

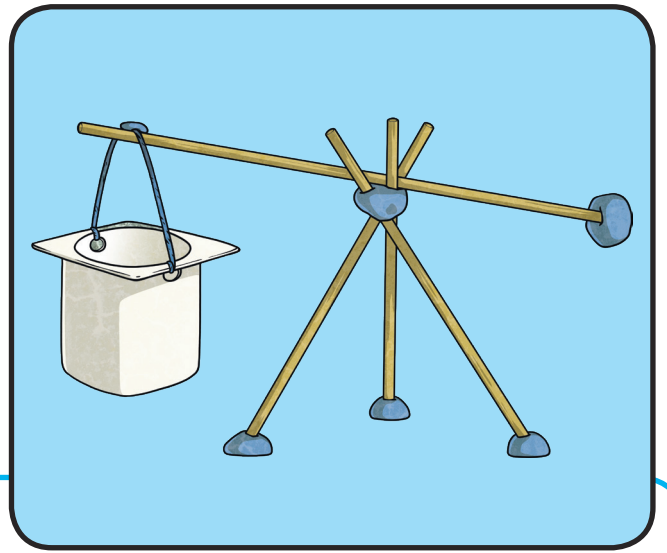
We hope you find the information on our website and resources useful. The activities set out in this resource are potentially hazardous. The activities are not suitable for all children and adult supervision may be required for some of the activities. It is your responsibility to assess whether the children in your care are able to safely carry out the activities and whether the children require adult supervision. You are responsible for carrying out proper risk assessments on the activities and for ensuring that activities can be carried out safely. We are not responsible for the health and safety of your group or environment so, insofar as it is possible under the law, we cannot accept liability for any loss suffered by anyone undertaking the activity or activities referred to or described in this resource. It is also your responsibility to ensure that those participating in the activity are fit enough to do so and that you or the organisation you are organising for has the relevant insurance to carry out the physical activity. If you are unsure in any way, we recommend that you take guidance from a suitably qualified professional.

How to Make a Shaduf

A shaduf is a hand-operated machine used to transport water from a lower level to a higher one. It was used by the ancient Egyptians to help water crops. Follow these step-by-step instructions to make your own shaduf.

You will need:

- four pieces of wooden dowel – three cut into 20cm lengths and one at 30cm
- bowl of water
- modelling clay
- yoghurt pot
- string
- sticky tack
- pencil
- scissors
- ruler, saw and clamp (if you are cutting the dowel yourself)



Instructions

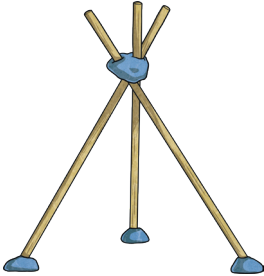
1. If you are cutting the dowel yourself:

- use a ruler to measure three lengths of 20cm and one of 30cm. Mark each measurement using a pencil.
- Put the dowel into a clamp and then carefully saw each length.

Sawing Safety Tips!

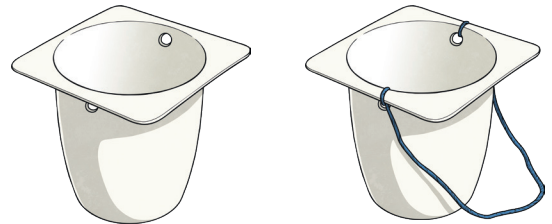
- You may wish to wear safety goggles.
- Securely attach a clamp to the table and then fix the dowel in it to make sure the wood doesn't slip.
- If you are right-handed, you need space to the right side of the bench hook for cutting the lengths of wood; this space will be on the opposite side if you are left-handed.
- Hold the saw with the hand you use to write with and place the other hand away from the saw on the table.
- Pull back with the saw before pushing forward.

- Your shaduf will need to be on a raised surface so that the container can reach down to pick up water from a lower level.
- Place the three dowels of the same length together, ensuring they are apart at the bottom but touching at the top to make a tripod.
- Secure the dowels to your surface by putting a lump of modelling clay at the base of each one.
At the top, the ends should be joined using a lump of modelling clay but with the three ends sticking up above the modelling clay.



- Place the longer piece of dowel so the middle of it rests on top of the tripod in-between the three ends. You may want to loosely secure it with a piece of modelling clay don't push down too hard though as this piece needs to pivot back and forth.
- Put holes at the top of the yoghurt pot on either side:

- Place the pot on its side and put a piece of sticky tack underneath it where you want the hole to be.
- From the inside of the pot, use a pencil to press through the pot and into the sticky tack.
- Repeat on the other side.



- Cut a length of string to 10cm.
- Put one end of string through one of the holes in the yoghurt pot and tie a knot on the end inside the pot so that it can't come back out. Repeat for the other hole so you have a loop.
- On one end of the long piece of dowel, put a lump of modelling clay. This is your counterweight
- On the other end of the longer piece of dowel, place the string with the yoghurt pot dangling down. Fix the string in place with a small piece of modelling clay.
- Put the bowl of water on to the lower level near the yoghurt pot. Pull the pot down so it reaches the bowl and fills with water.
- Pull on the counterweight to lift up the pot of water. And that's basically how the ancient Egyptians moved water.

Challenge

Using other equipment, can you find a way to make the shaduf spin round so the water can be emptied on the other side?

Can you make a shaduf using different construction equipment or toys?