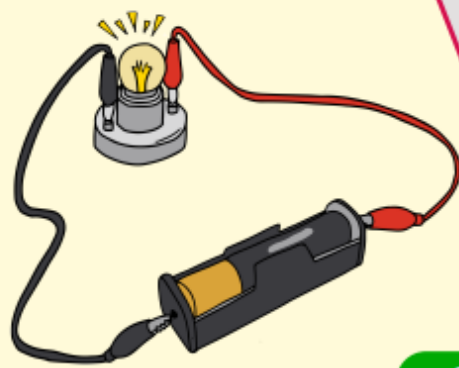




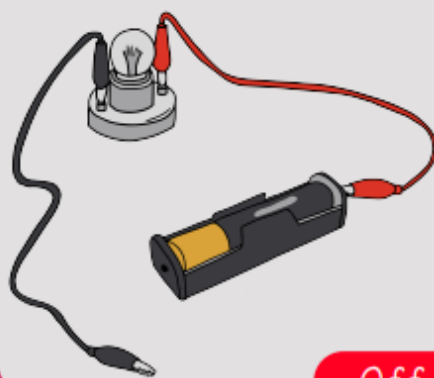
## Year 5 - Doodlers

|                   |  |
|-------------------|--|
| Circuit           | A collection of components that make an electrical system.   |
| Circuit component | One of several parts that complete a circuit (e.g. bulb).  |
| Configuration     | How different parts are put together to form an object.  |
| Current           | The flow of electricity.   |
| Develop           | Continue to work on something to make progress or improve it.  |
| DIY               | The acronym means 'Do it yourself' and represents various activities that someone chooses to do themselves at home, rather than through a service or professional. |
| Investigate       | Research something by looking at it in greater detail.   |
| Problem-solve     | Develop and test solutions to an issue.  |
| Product analysis  | To look at an object and evaluate it based on certain criteria (e.g. function).  |
| Stable            | Object does not easily topple over.  |
| Target user       | A particular person at whom the product is aimed.  |

Series circuits only have one path for the electrical current to flow.



On

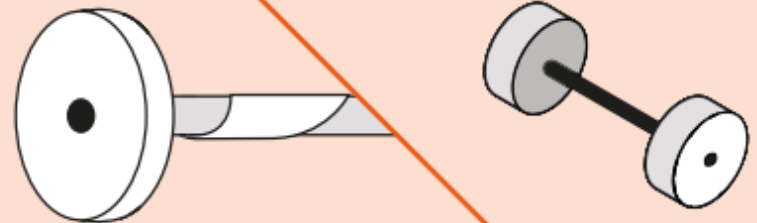


Off

If there is a break in a series circuit, the electrical current will be cut and all the components will stop working. Causing a break in a series circuit can act as a switch to turn the circuit off.

## Key facts

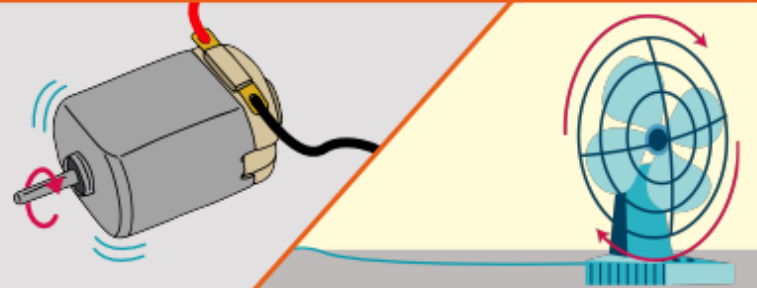
Axles form part of the wheel mechanism in wheeled products such as toy cars, wheelbarrows and bicycles.



For a bicycle to function we need to use our legs and feet to push the pedals that rotate the axle and spin the wheels.



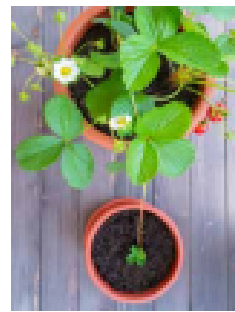
An electric motor converts electrical energy into rotational movement, causing the motor's axle to spin. Motors use electricity instead of human force to move the axle.



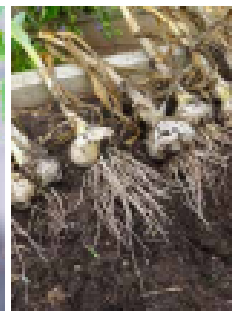
A motorised product is an object that uses a motor to function.

### Asexual reproduction

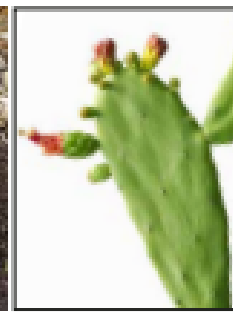
- The parent plant creates an exact copy of itself without involving another plant.
- Natural methods include **runners**, **tubers**, **budding** and **bulbs**.
- Forced methods (by humans) include **cuttings**, layering and divisions.



runner



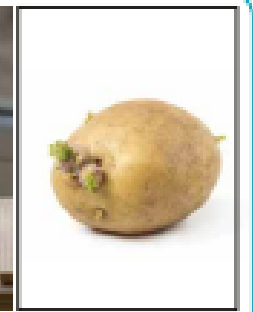
bulbs



budding



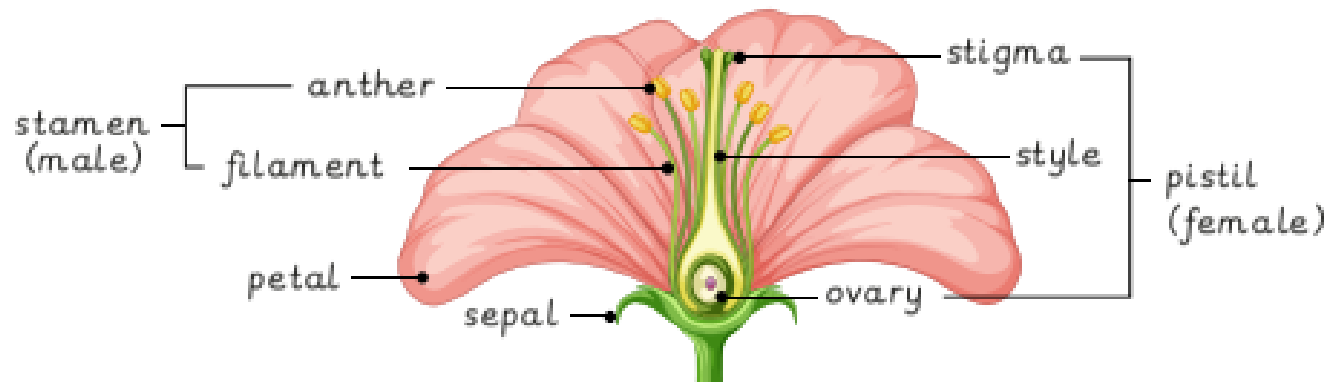
cutting



tuber

### Sexual reproduction

- Pollen is transferred from the male anther of one flower to the female stigma of a flower on another plant.
- Pollen can be transferred by insects, wind or other animals.
- **Fertilisation** happens when the male **pollen** reaches the **ovary** and combines with the female ovules.
- The fertilised ovule then develops into a seed, which can be dispersed by wind, air or animals.
- Seeds can then grow into new plants, starting the plant life cycle again.



### Who were the Vikings?

- Vikings left their homes in Scandinavia and sailed in longships to other parts of Europe.
- Longships could sail in shallow water, so they could travel up rivers and across seas.
- Vikings lived simply and comfortably with their families in longhouses.



### Danelaw

After King Alfred's victory at the Battle of Edington, Guthrum withdrew from Wessex and agreed to divide England.

The Vikings settled in the Danelaw, where York was the most important city.

Many Anglo-Saxons lived peacefully in the Danelaw as long as they followed Danish law.

Edward the Elder and his sister Aethelflaed conquered the Danelaw.



### Trade

- The Vikings travelled buying and selling many goods.
- Excavations and analysis of Viking hoards show us how far the Vikings travelled and traded.

### Viking raids



- In England, Vikings raided religious buildings. These were easy to find and contained gold and silver.
- Vikings believed dying in battle would help them reach Valhalla (heaven).

### Viking rule

Edward's son, Athelstan, was the first king of all England.



Edward the Confessor

In the late 10th century, Viking raids began again. King Ethelred fought them using the Danegeld.

Danish king Sweyn Forkbeard conquered England. His son, King Cnut, ruled England, Denmark, and Norway peacefully.

In 1042, Edward the Confessor became king after 25 years of Danish rule.

**790CE**

Viking age began

**874CE**

Vikings had conquered all English kingdoms except Wessex

**1042**

Edward the Confessor became king

**1066**

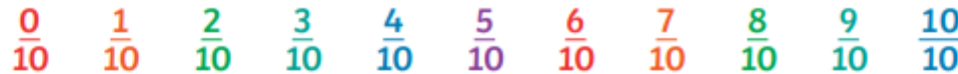
Viking period ended

# Decimals

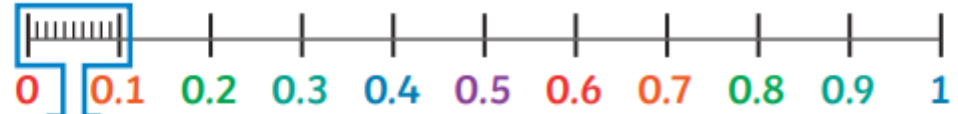
## Key Vocabulary

## Tenths, Hundredths and Thousandths

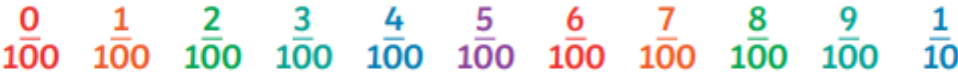
tenths



hundredths



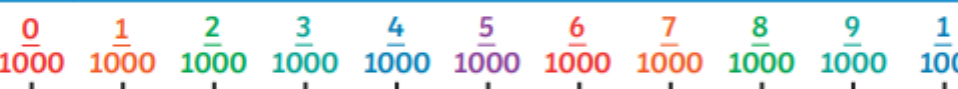
decimal tenths



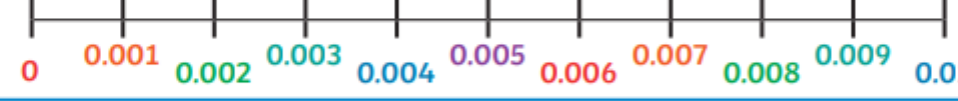
decimal hundredths



decimal equivalents



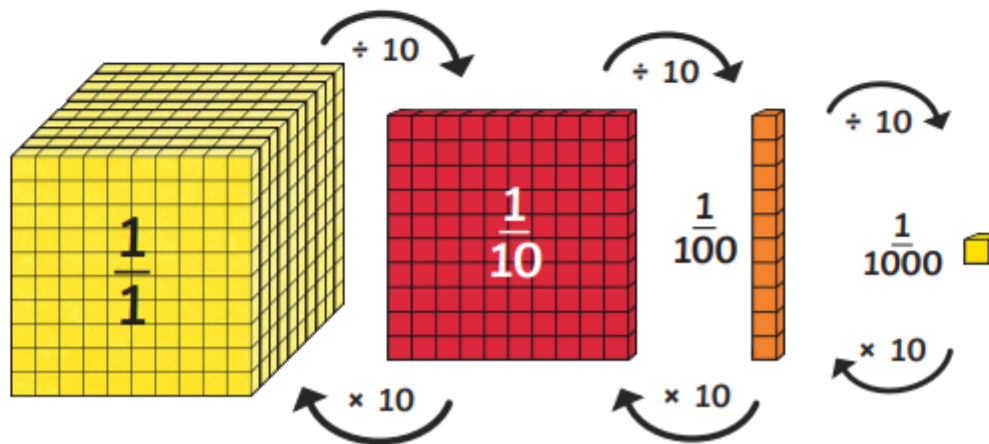
part-whole model



rounding

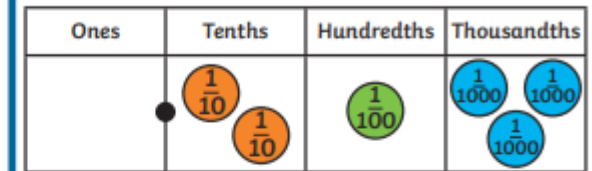
decimal point

place value

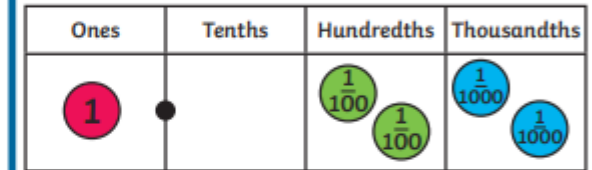


# Knowledge Organiser

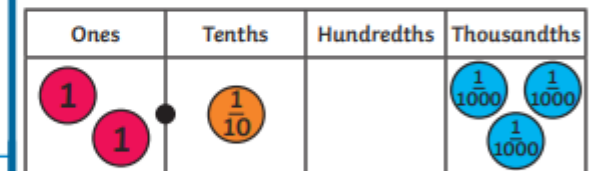
## Order and Compare Numbers with Three Decimal Places



0 . 2 1 3



1 . 0 2 2



2 . 1 0 3

## Decimal Numbers as Fractions

$$0.71 = \frac{71}{100} = \frac{7}{10} + \frac{1}{100}$$

$$0.37 = \frac{37}{100} = \frac{3}{10} + \frac{7}{100}$$

# Decimals

# Knowledge Organiser

## Multiplying and Dividing by 10, 100 and 1000

| Tens | Ones | Tenths | Hundredths | Thousandths |
|------|------|--------|------------|-------------|
| 3    | 8    |        |            |             |
|      | 3    | 8      |            |             |
| 3    | 8    |        |            |             |

$\div 10$  (arrow from 8 to 3) and  $\times 10$  (arrow from 3 to 8)

| Tens | Ones | Tenths | Hundredths | Thousandths |
|------|------|--------|------------|-------------|
| 3    | 8    |        |            |             |
|      | 0    | 3      | 8          |             |
| 3    | 8    |        |            |             |

$\div 100$  (arrow from 8 to 0) and  $\times 100$  (arrow from 0 to 8)

| Tens | Ones | Tenths | Hundredths | Thousandths |
|------|------|--------|------------|-------------|
| 3    | 8    |        |            |             |
|      | 0    | 0      | 3          | 8           |
| 3    | 8    |        |            |             |

$\div 1000$  (arrow from 8 to 0) and  $\times 1000$  (arrow from 0 to 8)

## Adding and Subtracting Decimals

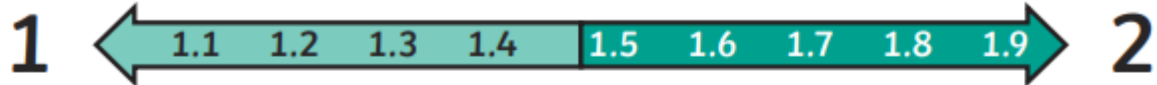
$$0.8 + 0.001 = 0.801$$

$$1.031 - 0.23 = 0.801$$

$$0.4005 + 0.4005 = 0.801$$

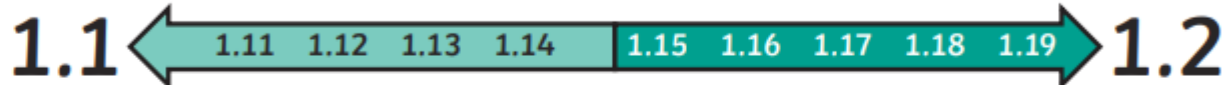


## Rounding Decimals



If the tenths digit is 1, 2, 3 or 4, we round down to the nearest whole number.

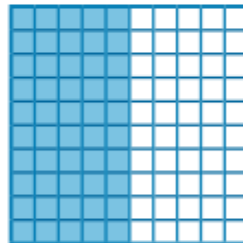
If the tenths digit is 5, 6, 7, 8 or 9, we round up to the nearest whole number.



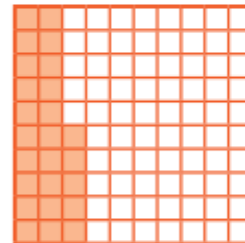
If the hundredths digit is 1, 2, 3 or 4, we round down to the nearest tenth.

If the hundredths digit is 5, 6, 7, 8 or 9, we round up to the nearest tenth.

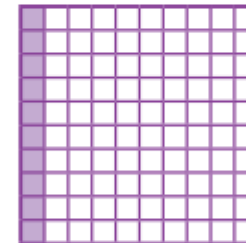
## Percentage and Decimal Equivalents



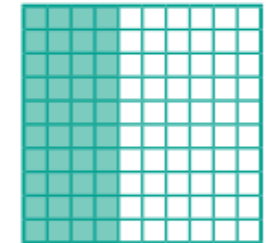
$$50\% = \frac{50}{100} = \frac{1}{2} = 0.5$$



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



$$10\% = \frac{10}{100} = \frac{1}{10} = 0.1$$

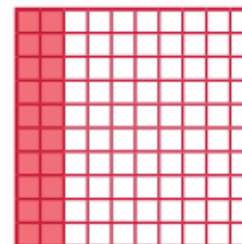


$$40\% = \frac{40}{100} = \frac{2}{5} = 0.4$$

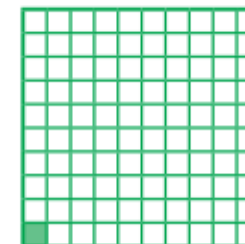
## Crossing the Whole

$$0.82 + 0.63 = 1.45$$

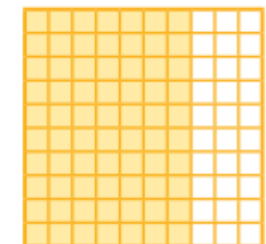
$$2.531 - 0.6 = 1.931$$



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




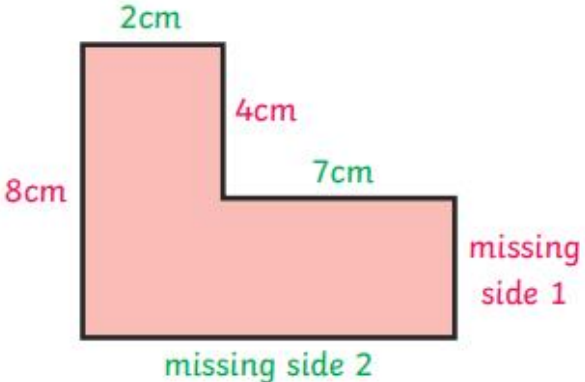
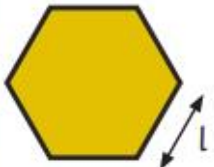


$$1\% = \frac{1}{100} = 0.01$$



$$70\% = \frac{70}{100} = \frac{7}{10} = 0.7$$

# Perimeter and Area

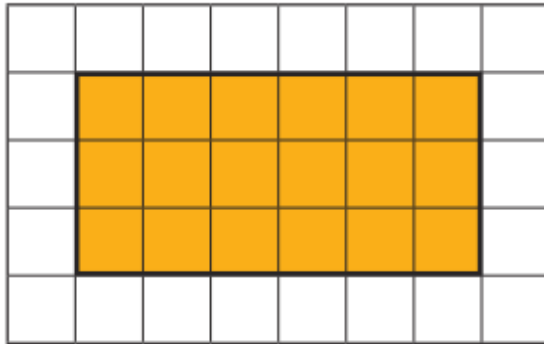
# Knowledge Organiser

| Key Vocabulary  | Measure Perimeter  | Calculate Perimeter   |  |  |
|---|--|---|--|--|
| metre   | <p>Measure the perimeter of a rectangle:</p>         | <p>Calculate the missing sides of this rectilinear shape to find the perimeter:</p>  |  |  |
| kilometre   |  |   | <p>Measure the length (l) and width (w).<br/>Perimeter = <math>l + w + l + w</math> or <math>(l + w) \times 2</math></p> | <p>* This shape is not drawn to the dimensions specified.</p>          |
| perimeter   |  |   | <p>Measure the perimeter of regular shapes:</p>  | <p><b>Missing side 1 + 4cm = 8cm,<br/>so missing side 1 = 4cm.</b></p> |
| length  | <p>Measure the length (l) and count the number of sides (s) on the shape.</p>  | <p><b>Missing side 2 = 2cm + 7cm = 9cm</b></p>  |  |  |
| width   |  <p>Perimeter = <math>l \times s</math></p>           | <p>Perimeter = sum of all sides =<br/><math>2\text{cm} + 4\text{cm} + 7\text{cm} + 4\text{cm} + 9\text{cm} + 8\text{cm} = 34\text{cm}</math></p>                        |  |  |
| rectangle   | <p>Measure the perimeter of irregular shapes:</p>  |   |  |  |
| rectilinear   |  |   |  |  |
| dimensions  |  |   |  |  |
|  visit <a href="https://www.twinkl.com">twinkl.com</a> | <p>Measure the length of each side and add them together.</p>  |   |  |  |

## Length and Perimeter

### Area of Rectangles

The area of a rectangle on a grid:



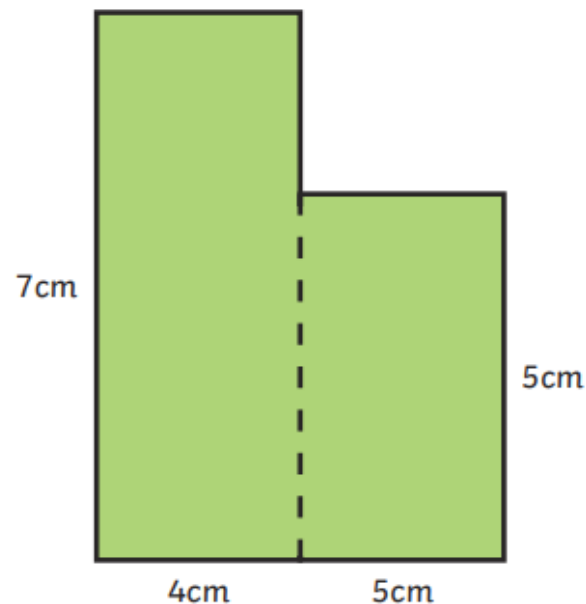
Multiply the length  $\times$  width  
 $= 6 \times 3 = 18$  squares.

The area of a rectangle = length (l)  $\times$  width (w).



### Area of Compound Shapes

To find the area of a compound shape, divide the shape into rectangles with known dimensions:

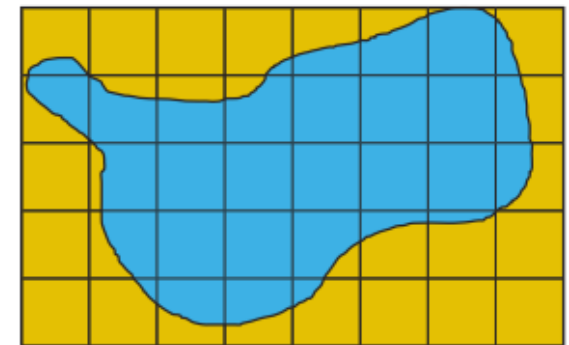


$$\begin{aligned}\text{Area} &= 7\text{cm} \times 4\text{cm} + 5\text{cm} \times 5\text{cm} \\ &= 28\text{cm}^2 + 25\text{cm}^2 \\ &= 53\text{cm}^2\end{aligned}$$

## Knowledge Organiser

### Area of Irregular Shapes

To find the area of an irregular shape, find the number of whole squares and part squares.



Whole squares = 10  
Part squares = 22

$$\begin{aligned}\text{Estimate of area} &= \text{whole squares} + \\ &\quad \text{half part squares} \\ &= 10\text{cm}^2 + 11\text{cm}^2 = 21\text{cm}^2\end{aligned}$$

\*There are other ways to estimate the area of irregular shapes.