







WARNING! Small Parts, Choking Hazard, For ages 7 and Up. Use Only with Adult Supervision.







TeacherGeek Supplies

Gather these components for your pull/push toy. Extra components are included to help you to create your own unique design.



TeacherGeek Tools

This isn't a kit. You're going to really build (cut, ream, screw) your Toy. Here are tools you'll need to get started. They can be shared by up to 4 groups at a time.

- TeacherGeek Reamer
- TeacherGeek Multi-Cutter
- Tapping Block Optional
- Small Hammer
- Pliers -Optional
- Philips Screwdriver

Get individual tools, or the complete **TeacherGeek / Maker Tool Set** Single <u>SKU 1823-24</u> Class Set <u>SKU 1823-85</u> **Tip:** Save all your materials (even what you cut off). Keep them in a bag. They can be used later.











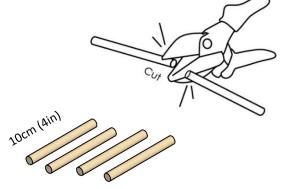


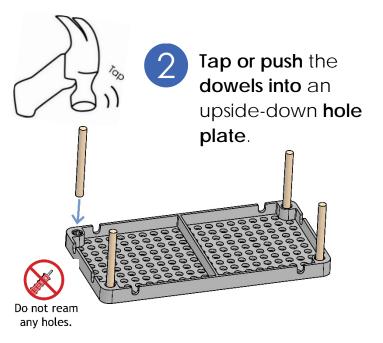


Build The Frame



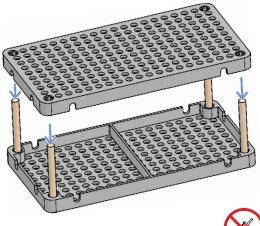
Cut four 10cm (4in) dowels.





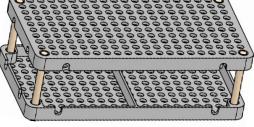


Tap or push a hole plate onto the dowels.



Do not ream any holes.

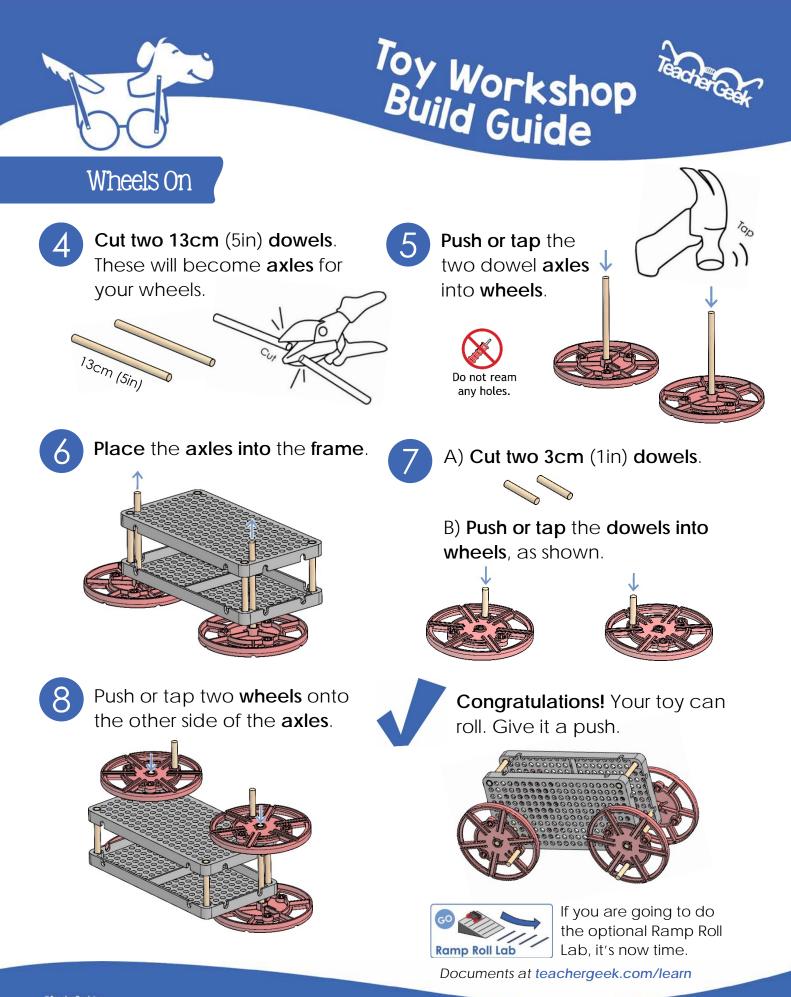






If you are going to do the optional Sled Race, it's now time.

Documents at teachergeek.com/learn









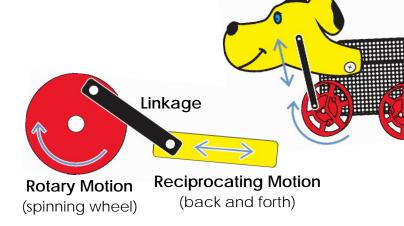
What is a Linkage?

Linkages are mechanisms which allow force or motion to be directed where it is needed.

Linkages can be used to change:

- The direction of motion
- The type of motion
- The size of a force

Make a Linkage



Cut <u>one</u> strip in half.

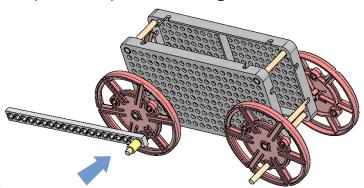
A) Gather the two half strips (from Step #9), and two full strips.B) Ream one end hole on each strip.



Cut two 1cm (1/2in) slide stop sections.



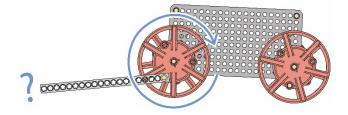
Attach a half strip to a wheel, as shown. Make sure the dowel goes through the reamed hole in the strip. Use slide stop to keep the strip from falling off.











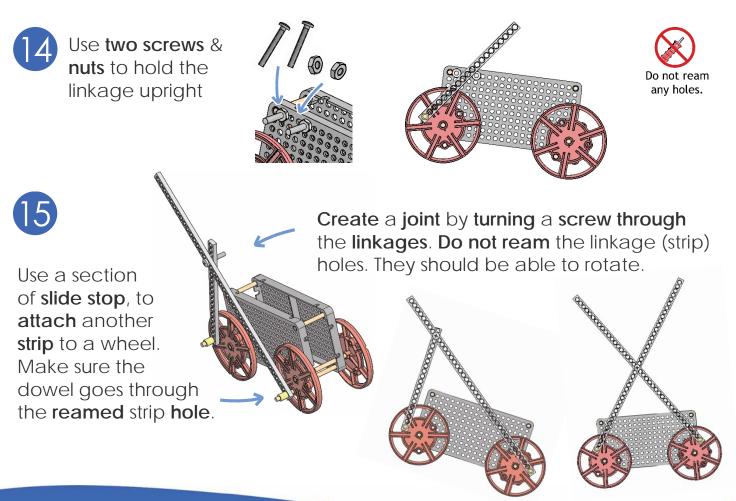
Roll the toy frame on a table or floor. Notice the motion of linkage (strip).

More Linkages

If you are going to do the optional **Linkage Lab**, it's now time.

Documents at teachergeek.com/learn

Experiment by creating and testing **different linkage mechanisms**. Add another linkage. Connect linkages together. Here are a few examples...









Geekbaby

The Toy Challenge

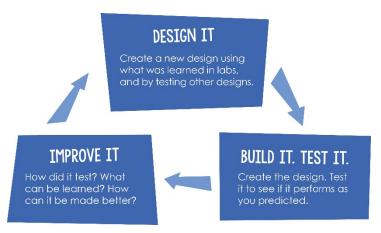
You have been hired by the Geek Baby Company to design and prototype a new pull/push toy. The toy should have features that move when it is rolled.

Criteria: (things your design can not, or must, do or be) The toy should:

- Be fun and innovative
- Use TeacherGeek wheels & linkages
- Function properly and reliably
- Be easy to use
- Be decorated with recycled and other materials
- Be given a name

Engineering Design Process:

You will be using the Engineering Design Process. What does that mean? Your design is never finished (it can always be improved). There is no such thing as a perfect design.





Fill out a new Engineering Notebook page each time you design/redesign your push/pull toy.



Use recycled packaging, tape, markers, and other materials to make your toy "good looks".







Ideas









Boxers go up and down, forwards and backwards



Girl does jumping-jacks and head goes from side-to-side





Giraffe runs and moves head Giraffe is missing body made from cereal box