



Putteridge
High
School

Extended Learning

Science

Years 7 & 8



Putteridge
High
School

Science Year 7



Extended Learning Opportunities

Subject: Science

Year: 7

Topic: 7A Cells, Tissues and Organs

Learning Objectives

- To identify the life processes in different organisms
- To describe the functions of a large range of human, animal and plant organs.
- To describe how to use a light microscope
- To describe the functions of cell parts in animal and plant cells
- To state the functions of various organ systems: digestion, circulation, urinary, nervous

Extended Learning Opportunities

- Watch the Crash Course Biology videos on:
 - Animal cells: <https://www.youtube.com/watch?v=cj8dDTHGJBY>
 - Plant cells: <https://www.youtube.com/watch?v=9UvIqAVCoqY&t=26s>
- Learn more about cells, tissues and organ systems on <https://www.bbc.com/education/guides/z9hyvcw/revision/1>
- Visit the Who am I? exhibit at the Science Museum to learn more about how genetics and the nervous system create you.



Extended Learning Opportunities

Subject: Science

Year: 7

Topic: 7B Sexual reproduction in animals

Learning Objectives

- Compare reproduction in different types of animals.
- Explain how sperm cells and egg cells are adapted to their functions.
- Compare the reproductive systems of humans and other animals.
- Describe how materials are supplied and removed from the foetus.
- Describe the effects of some substances that may harm a developing foetus.
- Describe what happens to parts of the body during puberty and adolescence.

Extended Learning Opportunities

- Watch the Crash Course Biology videos on:
 - Female reproductive system: <https://www.youtube.com/watch?v=RFDatCchpus>
 - Male reproductive system: https://www.youtube.com/watch?v=-XQcnO4iX_U
 - Pregnancy and development: <https://www.youtube.com/watch?v=BtsSbZ85yiQ>
- Visit Whipsnade zoo or London zoo and learn about their breeding programmes. Also discuss with the zookeepers about how different animals raise their young.



Extended Learning Opportunities

Subject: Science

Year: 7

Topic: 7E Mixtures and separation

Learning Objectives

- To identify solids, liquids, gases and mixtures
- To describe dissolving
- To describe how to separate solutions
- To explain chromatography
- To explain distillation

Extended Learning Opportunities

- Watch the Crash Course Kids video on mixtures
<https://www.youtube.com/watch?v=jAOPzblYPUM>
- Watch the BBC Bitesize video on separation techniques
<https://www.youtube.com/watch?v=pDDWCfNuhj4>
- Visit the Crossness Pumping station to look at sewage treatment and the processes involved in purifying water to go into the Thames.



Extended Learning Opportunities

Subject: Science

Year: 7

Topic: 7I Energy

Learning Objectives

- To explain the differing energy needs of people of different ages and activity levels.
- To apply the law of conservation of energy
- To compare renewable and non-renewable fuels

Extended Learning Opportunities

- Visit the “Energy: fuelling the future gallery” (closing October 2018) and the Energy Hall at the Science Museum to learn more about the generation of electricity from the past to the future.
- Watch the EDF nuclear reactor advert to get a basic understanding of how nuclear reactors work <https://www.youtube.com/watch?v=6K5gy3RLcKc>
- Visit a power station; EDF energy and Drax are two of the most popular. Drax is a “half-and-half” power station, therefore it uses both non-renewable and renewable energy sources.



Science Year 8



Extended Learning Opportunities

Subject: Science

Year: 8

Topic: 8A Food and digestion

Learning Objectives

- To explain the nutritional value of food.
- To describe the effects of an unbalanced diet
- To describe and explain digestion.
- To explain how and why absorption occurs.

Extended Learning Opportunities

- Watch the Crash Course videos on Digestion:
 - Part 1: <https://www.youtube.com/watch?v=yloTRGfcMqM>
 - Part 2: <https://www.youtube.com/watch?v=pqgcElaXGME>
 - Part 3: <https://www.youtube.com/watch?v=jGme7BRkpuQ>
- Buy or make a plain apron. Draw the digestive system onto the apron as a way of remembering the organs shapes and locations.
- Make a video using a camera or smartphone app about the role of enzymes and how they work in digesting food.



Extended Learning Opportunities

Subject: Science

Year: 8

Topic: 8E Combustion

Learning Objectives

- Explain changes in mass within reactions.
- Compare efficiency of fuels
- Explain the effects of complete and incomplete combustion
- Explain the role of carbon dioxide in global warming

Extended Learning Opportunities

- Watch the following Crash Course videos
 - Conservation of mass - <https://www.youtube.com/watch?v=3IHHOiTdmK4>
 - Fundamental laws (conservation of mass - advanced, historical aspects, combustion) - <https://www.youtube.com/watch?v=QiiyvzZBKT8>
 - Combustion of hydrocarbons (GCSE and above) - <https://www.youtube.com/watch?v=Ulolw7dhnIQ>
- Visit the Atmosphere gallery at the Science Museum and investigate climate change and global warming.



Extended Learning Opportunities

Subject: Science

Year: 8

Topic: 8I Fluids

Learning Objectives

- Explain what happens to particles and temperature during changes of state, in terms of energy and forces.
- Explain atmospheric and fluid pressure in different situations.
- Explain why an object floats.
- Explain why a vehicle needs a force from the engine to keep moving at a constant speed.

Extended Learning Opportunities

- Make your own cartesian diver (<https://sciencebob.com/make-a-cartesian-diver/>). Use it to explain the effect of fluid pressure.
- Try some of these science experiments (<https://www.asme.org/career-education/articles/k-12-grade/5-ways-to-demonstrate-air-pressure-to-children>) that demonstrate changes in air pressure. In each one make sure you can explain how changes in air pressure are involved.



Extended Learning Opportunities

Subject: Science

Year: 8

Topic: 8B Plants and their reproduction

Learning Objectives

- Explain how organisms are classified, using smaller and smaller groupings of shared characteristics.
- Explain the difference in outcomes of asexual and sexual reproduction in plants.
- Describe how the structures of a flower are adapted to their functions.
- Explain the functions of the different parts of a seed.
- Explain the importance of seed dispersal.

Extended Learning Opportunities

- Watch the Crash Course video on:
 - Plant reproduction: <https://www.youtube.com/watch?v=ExaQ8shhkW8>
- Visit Wakehurst Botanical Gardens (Sussex) and learn about seed banks.