



Drop Zone

Learning Outcome:

Use the materials provided to create a safe way for the cups to travel from the top to the base of the tube.

You will need:

- Cups
- String
- Paper Clips
- Balloons
- Art Straws
- Pipe Cleaners

What to do:

1. Using the materials provided you have to create a safe way for the two Lego figures to travel from the top to the base of the tube.
2. Your solution must have a soft landing but also be an exciting ride.
3. Both Lego characters must still be in cups at the end of the task.



Drop Zone

I explore and discover engineering disciplines and can create solutions. **TCH 1-12a**

- Recognises and identify different engineering disciplines.
- Builds a solution to a specific task, which has moving parts.

I can extend my knowledge and understanding of engineering disciplines to create solution. **TCH 2-12a**

- Understands the difference between different engineering disciplines
- Understands different energy types.
- Builds/simulates solutions to engineering problems.



House of Mirrors

Learning Outcome:

Demonstrate and explain how light travels

You will need:

- Cardboard box
- Glue
- Mirrors
- Torch/light beam

What to do:

1. Create a maze using a cardboard box.
2. Place the mirrors throughout the maze.
3. Shine the torch on the first mirror and try and get the light to travel to the end of the maze.
4. Move the mirrors to get the light to travel to the next mirror.



House of Mirrors

By exploring reflections, the formation of shadows and the mixing of colour lights, I can use my knowledge of the properties of light to show how it can be used in a creative way. **SCN 2-11b**

- *Demonstrates and records, through practical investigations, that light travels in straight lines, can be reflected by highly-polished surfaces and that curved faces can distort the image.*
- *Predicts and investigates how the position, shape and size of a shadow depend on the position of the object in relation to the light source.*
- *Demonstrates that white light/sunlight can be dispersed to show the colours of the visible spectrum and identifies the colours and order of the rainbow as red, orange, yellow, green, blue, indigo and violet.*
- *Explains that we see objects because they give out or reflect light rays that enter our eyes.*
- *Draws on findings from practical investigations to describe the effect that coloured filters have on white light and how they can be used to make other colours.*
- *Explains how we can recognise the colour of an object due to reflection and absorption of particular parts of the visible spectrum.*



Go Fishing

Learning Outcome:

Describe how magnets repel and attract certain materials

You will need:

- Variety of magnetic and non-magnetic objects
- Magnetic wand
- Fish tank
- Art materials

What to do:

1. Collect a variety of magnet and non magnetic objects.
2. Decorate the objects with various sea creatures.
3. Place sea creatures in the fish tank.
4. Go fishing with the magnetic wand.
5. Sort magnetic and non magnetic objects out.



Go Fishing

By exploring forces exerted by magnets and magnetic materials, I can contribute to the design of a game. **SCN 1-08a**

- *Reports in writing, visually, orally how magnets exert a non-contact force on each other and attract certain materials.*
- *Demonstrates through practical activities that like poles repel and opposite poles attract.*
- *Give at least two examples for how magnets are used in everyday life.*



Log Flume

Learning Outcome:

Describe and demonstrate how magnets repel and attract

You will need:

- Magnet wands
- Plastic boat
- Gutter/bucket of water

What to do:

1. Take one of the premade boats and place it in the gutter.
2. Using the magnet wand try to 'push' the boat from one end of the gutter to the other using only magnetic force.
3. Now try and take the boat back to the start by using magnetic force to 'pull' the boat. You might want to try placing the magnet underneath or at the side of the gutter to see what works best.



Log Flume

I have collaborated in investigations to compare magnetic, electrostatic and gravitational forces and have explored their practical applications.

SCN 2-09a

- *Measures gravitational force with a force meter or newton meter and record results using appropriate units (Newtons).*
- *Explains how some objects may become electrically charged by rubbing two surfaces together and the charges produce an electrostatic force.*
- *Describes practical applications of magnetic, electrostatic and gravitational forces, for example, magnetised needle in a compass.*

I can recognise a variety of materials and suggest an appropriate material for a specific use. **TCH 1-10a**

I can recognise basic properties and uses for a variety of materials and can discuss which ones are most suitable for a given task. **TCH 2-10a**

- Recognises characteristics of groups of materials such as wood, plastic and metal.
- Selects suitable materials to use in a task
- Discuss the uses of materials



Ferris Wheel

Learning Outcome:

Use components to create a circuit that can be used for different purposes

You will need:

- Battery
- Wires
- Motor
- Switch
- Card
- Variety of media

What to do:

1. Create an electrical circuit containing a motor and a switch.
2. Create a structure to support the motor from a variety of media.
3. Using card create a wheel that can be attached to the motor to create a Ferris Wheel.



Ferris Wheel

I can describe an electrical circuit as a continuous loop of conducting materials. I can combine simple components in a series circuit to make a game or model. **SCN 1-09a**

- *Builds simple circuits containing bulbs, switches, bells and batteries.*

I have used a range of electrical components to help make a variety of circuits for differing purposes. I can represent my circuit using symbols and describe the transfer of energy around the circuit. **SCN 2-09a**

- *Designs and builds a variety of electrical circuits for differing purposes, using an increasing range of components.*
- *Draw circuit diagrams using appropriate symbols to denote a bulb, switch, motor, bell, buzzer, wires, cell and a battery.*
- *Describes how components in a circuit transfer energy into different forms.*



The Puppet Show

Learning Outcome:

Investigate how to create and change shadows by altering variables

You will need:

- Card
- Art straws
- Torch

What to do:

1. Using card create a creature that has a number of cut outs.
2. Attach an art straw to the creature so that there is now a handle.
3. Turn the lights off.
4. Use a torch to shine the light on the creature and create a shadow.

What variables can be changed to alter the position, shape and size of the shadow?



The Puppet Show

By exploring reflections, the formation of shadows and the mixing of colour lights, I can use my knowledge of the properties of light to show how it can be used in a creative way. **SCN 2-11b**

- *Demonstrates and records, through practical investigations, that light travels in straight lines, can be reflected by highly-polished surfaces and that curved faces can distort the image.*
- *Predicts and investigates how the position, shape and size of a shadow depend on the position of the object in relation to the light source.*
- *Demonstrates that white light/sunlight can be dispersed to show the colours of the visible spectrum and identifies the colours and order of the rainbow as red, orange, yellow, green, blue, indigo and violet.*
- *Explains that we see objects because they give out or reflect light rays that enter our eyes.*
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Carnival Lights

Learning Outcome:

Construct a simple cell

You will need:

- Apple
- Wires
- Light

What to do:

1. Create an electrical circuit containing using the fruit as the cell.
2. Insert 2 prods/nails into the fruit and connect one red and one black wire.
3. Now connect the black and red wire to the bulb.



Carnival Lights

To begin to understand how batteries work, I can help to build simple chemical cells using readily-available materials which can be used to make an appliance work. **SCN 2-10a**

- *Applies knowledge and understanding to build simple batteries (chemical cells) and demonstrates understanding that a battery (cell) is a portable energy source which has a store of chemical energy.*
- *Explains the process of energy transformation form battery (cell) to electrical components.*