

# Parent Guide

## How can I use this with my children?

Create this machine together with your child or prepare in advance for a fun, simple science experiment.

## How does this help my children's learning?

Using crafting tools and materials can help your child to develop their fine motor skills. This simple machine can also inspire discussions about science concepts such as weight, gravity and forces.

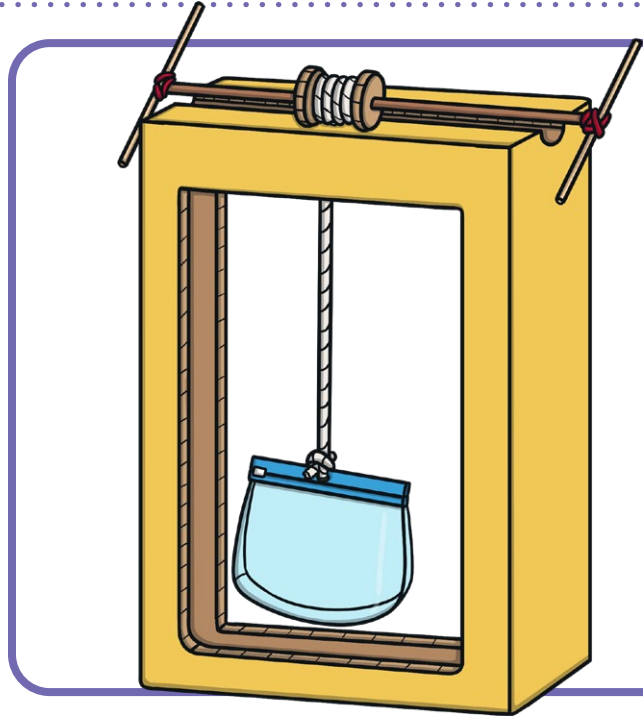
## Ideas for further learning:

Challenge your child to think of what other materials could be used to make a pulley.

# Simple Machines: Pulley Craft

Though we may think of machines as electrical devices, there are actually six basic machines that don't require electricity at all. These include screws, wheels and axles, inclined planes, levers, wedges and pulleys.

In this activity, we're learning about pulleys, which is a method of moving objects from a low place to a high place. For a really simple pulley, you could hang a piece of string over a horizontal bannister or ledge, attach a small bag or basket to the overhanging string, then pull down on the string to make the bag or basket rise up. This activity includes a craft version that you can have a go at making yourself to see how pulleys work!



## You will need:

- cardboard
- bottle top
- scissors
- white glue
- cereal box
- craft knife (optional)
- skewer
- ruler (optional)
- 2 toothpicks
- 4 elastic bands
- string or twine
- strong glue
- small ziplock bag
- hole punch

Some ingredients and/or materials used might cause allergic reactions or health problems. You should ensure that you are fully aware of the allergies and health conditions of those taking part. If you have any concerns about your own or somebody else's health or wellbeing, always speak to a qualified health professional. Activities listed within the resource should always be supervised by an appropriate adult. Children should be supervised when using sharp items such as scissors or other tools. Please make sure you are aware that children may put craft items into their mouths, and that they should wash their hands afterwards. By using this resource, you acknowledge that it is the responsibility of supervising adults to ensure the safety of children in their care and that we will accept no liability as a result of the activity.

### Craft Instructions:

**1** On a piece of cardboard, draw around a bottle top to create a circular shape. You will need about three or four circles in this size.

**2** On the same cardboard, draw a circle shape that is bigger than your previous bottle top circles by about 1cm all around (this does not need to be a perfect circle, so don't worry if it's a little wonky). You will need two circles in this size.

**3** Cut out all the cardboard circles.

**4** Find the centre point for each circle and poke a hole through the cardboard using a pencil or skewer.

**5** Using white glue, stick all the circles together face-to-face, with the largest two on the outer edges. Put aside to let the glue dry.

**6** Using a craft knife or scissors, cut the top side off a cereal box. You will also need to cut out a window on the front face of the cereal box.

**7** Place a skewer across the top of the cereal box as a reference and then, using scissors, put two semicircular notches on the top edge where the skewer will sit. This needs to be as straight across as possible.

**8** Once the glue holding together the cardboard circles is dry, slide it onto the skewer and position it in the middle. Wrap an elastic band around the skewer on either side of the cardboard circle to prevent it from slipping around.

## Simple Machines: Pulley Craft

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Take two toothpicks and snip the pointed ends off using scissors. Attach one toothpick to the end of the skewer to form a cross shape by wrapping an elastic band around it. Repeat this on the other side so that you have a toothpick attached to both sides. These will be your handles.

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Place the skewer across the top of the cereal box in the grooves you made earlier. Measure a piece of string or twine so that it is long enough to reach from the skewer to about an inch from the bottom of the box, then double it and cut.

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Tie the piece of string around the cardboard circle so that it sits between the two larger pieces on the end. Secure the string in place with strong glue so that it doesn't move.

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Use a hole punch to make a hole in a small ziplock bag - this should be in the middle along the top edge.

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Using the hole you made, tie the ziplock bag onto the bottom end of the string that is hanging from the structure.

### Instructions for use:

Using the toothpick handles, wind the pulley up and down so that the string gets longer or shorter - this will bring the ziplock bag up and down.

### Challenges and Questions:

- What items will you put in the bag to bring up and down?
- What uses does a pulley system have in real life?
- What other materials could you use to create a pulley system like this?

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