The Smallpeice Trust

ENGINEERING @HOME

02

The Paddle Boat Challenge

#EngineeringAtHome

Suitable for ages: 6+

Time needed: 1hr+

smallpeice
Dare to imagine

Curriculum links: Buoyancy, forces and conservation

Skills learnt: Design, testing and evaluation skills

smallpeice
Dare to imagine

Since our Smallpeice team can't visit schools, we've decided to challenge each other to make a paddle boat which you can test in your bathtub or sink.

02.

Learning Objectives

Create purposeful, functional and appealing designs

Select from a wide range of materials and use tools to perform practical tasks

Build structures, exploring how they can be made stronger and more stable

Evaluate your ideas and products against design criteria

Topics Covered

BUOYANCY
https://bbc.in/346vgEa

FORCES
https://bit.ly/2Jyyp6n

CONSERVATION
https://bit.ly/3bPrRMJ

WHAT MATERIALS TO USE

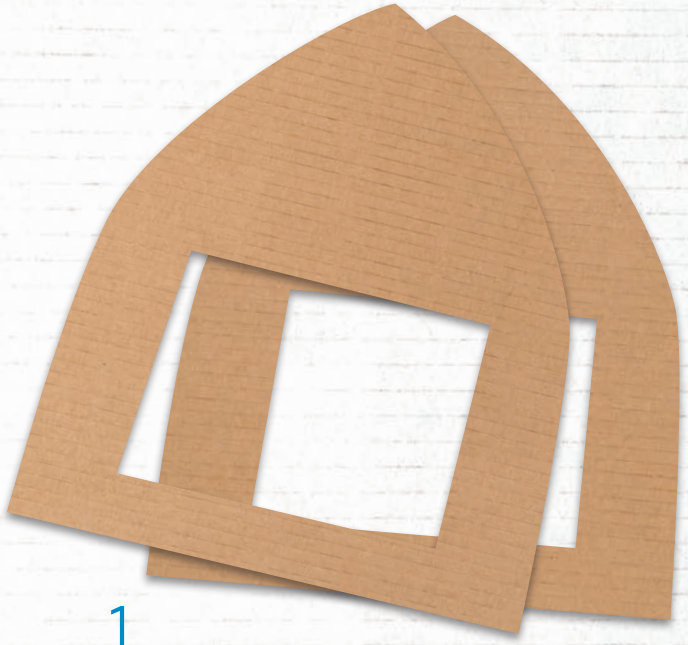
You can use cardboard, plastic, wood, or anything else that works well and you can get at home.

Try looking in your recycling box.

HERE'S WHAT WE USED:

1. **CARDBOARD**
2. **STRAWS**
3. **SELLOTAPE**
4. **RUBBER BAND**
5. **SCISSORS**
6. **BATHTUB/SINK FOR TESTING**

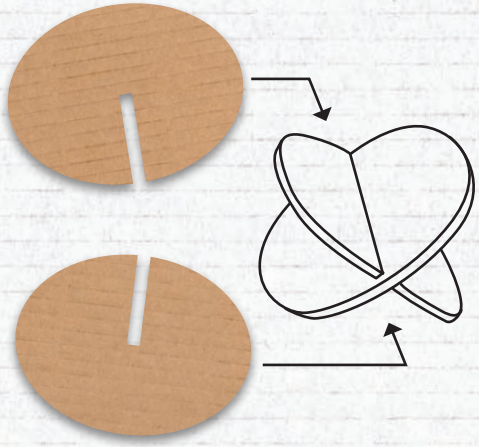
INSTRUCTIONS 1 OF 2



1.

Use some old cardboard to cut out two identical shapes to make the main body of your boat.

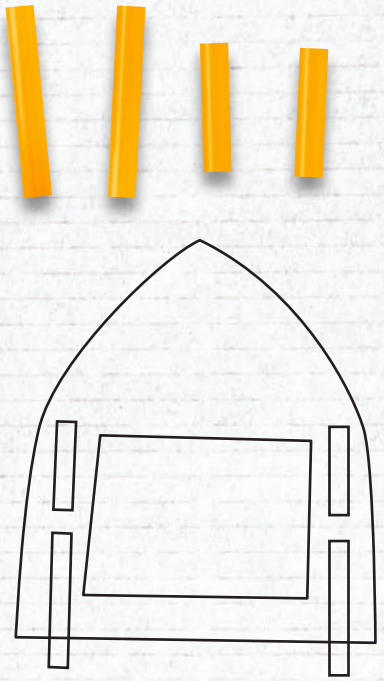
Cut a window out of the middle of each shape.



2.

From another piece of card cut two identical ovals with a slit half-way through.

Slot these together to make your paddle.

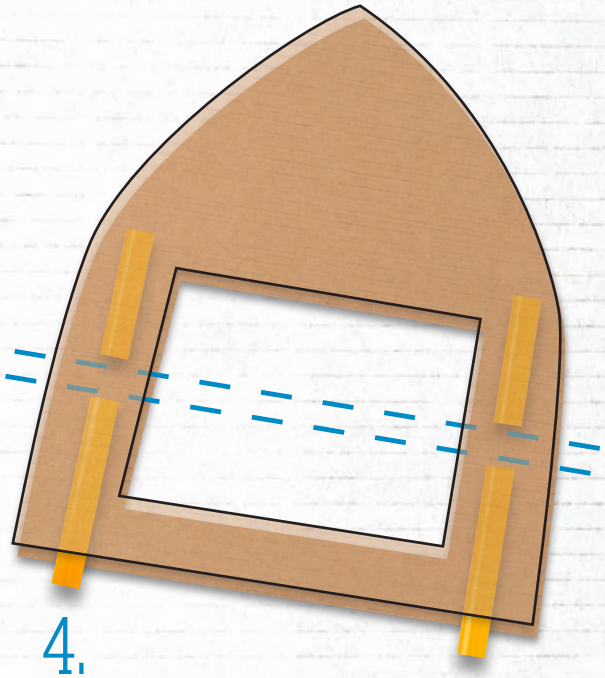


3.

Take a straw, cut it into four pieces. Stick these to one of the boat body pieces like this picture.

Two of the straws should poke out of the bottom of your boat, make sure the other two are stuck down with a gap in the centre of your window.

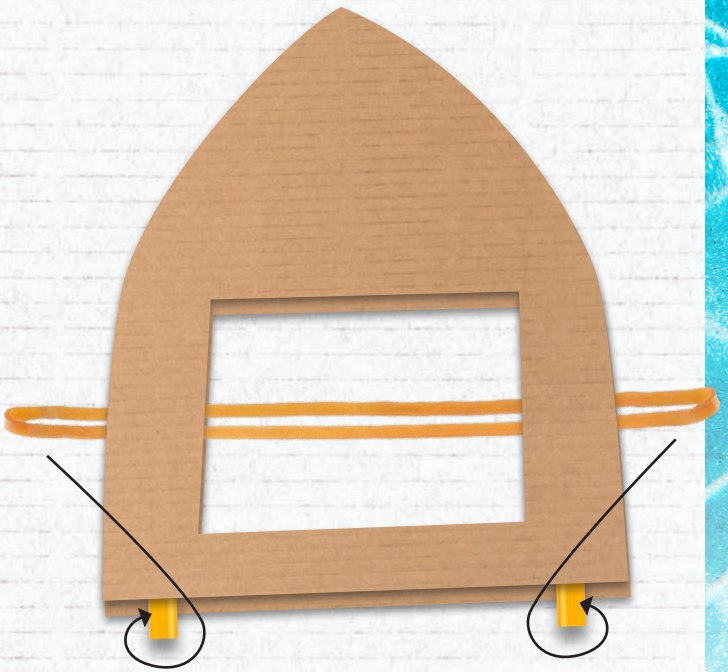
INSTRUCTIONS 2 OF 2



4.

Now stick the other boat body shape on top of the other, with the straws in the middle.

Make sure to leave a gap in the sides where the gap in the straw is.



5.

Next thread the elastic band through the gap in the straws on each side and wrap each end around the straws poking out at the bottom.

6.

Put your paddle onto the elastic band in the window of your boat.

Turn your paddle and make sure the elastic band is twisting at the same time, when you let go your paddle will spin!

7.

Customise your boat to make it your own! Do you want to add colours, sails, a vending machine?

NEED A CHALLENGE?

If you complete your paddle boat and want to challenge yourself further:

1. **Try and find some materials which may be more waterproof than cardboard or find a way to make your cardboard waterproof by protecting it?**

2. **Add a seat to your boat and see if it can safely carry a passenger? You could use a Lego character if you have one.**

3. **Ask someone else in your house to make one and see who's is quickest? How could you make your boat quicker?**

4. **Draw a force diagram and see if you can label all the forces acting on your boat?**

Once you've got your boat's performing at its optimum, film it in action and share your video on:

www.facebook.com/TheSmallpeiceTrust

www.twitter.com/SmallpeiceTrust
Use the hashtag **#EngineeringAtHome**

www.instagram.com/SmallpeiceTrust