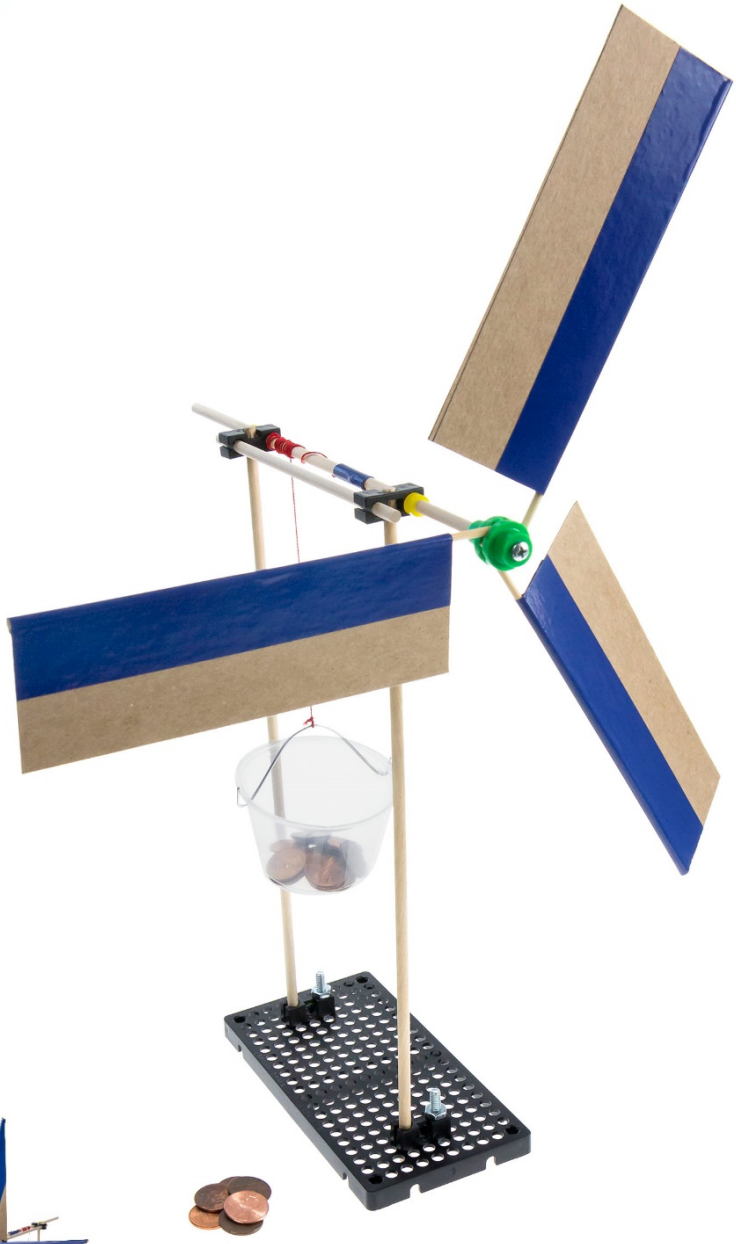
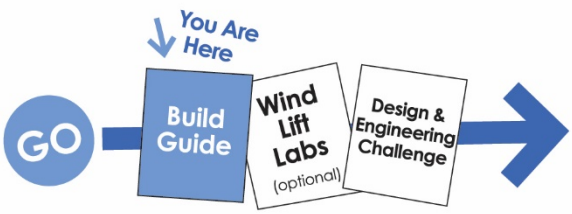
Wind Lift Build Guide

TeacherGeek



Start by building the example Wind Lift, then turn it into your own unique design.



Download Documents at **teachergeek.com/learn**

For use with TeacherGeek Wind Lift Activity Pack, or Maker Cart. Find documents and activity materials at **teachergeek.com**.

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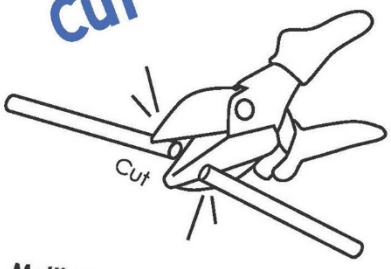
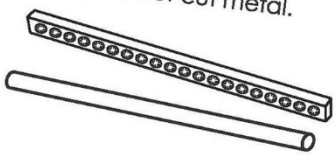
Cut



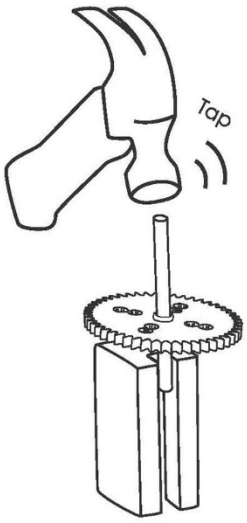
Multi-Cutters cut wood & plastic (like **dowels** and **connector strips**). They do not cut metal.



Push, Wiggle,

Push, wiggle or tap **dowels** into holes.

Tap



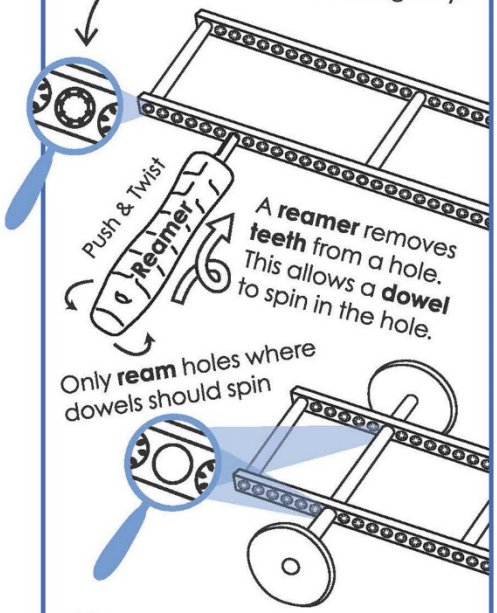
Use a **hammer** and **slider block** to tap **dowels** farther through holes.

Quick Tip!

Use a crayon, or soap on the end of a Dowel to make building easier.

Ream

Most parts have holes with **teeth**. The **teeth** hold **dowels** (keep dowels from falling out).



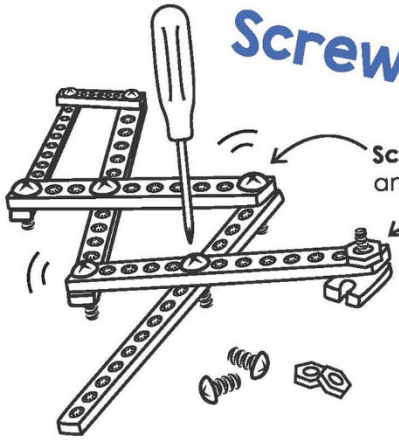
A **reamer** removes **teeth** from a hole. This allows a **dowel** to spin in the hole.

Only **ream** holes where dowels should spin

Never **ream pulleys, gears, wheels,** or any hole a **dowel** stays stuck into.

Screws & Nuts

Do not **ream** holes you will put **screws** into.

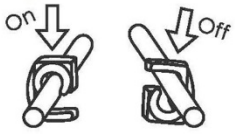


Screws (without nuts) can connect parts, and allow them to rotate.

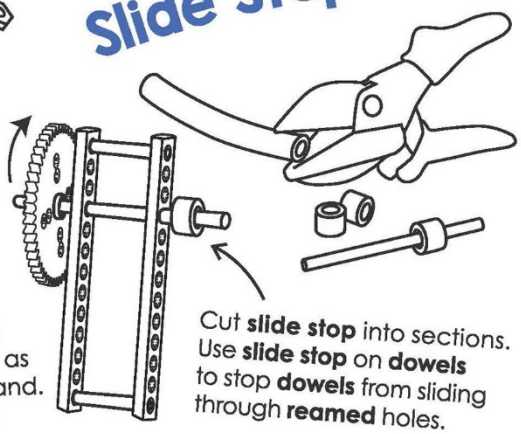
Screws (with a nut) can connect parts, and keep them from rotating.

Slide Stop

Stop Clip



Press a **stop clip** onto a **dowel** to keep it from sliding or use it as a hook for a string / rubber band. It takes little force to get it on.



Cut **slide stop** into sections. Use **slide stop** on **dowels** to stop **dowels** from sliding through **reamed** holes.

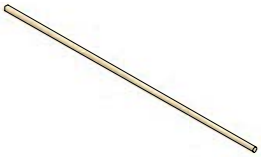
Wind Lift Build Guide

TeacherGeek Components

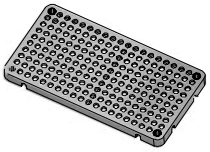
For One Wind Lift

Below is the list of "ingredients" you'll need to build one Wind Lift.
It includes some extra components to allow you to create your own unique design.

4 - Blocks



4 - Dowels
300mm (12")



1 - Hole Plate

1 - Slide Stop
100mm (3")

2 - 25mm Screws
#10 25mm (1")

2 - Nuts
#10

1 - Mini Hub Screw

1 - Mini Hub Cover

1 - Mini Hub Base

10 – Large Project Sticks

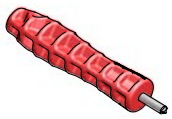
1 - Wire Roll or section

1 - Portion Cup

TeacherGeek Tools You'll Need

Easy to Share in Groups

Multi-Cutter
SKU 1823-81



Reamer
SKU 1823-87

Screwdriver
SKU 1823-90

Pliers
SKU 1823-86

Materials You Supply

Tape

String
450mm (1.5ft)

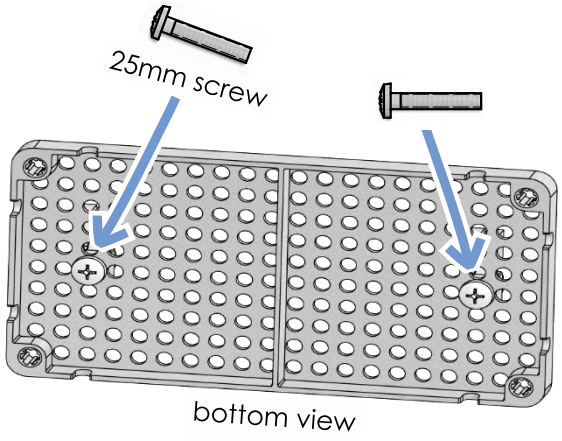
Pennies
100 or more to lift

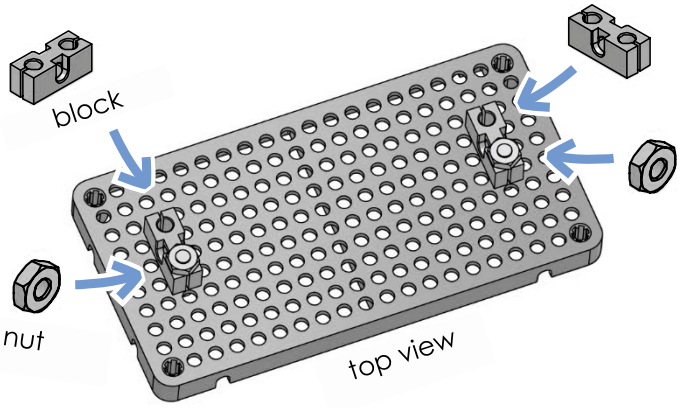
Recycling Materials
(for blades)

Wind Lift Build Guide

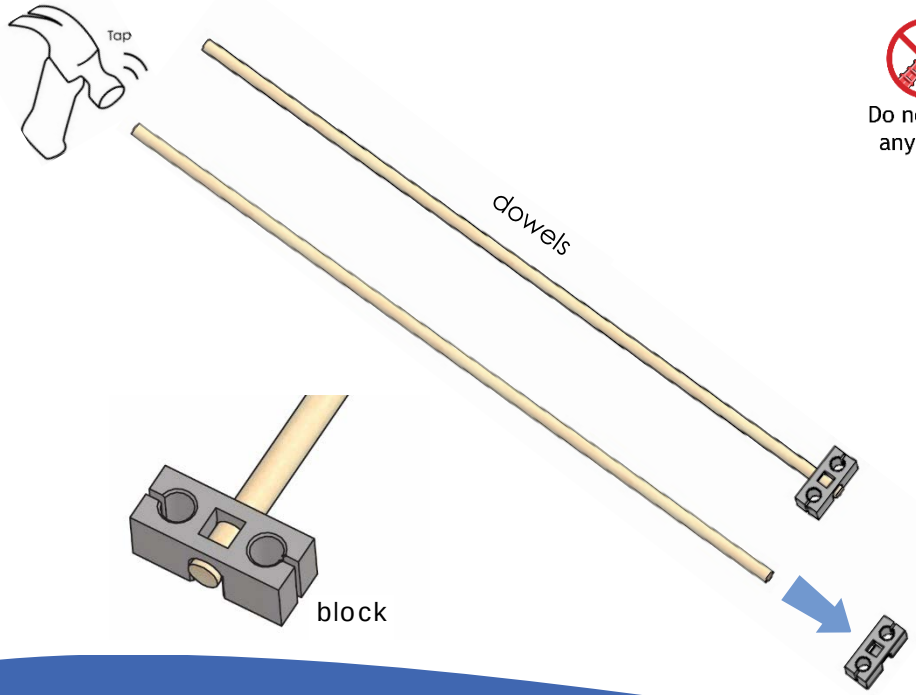
Let's Get Started

1 **Attach** two **blocks** to the **hole plate** using a **25mm screw** and **nut.**



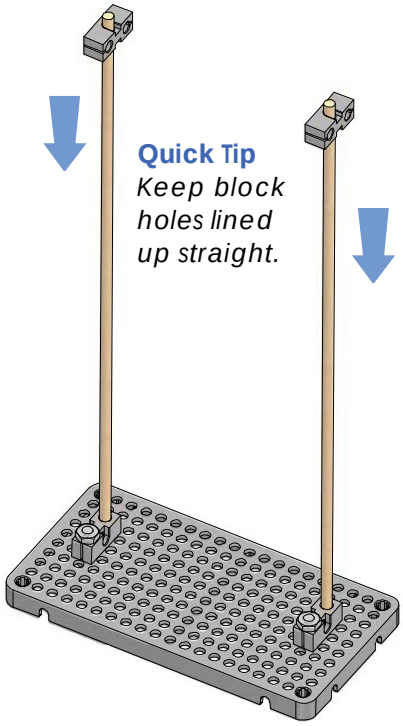


2 Take **two dowels**. **Tap** each one into the **middle hole** of a **block.**



3 Push **dowels** through the **blocks** on the **hole plate** as shown.

Do not ream any holes.



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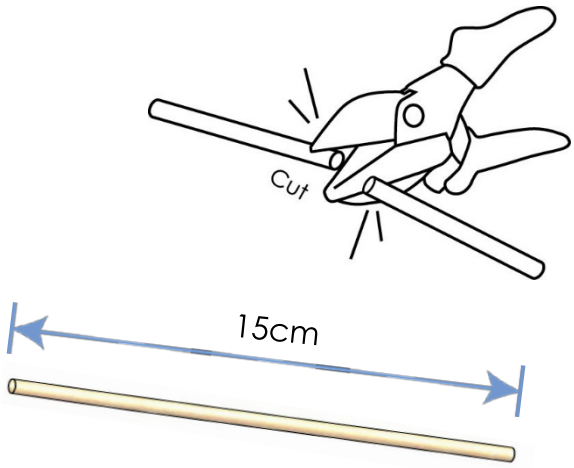
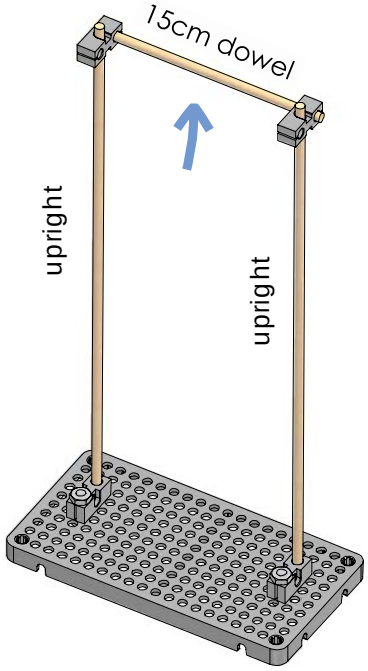
4 Cut a **15cm** (4”) dowel.

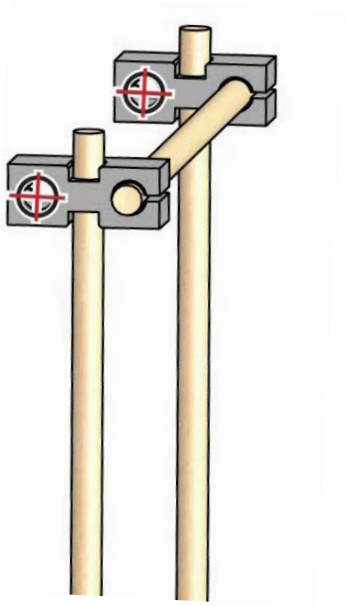


5 **Insert** the **dowel** into the **block** holes in the **uprights** as shown.

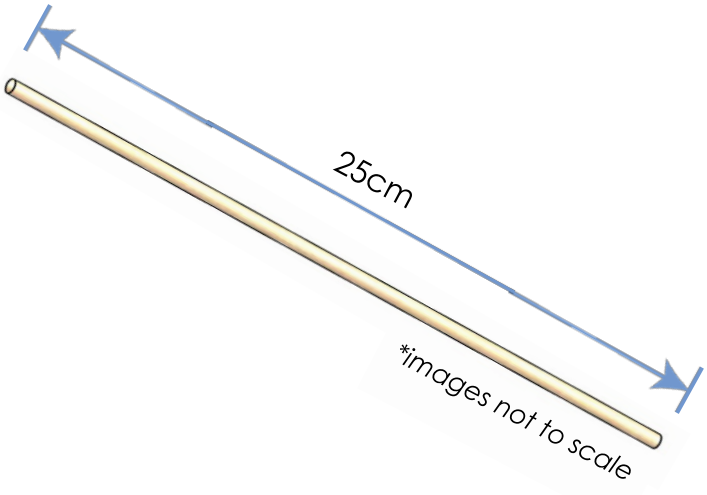


6 **Ream** the two holes marked with the ⊕ symbol.

Quick Tip
Be sure to ream holes very well.



7 Cut a **25cm** (10”) **dowel**.



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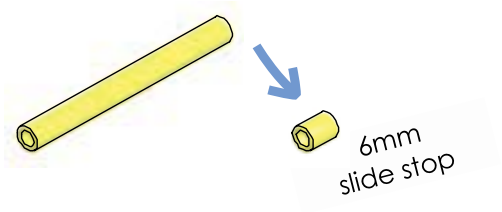
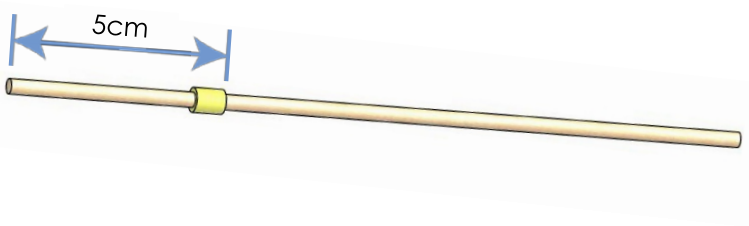
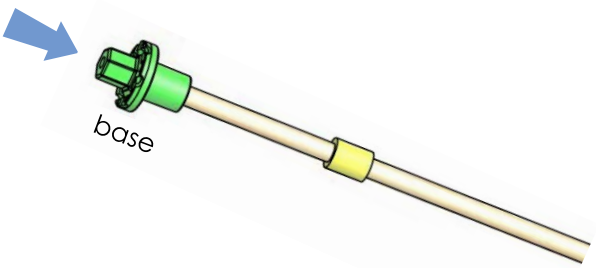
8 **Cut** a **6mm** (¼") **slide stop** section.



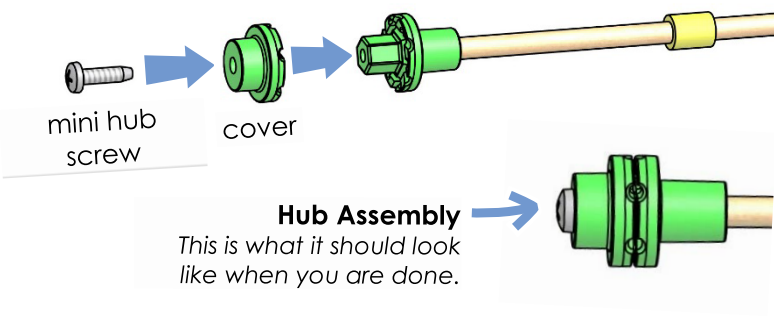
9 **Push** the **slide stop** 5cm (2") onto the **dowel**.



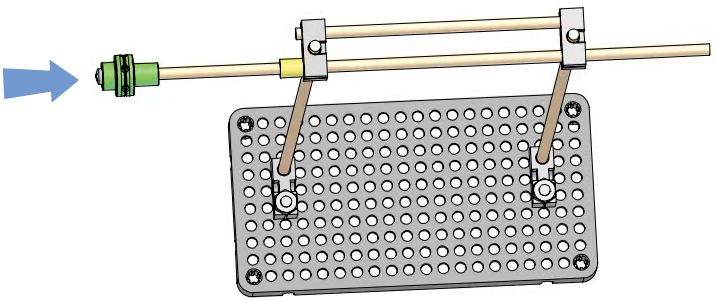
10 **Push** or **tap** the **mini hub base** onto the **dowel** as shown.



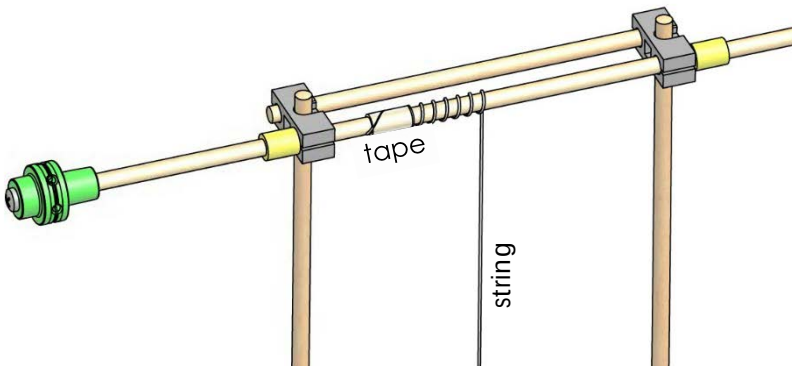
11 **Attach** the **mini hub cover** to the **base** using a **mini hub screw.**



12 **Slide** the **dowel** into the **reamed** holes of the **blocks** as shown.



13 **Tape** the **45cm** (1.5ft) **string** onto the **dowel** in the **reamed holes**.



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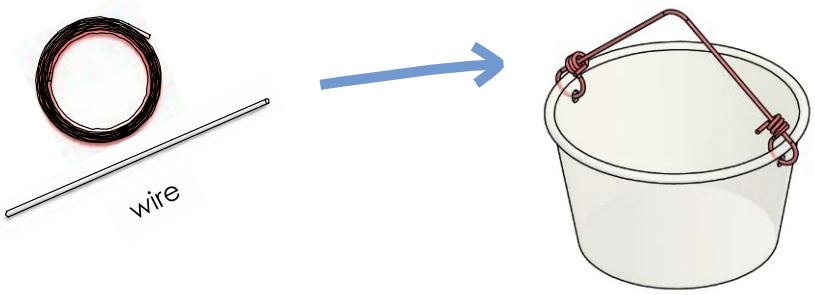
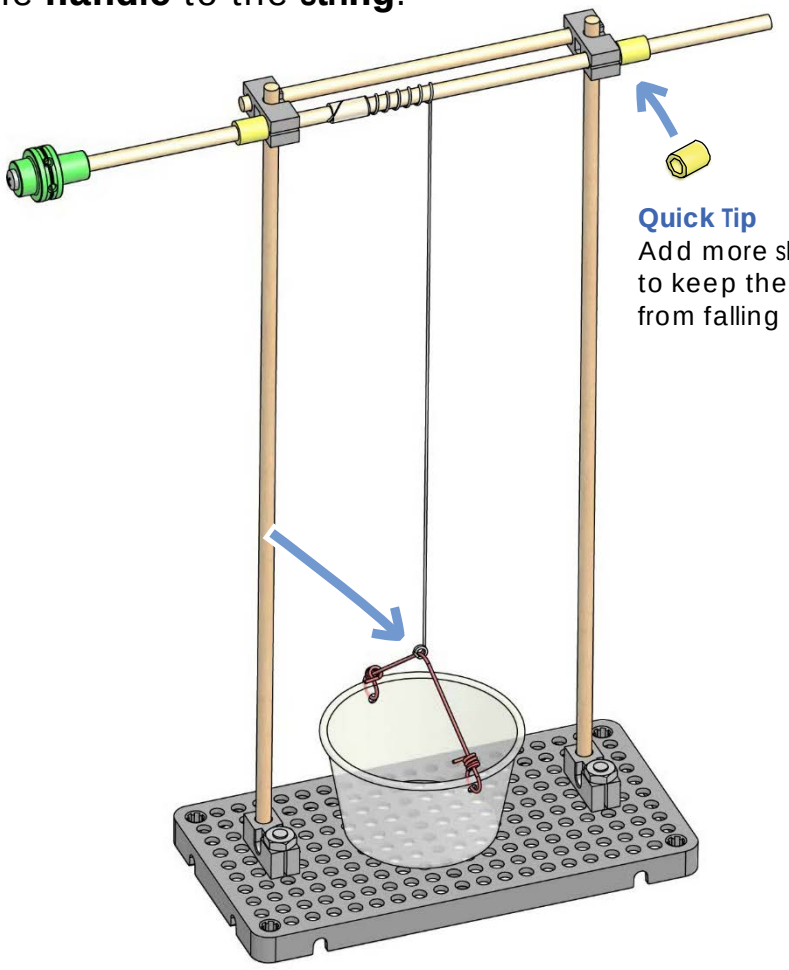
14 Make a **handle** for the **portion cup** out of **wire**. **Poke** two **holes** with scissors or a screwdriver to **tie** the **wire** through.



15 **Tie** the **handle** to the **string**.



Quick Tip
Add more slide stop to keep the dowel from falling out.

Congratulations!

You did it. You made the lift mechanism of your design.

Experiment and play. Spin the dowel to see how the cup rises and lowers.

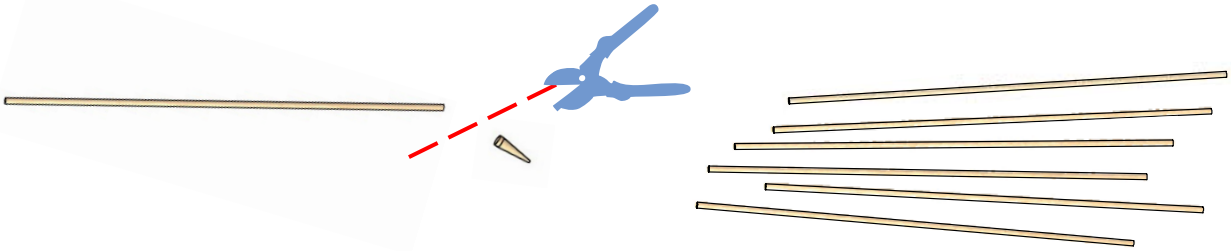
Next, let's add blades to use the power of the wind.

Wind Lift Build Guide

Blade Designs

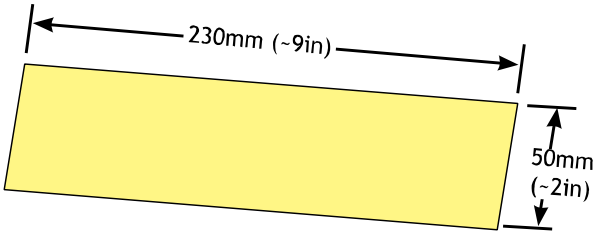
Now it's time to make your blades. Make the example blades shown below. Then, in the Engineering Challenges, make them into your own unique design.

16 Cut **points** off the **large bamboo project sticks**.

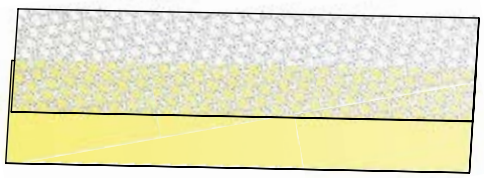


17 Tape your **recycling materials** (cardboard, card stock, cereal boxes, etc.) to the **skewers** as shown below.

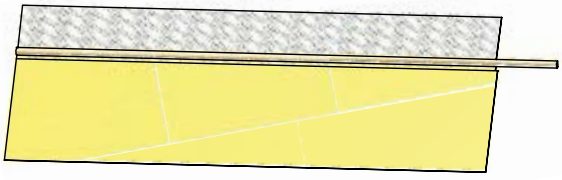
*a. Cut a section of **recycling material**. This will be one of your **blades**.*



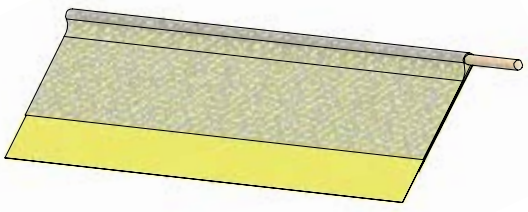
*b. Place **tape** half over the edge of the **blade**.*



*c. Place a **stick** at the edge of the **blade**, overhanging to one side.*



*d. Fold the **tape** over the **stick**. **Press** to secure tape.*



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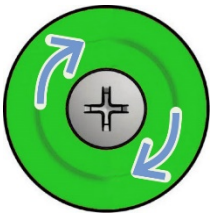
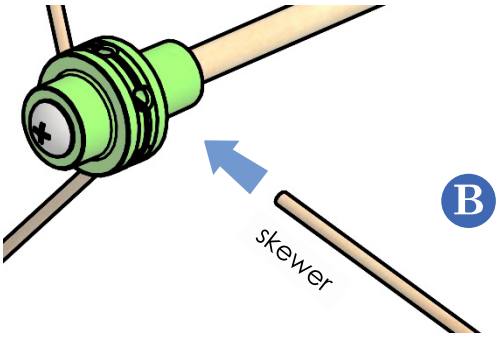
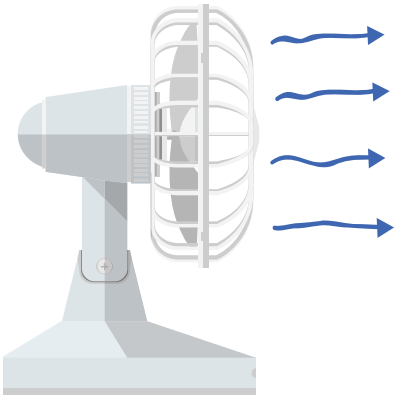
18 **Loosen** the **mini hub screw** about **1 turn** to allow the **project sticks** to **slide** in.

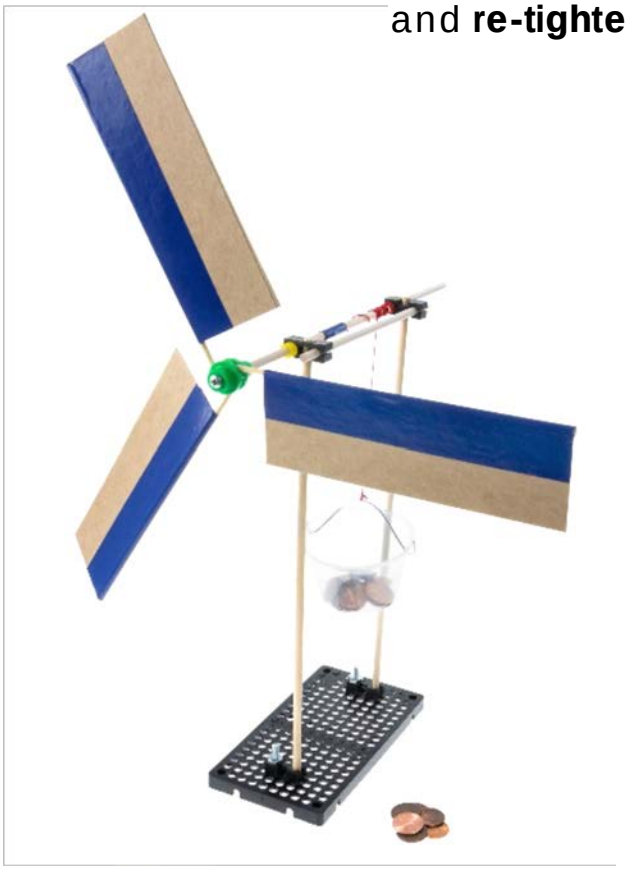


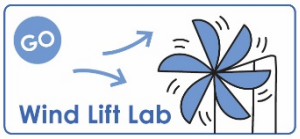
A First, **loosen** the mini hub screw by **1 full turns**.



B Then, carefully **slide** the sticks into the **mini hub's holes**. **Angle** your blades and **re-tighten**.







If you are going to do the optional *Wind Lift Lab*, now's the time!

Documents at ***teachergeek.com/learn***