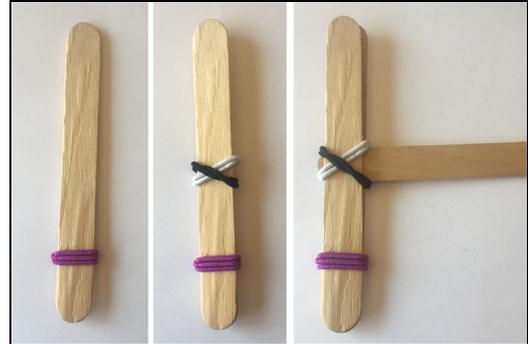


Energy - Where Does it Go?		Grade 1 - Energy in Our Lives				
Lesson Plan		Safety Notes	Do not aim catapults or paper airplanes at other people. Choose safe catapult ammunition.			
<p>Description In this lesson, students will learn about different types of energy in their lives and build a catapult and paper airplane launcher which use energy to make them move.</p>						
<p>Materials</p> <table border="0" style="width: 100%;"> <tr> <td style="vertical-align: top; width: 33%;"> <p>Catapult 1</p> <ul style="list-style-type: none"> ● Plastic spoon ● Cotton balls </td> <td style="vertical-align: top; width: 33%;"> <p>Catapult 1</p> <ul style="list-style-type: none"> ● Craft sticks ● Elastics ● Large marker ● Tape ● Bottle cap ● Cotton Balls </td> <td style="vertical-align: top; width: 33%;"> <p>Paper Airplane Launcher</p> <ul style="list-style-type: none"> ● Craft stick ● Elastic ● Tape ● Paperclip ● Computer paper or Airplane template ● Crayons or Markers </td> </tr> </table>				<p>Catapult 1</p> <ul style="list-style-type: none"> ● Plastic spoon ● Cotton balls 	<p>Catapult 1</p> <ul style="list-style-type: none"> ● Craft sticks ● Elastics ● Large marker ● Tape ● Bottle cap ● Cotton Balls 	<p>Paper Airplane Launcher</p> <ul style="list-style-type: none"> ● Craft stick ● Elastic ● Tape ● Paperclip ● Computer paper or Airplane template ● Crayons or Markers
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<p>Science Background</p> <p>Energy is the ability to do work. That means energy is used to make things happen! From moving an object to lighting up a flashlight, nothing happens without some energy being involved! Energy can be divided into 2 main types; kinetic and potential.</p> <p>Kinetic energy is the energy in moving objects. Running, jumping, a rolling ball, a moving car, and electrons flowing in a circuit all have kinetic energy!</p> <p>Potential energy is energy that is being stored and waiting to do something. A ball that could fall, a stretched elastic that could snap, a battery that could turn something on, a muscle waiting to move, all of these things could do something so they have potential energy!</p> <p>The catapult and launcher both store potential energy and release it as kinetic energy! Can you figure out where the potential energy is stored?</p>						
<p>Activity Procedure</p> <p>Catapult 1</p> <ol style="list-style-type: none"> 1. Hold the plastic spoon out in front of you with one hand. 2. With the other hand, put a cotton ball in the bowl of the spoon and pull the bowl down. 3. Let go of the bowl and watch the cotton ball fly! 						

- Challenge: Try out different plastic spoons! Make a target and see if you can get a bulls-eye!

Catapult 2

- Place 2 craft sticks on top of each other.
- Wrap an elastic around the craft sticks to attach them together tightly at one end.
- Wrap 2 more elastics around the craft sticks, make these ones looser.
- Cross the two loose elastics to make an X.
- Slide an extra craft stick between the two craft sticks and the arms of the X made by the elastics.
- Turn this craft stick on its side, this will lift up one side of the sandwiched craft sticks.
- Slide a marker along the craft stick, into the gap the craft stick has created.
- Slide out the extra craft stick.
- Tape a bottle cap onto the end of the top craft stick.
- Place a cotton ball onto the bottle cap, pull the bottle cap down, release and watch the cotton ball fly!
- Challenge: Try using something other than a marker! What else could work? How would that affect how far it can launch things?

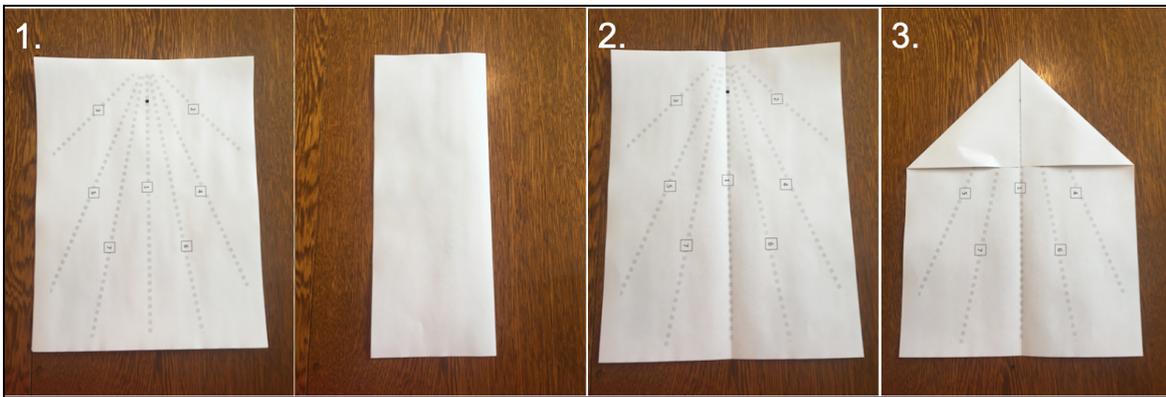


Paper Airplane Launcher

Basic Dart

These instructions are for making a basic paper airplane. A template has been made so that you can follow along. Remember that no paper airplane is perfect! Each one is an experiment!

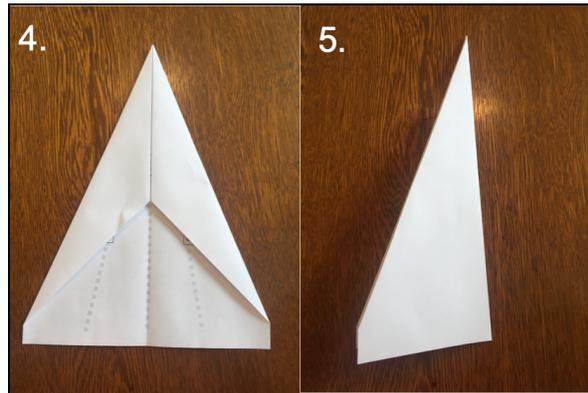
- Fold the paper in half, its longer edge (fold line 1)
- Open it up again.
Now you have a line going down the middle!
- Fold the 2 top corners to the center fold line, do this on both sides (fold lines 2 and 3).
The paper should now look like a house!



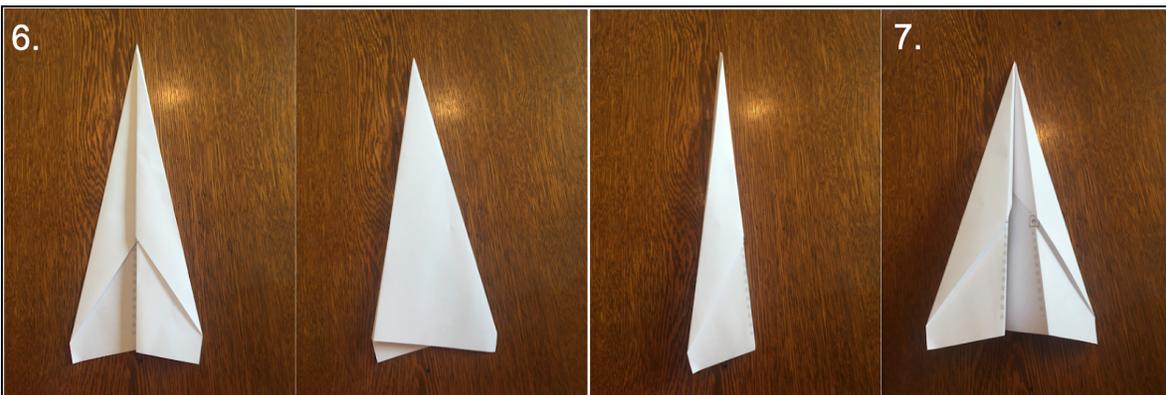
4. Fold the edge of the roof of the house to the centre line, do this on both sides (fold lines 4 and 5).

It should now look almost like a pointy triangle!

5. Fold it in half again (fold line 1).
6. Fold the edge of the wing to meet the centre line of the plane, do this on both sides (fold lines 6 and 7).



7. Open the wings.
8. Colour your plane!

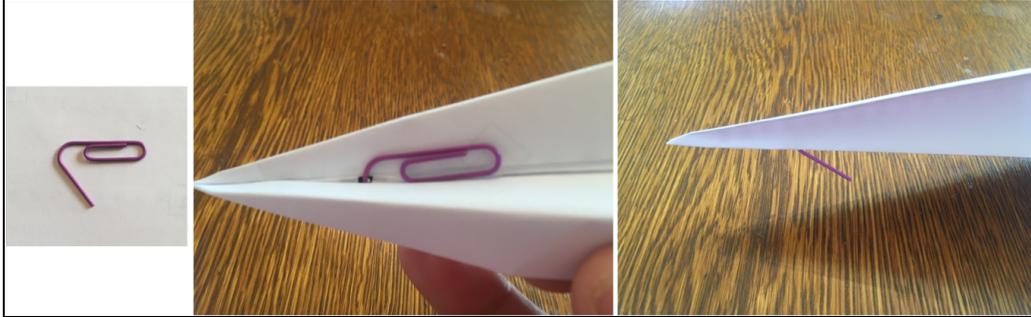


Launcher

1. Loop an elastic around the end of a craft stick twice, there should be a lot of elastic that is not looped.
2. Tape the elastic onto the popsicle stick.
3. Take a paperclip and bend the outside arm down.



4. Poke the arm of the paper clip through the centre of the paper airplane, a few centimeters from the nose of the plane (Black dot on template).
The arm of the paperclip should point backwards.
5. Tape the paperclip in place on the inside of the plane.



How to launch

1. Hold the launcher by the craft stick in one hand, with the elastic on the top.
2. Hook the paper clip onto the elastic on the launcher and pull back so it is taught.
3. Let go! It might take some practice to launch and aim the paper airplane!
4. Challenge: try making different types of paper airplanes and attach them to the launcher. Try out different elastics or different hook positions.

Debrief

Catapults

When you push down on the top plastic spoon or craft stick and bend it, you're creating potential energy, or stored energy. When you release, the potential energy stored from the plastic or bent wood is changed into kinetic energy, or the energy involved in movement, and your ammunition is thrown! Depending how far down you push on your stick, or bend it, the greater the potential energy is, so when you release this causes the material to launch further and faster as kinetic energy.

Paper Airplane Launcher

When the elastic is pulled back, potential energy is being stored in the elastic. When the elastic is let go, it returns to its normal shape and passes its energy to the paper airplane to send it flying!

Energy - Where Does it Go?

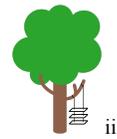
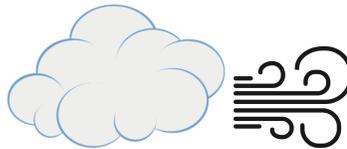
Grade 1 - Energy in Our Lives

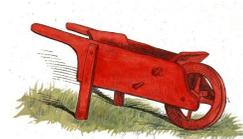
1. Draw lines to connect the energy source with its energy output. Then, fill in what type of energy source is being used.

Type of Energy Source
(Wind/Solar/Electricity/Kinetic)

Energy Source
(Where does it come from)

Energy Output
(Where does it go)









iii.





2. Answer the following questions with True or False

a. Energy is what makes something happen

b. Energy cannot make something move

c. Plants get their energy from electricity

d. The sun gives the earth light and heat

e. Food gives humans energy

f. Light is an energy output

g. Sources of energy never run out

h. Life would be very different without electricity



3. In the space below, draw 3 different things from everyday life that output the following types of energy:

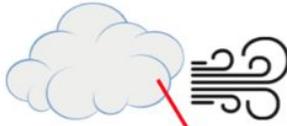
Light	Sound	Heat

i. Cartoon drawing of an outlet.svg from Wikimedia Commons by Euphoria42, CC-BY-SA 4.0
 ii. Tree swing cartoon colored1.svg from Wikimedia Commons by Redrobsche, CC-BY-SA 4.0
 iii. Man Flexing Muscles and Posing Cartoon.svg from Wikimedia Commons by Videoplasty.com, CC-BY-SA 4.0
 iv. Crystal clear app ktip.svg from Wikimedia Commons by Jacob Hnri 6, CC-BY-SA 3.0

Energy - Where Does it Go?

Grade 1 - Energy in Our Lives

1. Draw lines to connect the energy source with its energy output. Then, fill in what type of energy source is being used.

Type of Energy Source (Wind/Solar/Electricity/Kinetic)	Energy Source (Where does it come from)	Energy Output (Where does it go)
Wind	 <small>Cartoon drawing of an outlet.svg from Wikimedia Commons by Euphoria42, CC-BY-SA 4.0</small>	 <small>Tree swing cartoon colored1.svg from Wikimedia Commons by Redrobsche, CC-BY-SA 4.0</small>
Electricity	 <small>Cartoon drawing of an outlet.svg from Wikimedia Commons by Euphoria42, CC-BY-SA 4.0</small>	
Solar	 <small>Man Flexing Muscles and Posing Cartoon.svg from Wikimedia Commons by Videoplasty.com, CC-BY-SA 4.0</small>	 <small>iPhone white icons.svg from Wikimedia Commons by Blurred203, CC-BY-SA 3.0</small>
Kinetic	 <small>Man Flexing Muscles and Posing Cartoon.svg from Wikimedia Commons by Videoplasty.com, CC-BY-SA 4.0</small>	
Electricity	 <small>Crystal clear app ktip.svg from Wikimedia Commons by Jacob Hnri 6, CC-BY-SA 3.0</small>	 <small>Crystal clear app ktip.svg from Wikimedia Commons by Jacob Hnri 6, CC-BY-SA 3.0</small>

2. Answer the following questions with True or False

- a. Energy is what makes something happen
- b. Energy cannot make something move
- c. Plants get their energy from electricity
- d. The sun gives the earth light and heat
- e. Food gives humans energy
- f. Light is an energy output
- g. Sources of energy never run out
- h. Life would be very different without electricity

True

False

False

True

True

True

False

True



1. In the space below, draw 3 different things from everyday life that output the following types of energy

Light	Sound	Heat
<p>Examples:</p> <ul style="list-style-type: none"> - Lightbulb - Flashlight - Christmas lights - Traffic lights - Candle 	<p>Examples:</p> <ul style="list-style-type: none"> - Stereo/speakers - Microphone - Alarm clock - School bell - Chainsaw 	<p>Examples:</p> <ul style="list-style-type: none"> - Microwave - Stove/Oven - Fireplace - Hairdryer - Toaster

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