

Innovating for the future

Build a working waterwheel

About this activity

In this activity you're going to be building a waterwheel (which could be used to generate renewable electricity). You can experiment with dropping water from a greater height or with greater force to see if it affects how quickly the wheel moves.

Historically waterwheels have been used to power machinery in Victorian mills but today they can be used to generate sustainable electricity.

Time

1 hour

Kit list

- ✓ Thick card or plasticard (for a more durable waterwheel).
- ✓ Pen/pencil
- ✓ Plate (to use as a template)
- ✓ Wooden doweling (or round pencil)
- ✓ Disposable cups
- ✓ Scissors
- ✓ Adhesive
- ✓ Bottle/watering can/hosepipe or dried beans
- ✓ Bucket/washing up bowl (or do this outside!)

Next steps

- ✓ Go to MyLearning (mylearning.org) and type 'waterwheel' in the search bar to learn more about the history of waterwheels and how they have been used in the past as well as how we can harness water for renewable energy into the future!

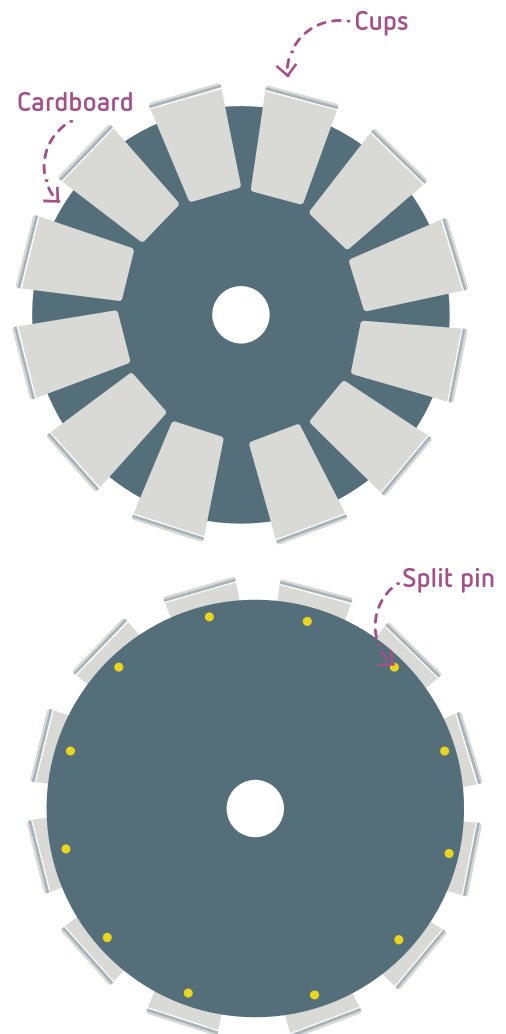
Watch out!

When cutting and attaching be careful not to cut yourself.

You might get wet! Quickly mop up any spills or the floor will get dangerously slippery.

Instructions

- 1 Use a circular template (such as a plate) and draw two big circles on the plasticard/ thick cardboard, then cut out the circles to form the sides of your wheel
- 2 Mark the centre of the circles and cut a hole in the middle of each of them. The hole in the centre should be wide enough to fit the axel (doweling or pencil). Then use split pins or tape to attach plastic cups to the edge of the wheel (it will work best if you use at least 4 cups). Make sure the cups are positioned at around a 45 degree angle to the edge of the wheel.
- 3 Once you've built the wheel, push the doweling or circular pencil through the holes in the middle of the wheel, and mark a point on the wheel so you can count its rotations.
- 4 Now it's time to test! Hold the water wheel above the bucket or bowl, and pour water into the waterwheel from above to make it turn (you could also pour dried beans from a bottle instead of water)
- 5 Try pouring water from different heights to see if the speed of the wheel changes or try increasing the stream of water and observe whether the wheel speeds up.



Career options

There are many different career options within museums and historic sites, including engineers, maintenance (historical preservation), joiners, and many more.

Example table of results (scientific investigation)

Height water poured from	Number of wheel rotations in 30 seconds
1cm	
10cm	
20cm	

At home

How is the electricity you use at home generated? Can you think of any alternative sources that homes could get their energy from in the future that would make for a more sustainable planet? How might these work?

Skills set

Creative, Observant, Curious