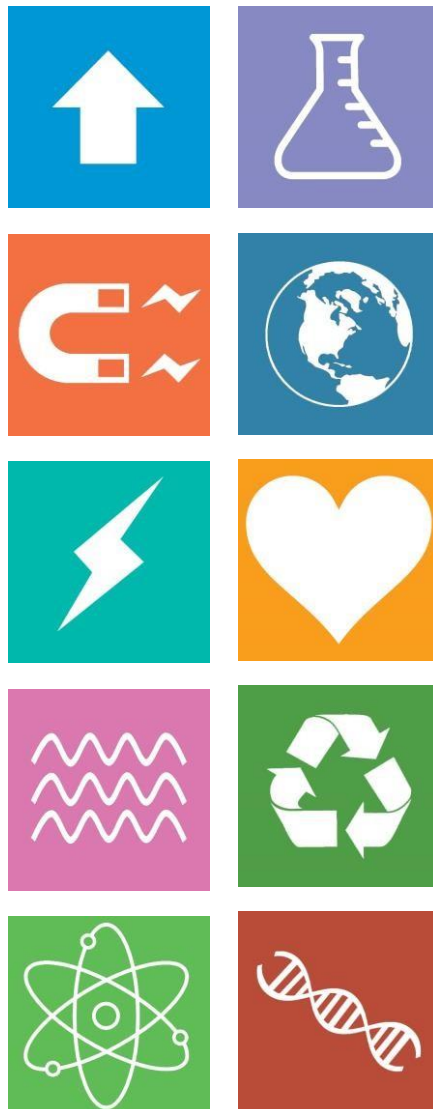


# Flying Start

## Support Booklet

To help give a boost to your daughter's progression in Science we have developed this flying start programme to help develop your daughter's confidence and abilities in Science. At the end of each teaching topic (approximately every 3 weeks) your daughter will undertake a quiz to help her see what she could improve on prior to the end of topics test. Part of this test will be based on the Flying Start booklet she received at the start of the year. The content is designed to stretch her attainment, support her current learning and enhance her scientific understanding. We would appreciate if you could help her to learn and progress by completing the tasks within each activity.





What your daughter could do to help challenge herself in Science:

Practice some equation questions with direct practice



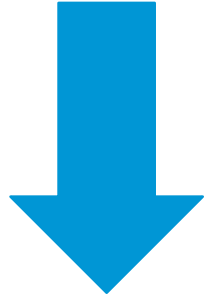
**Revise**

Have a go at using the weight equation to work out the mass of objects on other planets.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. What is the definition for a non-contact force?  
**Answer: A force that acts without direct contact**
2. What is the unit for measuring mass?  
**Answer: kilograms**
3. Which keyword is this the definition for? The force acting on an object due to gravity?  
**Answer: Weight**
4. If an object has a mass of 20kg and the gravitational field strength is 10N/kg, what is the weight of that object?  
**Answer: 200N**
5. Which force holds objects, such as moons, in orbit around larger bodies?  
**Answer: Gravity**

Challenge: If an object weighs 1500N and the gravitational field strength acting on that object is 10N/kg what is the mass of that object?

**Answer: 150kg**

## Additional Support

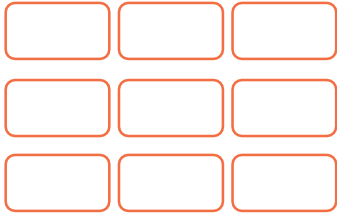
Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartforces>



What your daughter could do to help challenge herself in Science:

Make memory cards with the symbols and names



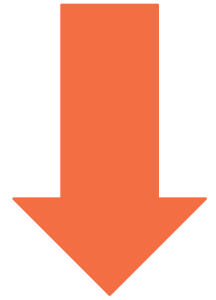
**Revise**

Try drawing out some simple circuit diagrams using the electrical symbols



**Practice**

Quiz her on the questions found below:



**Quiz**

### Quiz

1. What is the symbol for a fuse?

**Answer:**



2. What is the symbol for a diode?

**Answer:**



3. What is the difference between a battery and a cell?

**Answer: A cell is a single unit, a battery is a collection of cells**

4. What is this the symbol for?

**Answer: Resistor**



5. What is this the symbol for?

**Answer: Voltmeter**



Challenge: Why do the electrical symbols for the LED and diode contain a triangle?

**Answer: It shows that the current will only travel through them in one direction**

### Additional Support

Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartelectromagnets>



What your daughter could do to help challenge herself in Science:

Make an interactive revision table



**Revise**

Try to represent the different forms of energy in pictures to see if that helps you remember them.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. Which three substances are known together as fossil fuels?  
**Answer: Coal, Oil and Natural Gas**
2. Name three renewable energy resources?  
**Answer: Any three from: Biofuels, Wind, Hydro-electricity, Geothermal, Tidal, Solar**
3. Give an advantage of using nuclear fuels?  
**Answer: Produces a large amount of energy for a small volume of waste, doesn't release carbon dioxide**
4. Give an advantage of using tidal energy?  
**Answer: Reliable as there are always two tides a day**
5. Which energy resource is this an advantage for: Reliable as water can be stored behind large dams in reservoirs  
**Answer: Hydro-electric**

Challenge: Write a paragraph explaining why we should use renewable resources rather than non-renewable resources

## Additional Support

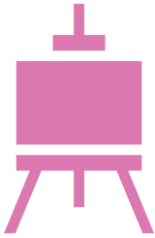
Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartenergy>



What your daughter could do to help challenge herself in Science:

Draw a wave and label on the key parts without looking



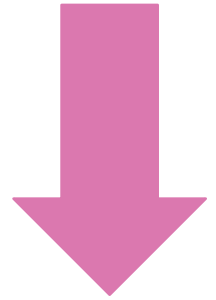
**Revise**

Find examples of different things that make sounds and draw what their sound wave would look like



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. What do you call the top of a wave?

**Answer: Peak**

2. If the amplitude of a wave increases, how does the sound change?

**Answer: The sound becomes louder**

3. What unit is the frequency of a wave measured in?

**Answer: Hertz (Hz)**

4. If the space between two peaks of a wave gets smaller what happens to the pitch?

**Answer: It decreases**

5. What is the definition of a wavelength?

**Answer: The distance from one point on a wave to the same point on the next wave**

Challenge: If there are 4 waves produced per second, what is the period of this wave?

**Answer: 0.25 seconds**

## Additional Support

Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartwaves>



What your daughter could do to help challenge herself in Science:

Draw a diagram to represent the different states of matter.



**Revise**

Find examples around the home of things that are changing state.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. Which states of matter can be compressed?  
**Answer: Gases**
2. Which states of matter flow?  
**Answer: Gases and Liquids**
3. What name is given to the change of state when something changes from a liquid to a gas?  
**Answer: Boiling**
4. What state change occurs when something freezes?  
**Answer: Liquid to Solid**
5. What state change occurs when something sublimates?  
**Answer: Solid to Gas**

Challenge: Can you draw out the state change triangle without looking?

**Answer: see student booklet**

## Additional Support

Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartmatter>



What your daughter could do to help challenge herself in Science:

Make a mind map about acids and alkalis



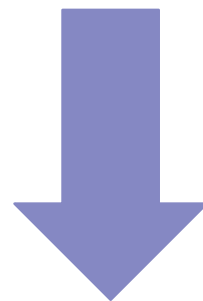
**Revise**

Draw out the pH scale and put on examples of everyday items and where they would appear on it.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. What pH is neutral?

**Answer: 7**

2. A substance that has a pH of 9 is an ....?

**Answer: Alkali**

3. Can you give the names of two strong acids?

**Answer: 2 from Hydrochloric acid, Nitric acid, Sulfuric acid**

4. When an acid reacts with an alkali what is produced?

**Answer: Salt + Water**

5. What type of substance has a pH of 6?

**Answer: Acid**

Challenge: What chemicals are produced when hydrochloric acid reacts with sodium hydroxide?

**Answer: Sodium chloride + Water**

## Additional Support

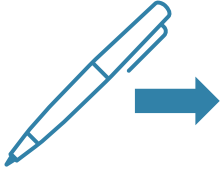
Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartreactions>



What your daughter could do to help challenge herself in Science:

Transform the information about the solar system into a diagram



**Revise**

Research the size of the universe and make a to scale model of the solar system.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. What is the closest planet to the Sun?

**Answer: Mercury**

2. What do we call a celestial body that orbits a planet?

**Answer: A moon**

3. What is the definition of a galaxy?

**Answer: A collection of stars held together by gravity**

4. Which planet is the furthest from the Sun?

**Answer: Neptune**

5. What is the name of our galaxy?

**Answer: The Milky Way**

Challenge: Draw out the solar system showing the planets in order

**Answer: See student booklet**

## Additional Support

Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartearth>





What your daughter could do to help challenge herself in Science:

Make a LSCWS for the functions of the part of the cell



**Revise**

Draw out a plant and animal cell, labelling both the key parts and what they do.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. What part of the cell controls it's activities?

**Answer: Nucleus**

2. Which three parts of a cell do plant cells have that animal cells do not?

**Answer: Cell wall, Vacuole, Chloroplasts**

3. What takes place in ribosomes?

**Answer: Protein synthesis**

4. In a plant cell what is found in the vacuole?

**Answer: Cell sap**

5. Which part of the cell controls the movement of substances in and out of the cell?

**Answer: Cell membrane**

Challenge: Draw out a plant and animal cell labelling on each part that is found within them.

**Answer: See student booklet**

## Additional Support

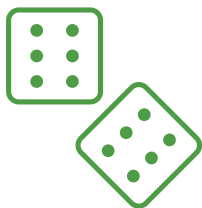
Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartorganisms>



What your daughter could do to help challenge herself in Science:

Make a game of key word revision snap



**Revise**

Sketch a cross section of a leaf and label on the key tissues.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. What carries water up through a plant?  
**Answer: Xylem**
2. Which tissues are found at the growing tips of shoots and roots?  
**Answer: Meristem Tissue**
3. What is the function of guard cells?  
**Answer: To open and close the stomata**
4. What takes place in the palisade mesophyll?  
**Answer: Photosynthesis**
5. Which tissue provides a waterproof layering for the leaf?  
**Answer: Cuticle**

Challenge: A leaf has an area of  $36\text{cm}^2$ . If there are 2.5 stomata per  $\text{cm}^2$  how many stomata are there on the entire leaf?

**Answer: 90**

## Additional Support

Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartecosystems>



What your daughter could do to help challenge herself in Science:

Set yourself questions on Educake to test yourself



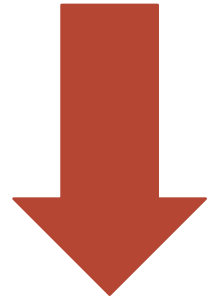
**Revise**

Find out some examples of other specialised cells and the adaptations that they have.



**Practice**

Quiz her on the questions found below:



**Quiz**

## Quiz

1. In an animal what are the gametes known as?  
**Answer: Sperm and Egg**
2. What is the key word for the joining of a male and female nucleus?  
**Answer: Fertilisation**
3. What is unique about the number of chromosomes in gametes?  
**Answer: Half the number of normal body cells**
4. What are the gametes in flowering plants called?  
**Answer: Pollen and Egg**
5. Why does a sperm cell have a tail?  
**Answer: To allow it to move**
6. What is the mid-section of a sperm cell full of?  
**Answer: Mitochondria**

Challenge: Why does a sperm cell have an acrosome?

**Answer: It contains digestive enzymes to break down the outer layer of the egg.**

## Additional Support

Practice your revision techniques here:

<https://www.revisingscience.com/flyingstartgenes>