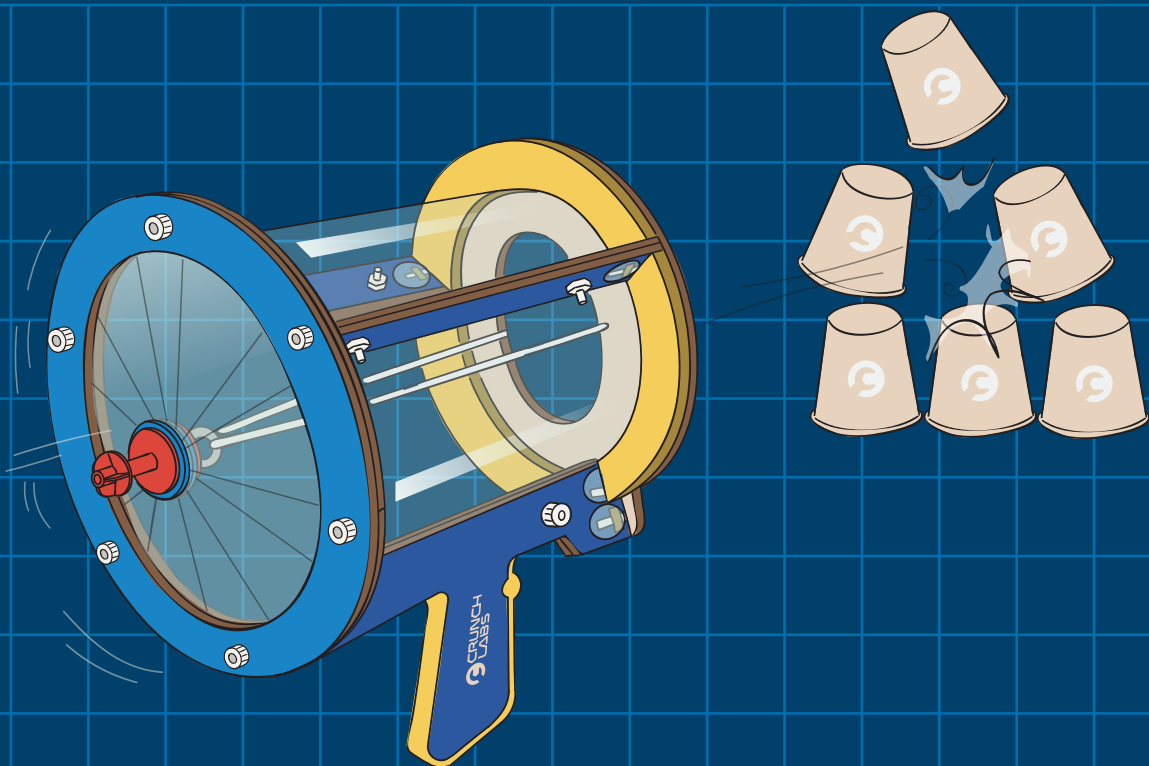




BUILD
BOX



VORTEX CANNON



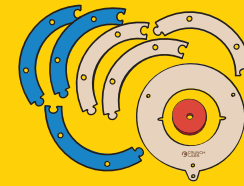
NEW VIDEO UNLOCKED

BUILD ALONG & LEARN WITH MARK ROBER

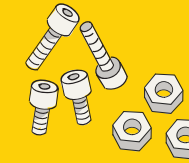


[CRUNCHLABS.COM/VORTEX](https://crunchlabs.com/vortex)

PARTS



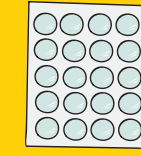
wood pieces



nuts and bolts



o-rings



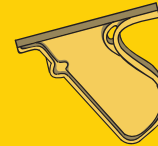
sticker sheet



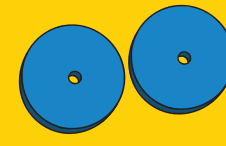
eye bolt



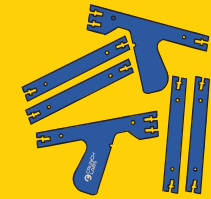
foam walls



grip



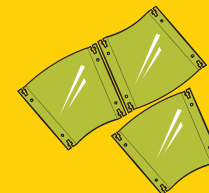
foam circles



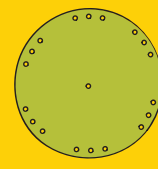
wood frames



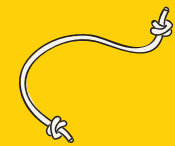
holder



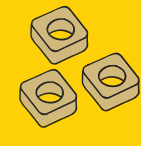
clear walls



membrane



elastic cord



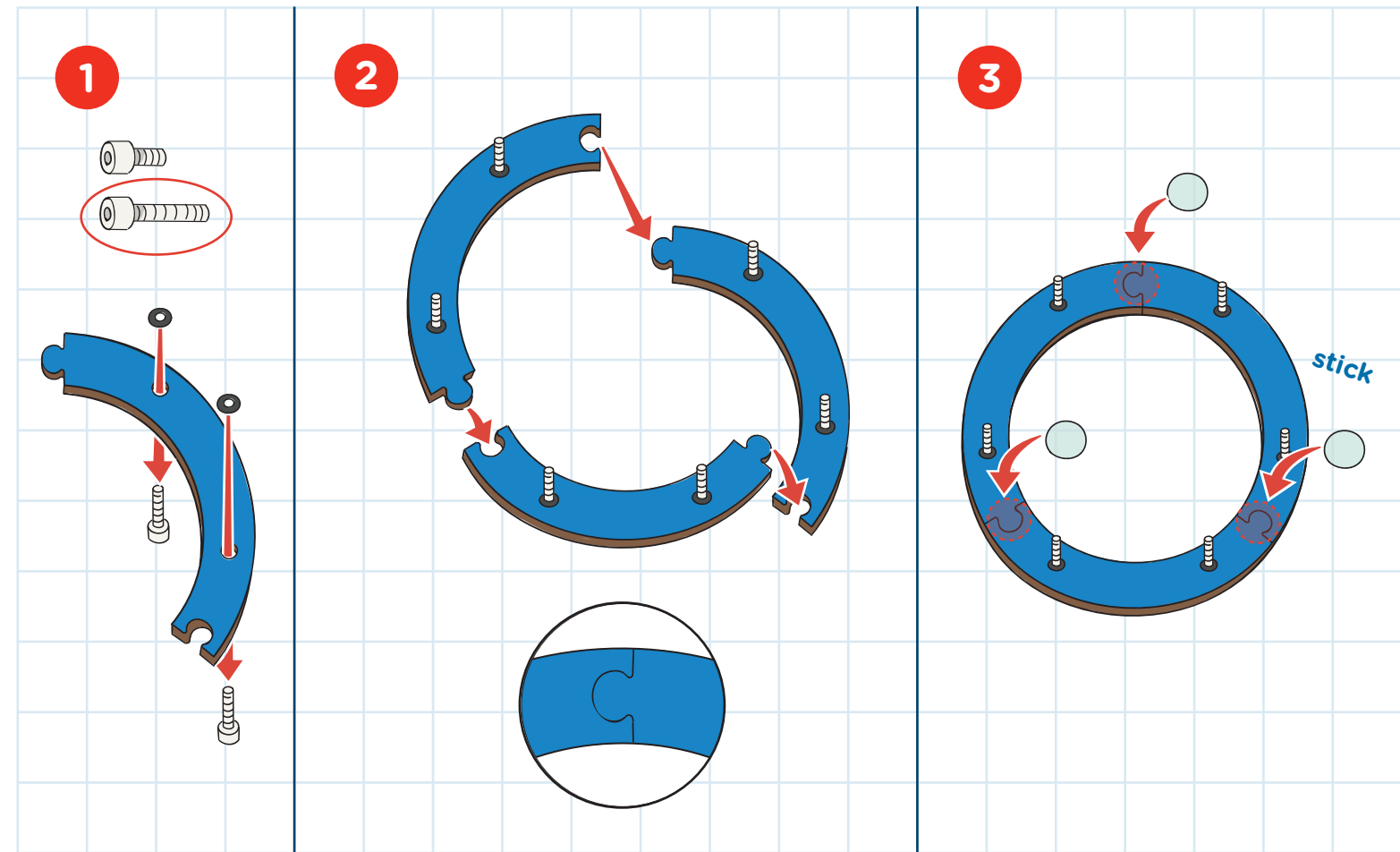
square nuts



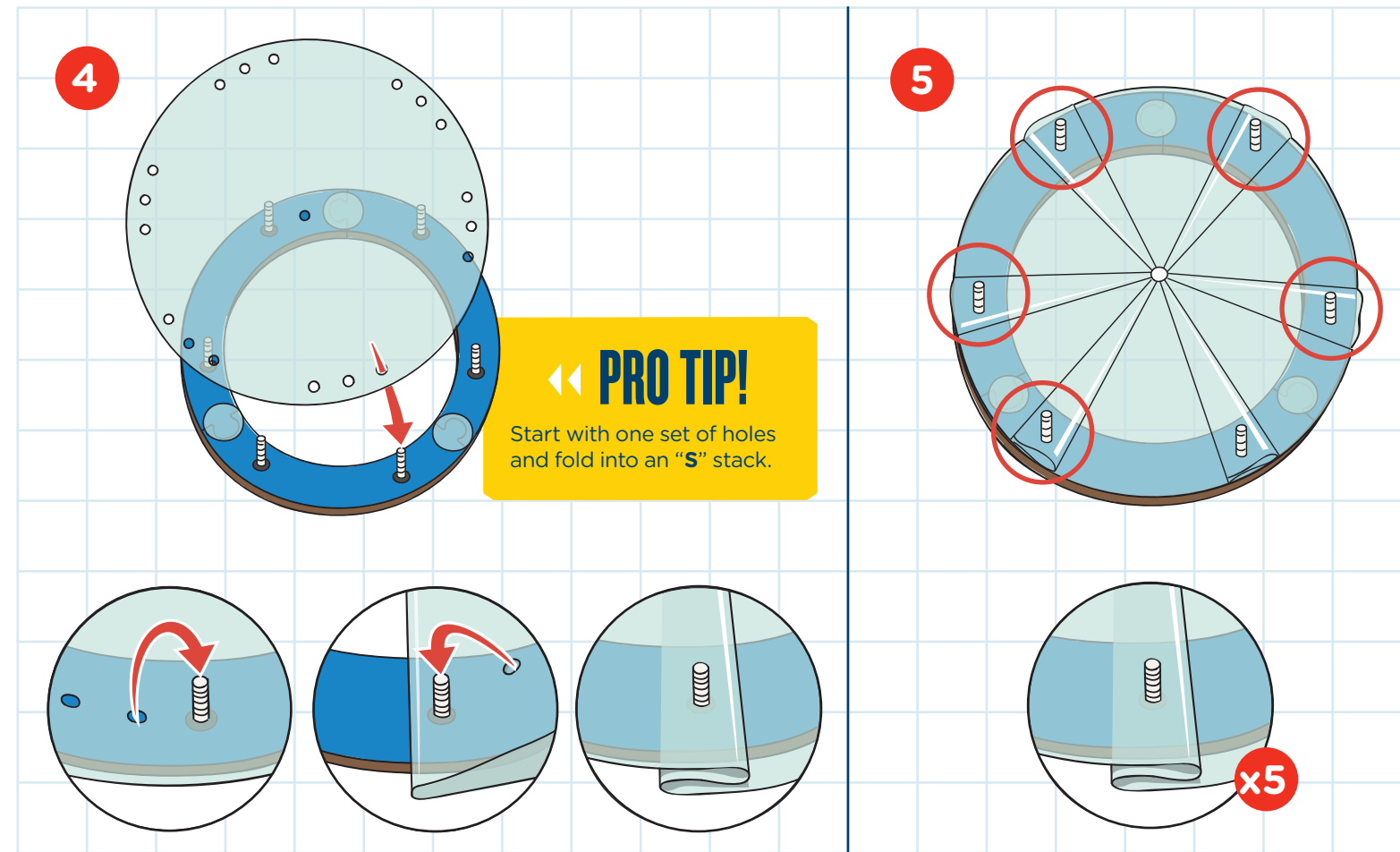
cups

For missing and replacement parts, visit "My Account" at crunchlabs.com and we'll ship them to you for free.

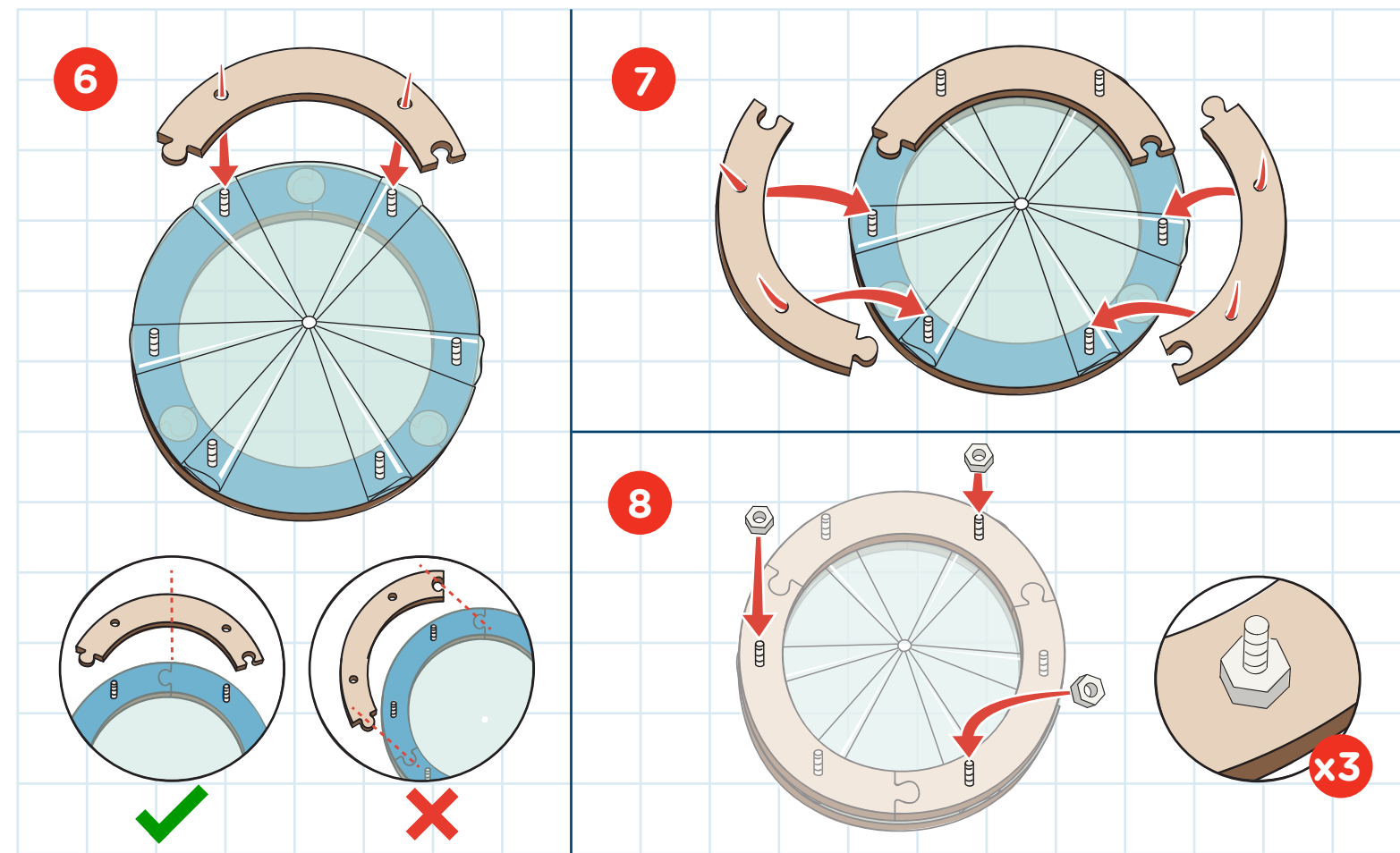
BUILD



BUILD

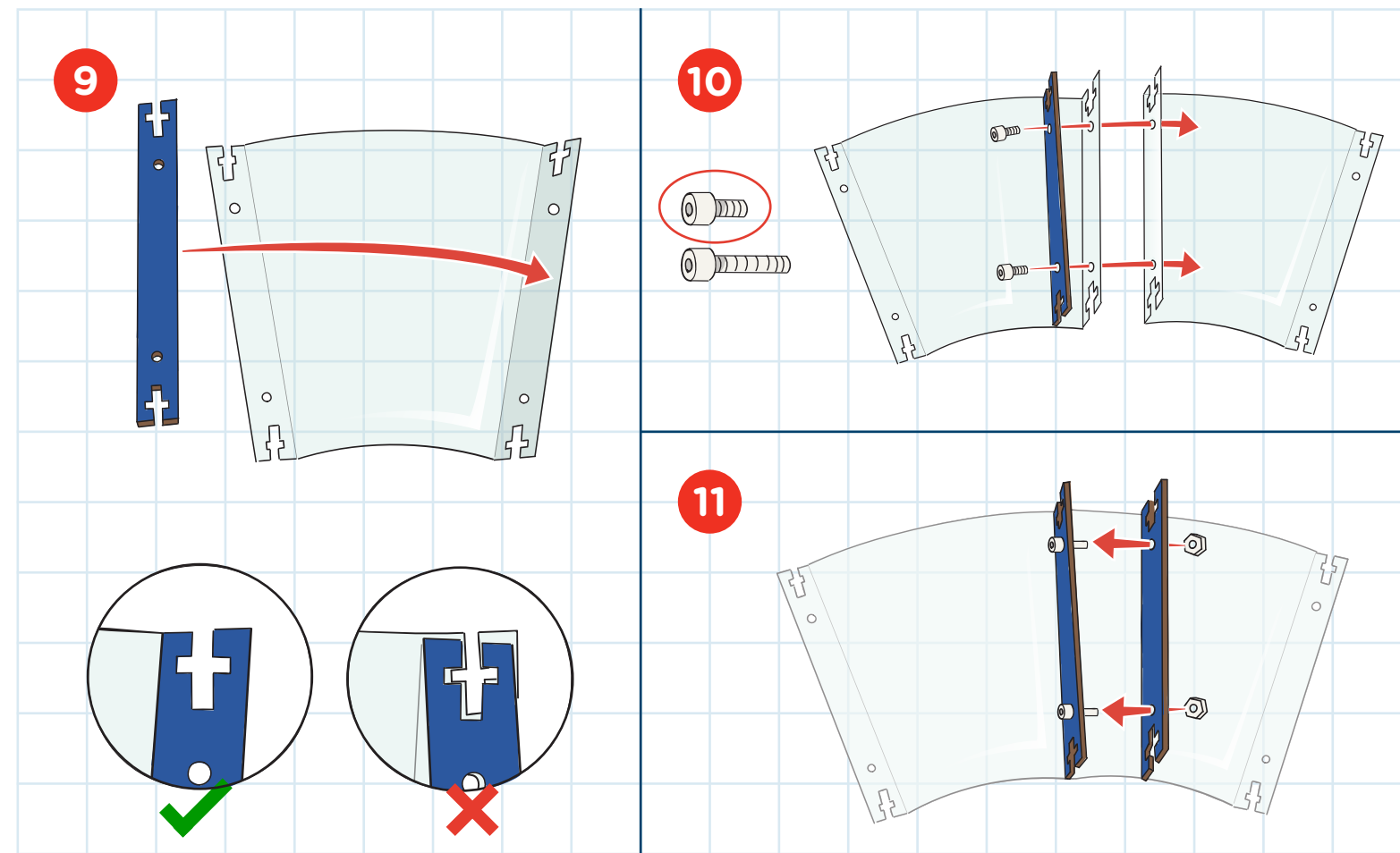


BUILD



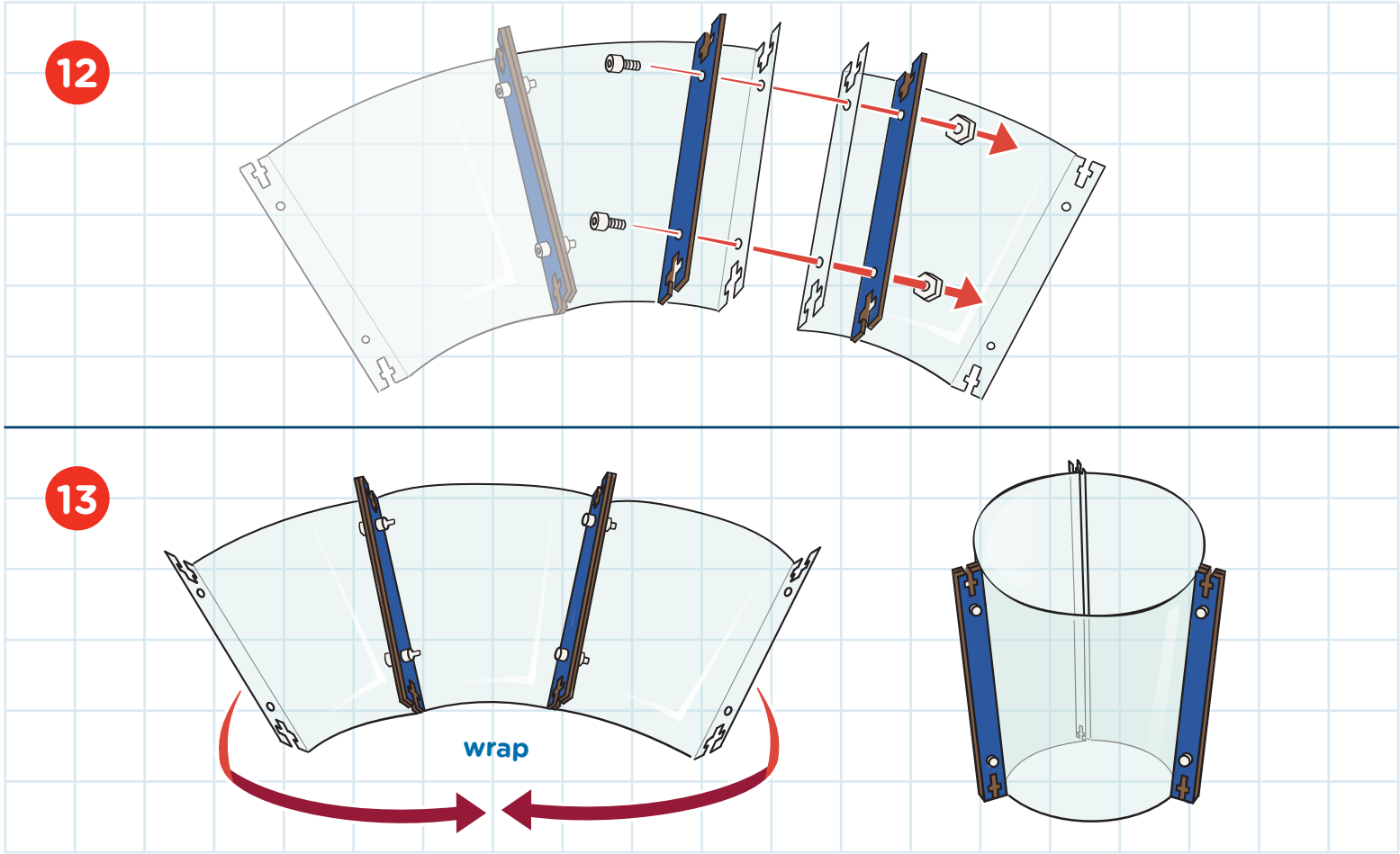
6

BUILD

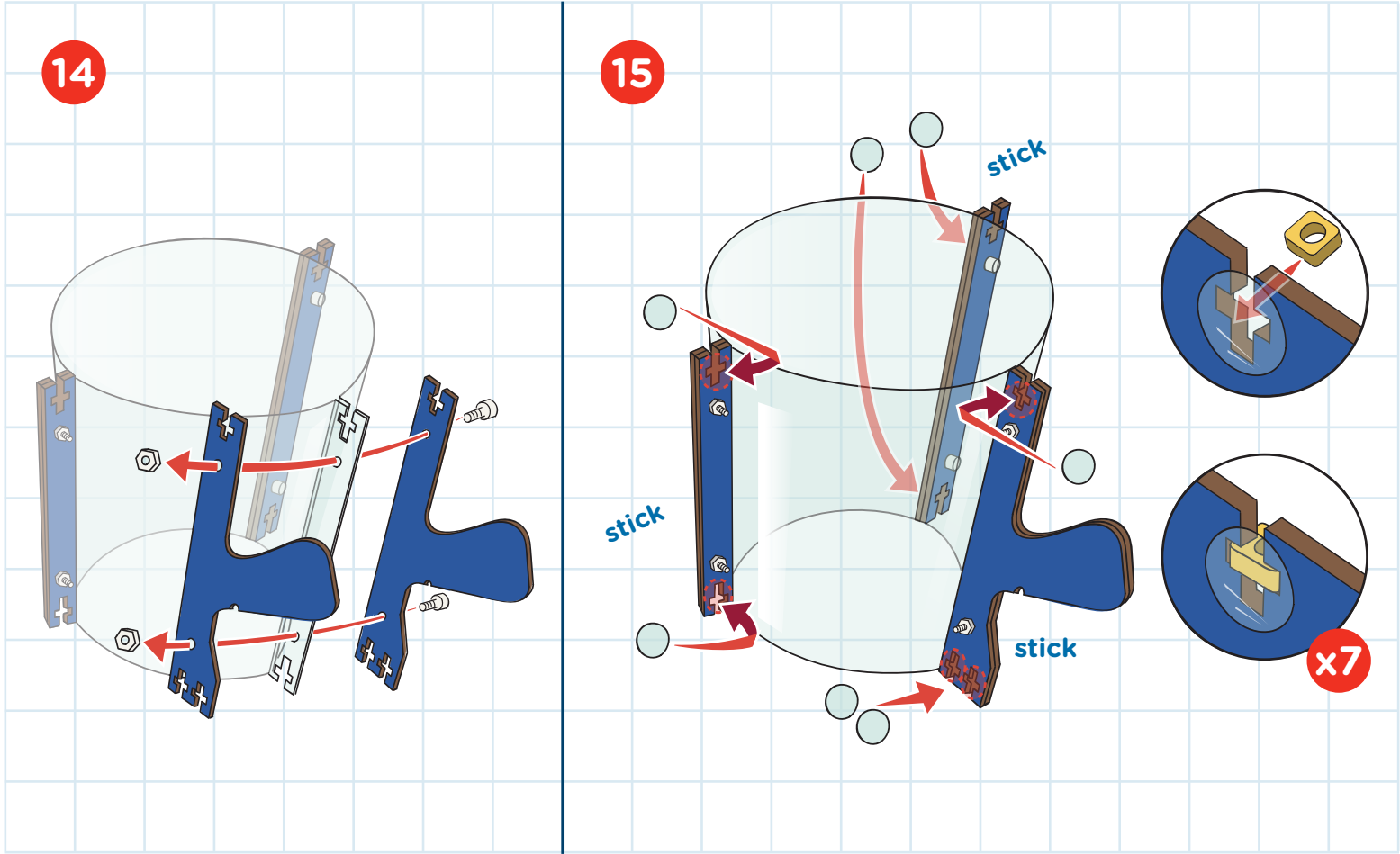


7

BUILD

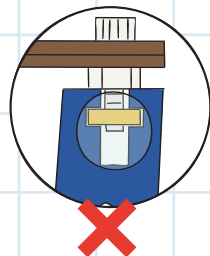
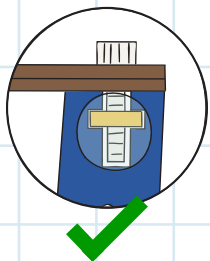
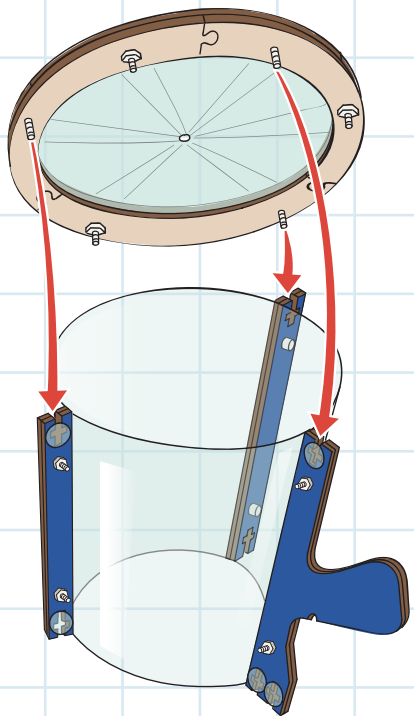


BUILD

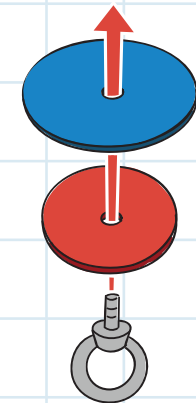


BUILD

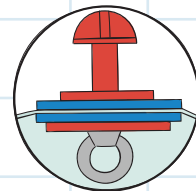
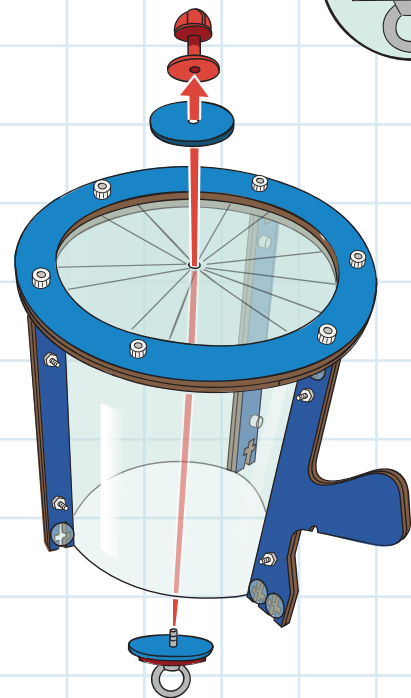
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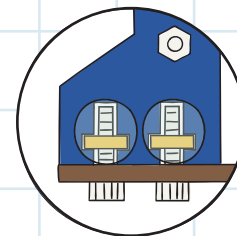
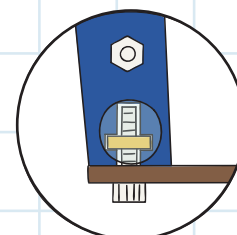
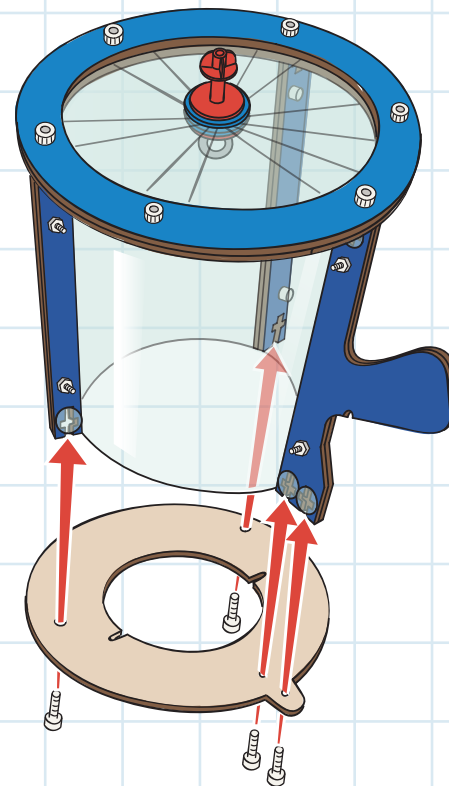
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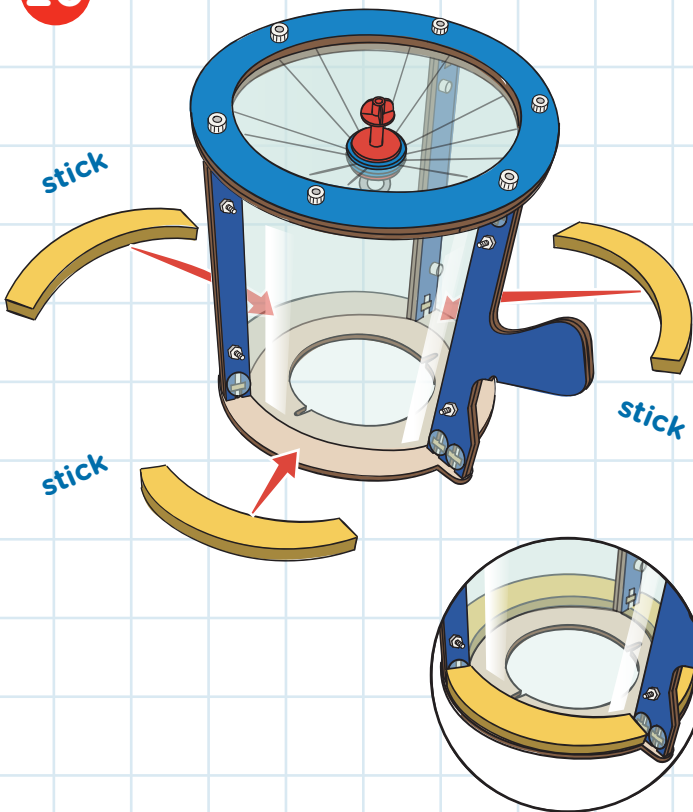
18



19



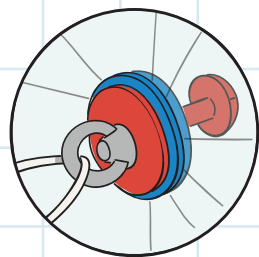
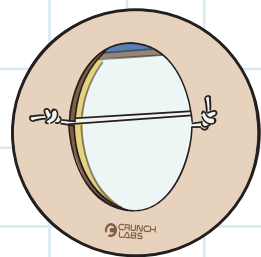
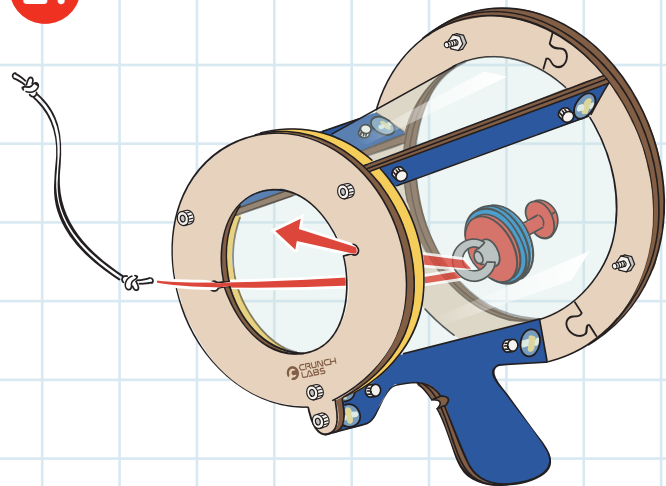
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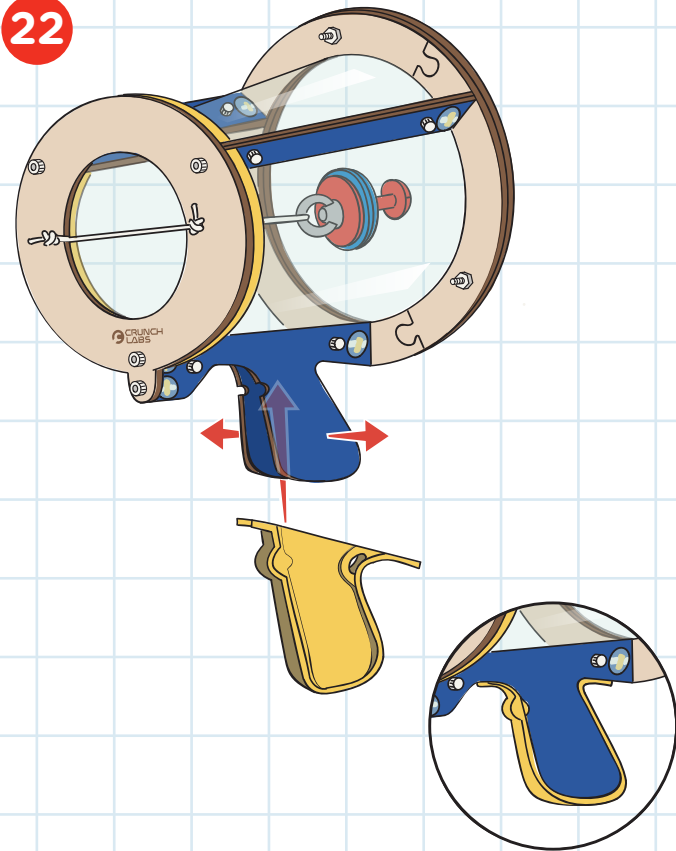
BUILD

BUILD

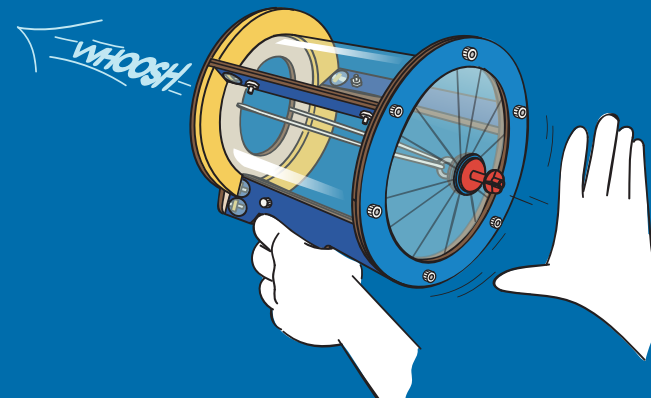
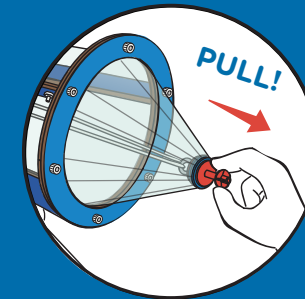
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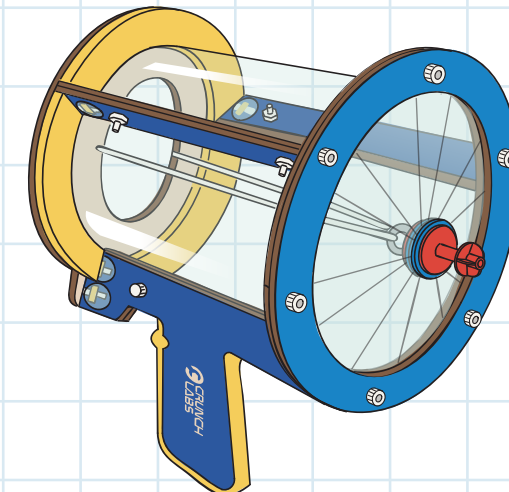
22



TEST



BUILT!



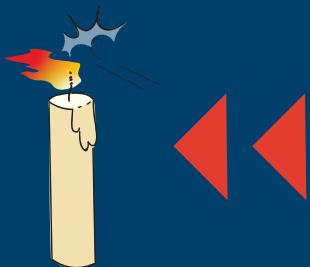
Having trouble? Watch the video at crunchlabs.com/vortex

PLAY



CUP STACK

Use the cups in your box to build a pyramid target. Try and knock them down with your vortex cannon.



MAKE A WISH

Try and blow out a candle from across the room. You could even bring your vortex cannon to your next birthday party.



FEEL THE BREEZE

If you want to feel the power of the cannon head on, you could ask a friend to shoot you with it. It's okay because it's only air!

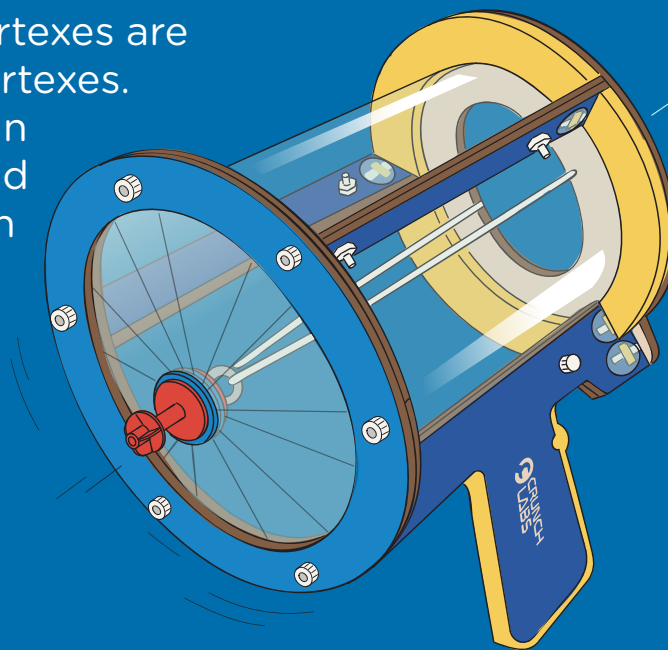
THINK

A **vortex** is a body of fluid which flows around a line.

Basically, it's a swirling pattern that can be found in gasses and liquids.

The two most common types of vortices are called "plug hole" and "toroidal" vortices.

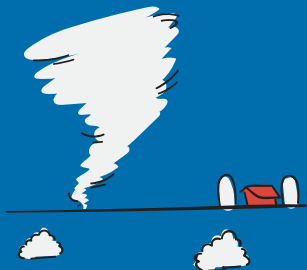
Plug hole vortices occur naturally in the form of tornados, whirlpools and hurricanes. **Toroidal** vortices, which look like donuts, occur underwater when dolphins or whales exhale from their blowholes. Your vortex cannon shoots an invisible toroidal vortex made from air.



THINK

Find vortices in other objects!

Vortexes can be found in nature as well as machines. Vortexes form when a **fluid flows around a central line**. Engineers will artificially create vortexes in order to circulate fluids within a machine.



VORTEXES IN NATURE

Vortexes naturally occur in different weather systems. Tornadoes and hurricanes both form **vortexes that circulate around a central line**. The largest tornado ever recorded was 1 mile wide, while the largest hurricane ever recorded was 1,380 miles wide.



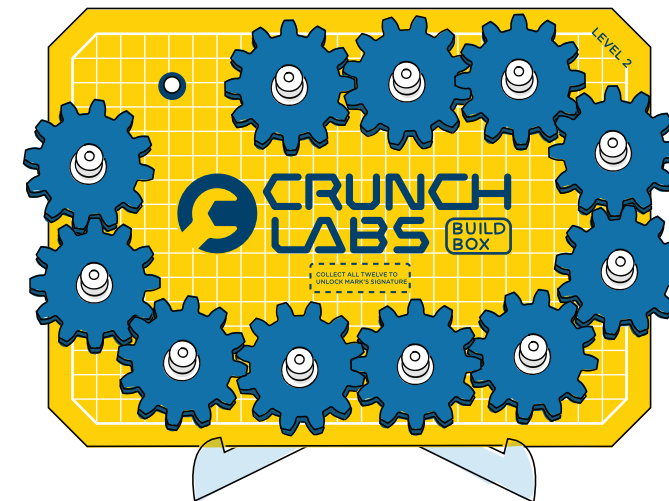
BLENDER TO MAKE CHUM

Mark once filmed a video with sharks! Mark used bait to attract the sharks, which he made in a blender. Blenders use **rotating blades which form a vortex** in order to evenly chop up whatever you put inside. Without the vortex, blenders wouldn't be able to evenly blend.

THINK

CONGRATULATIONS!

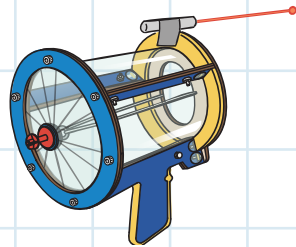
You earned a gear badge for vortex



Don't forget to add your gear badge to your gear train!

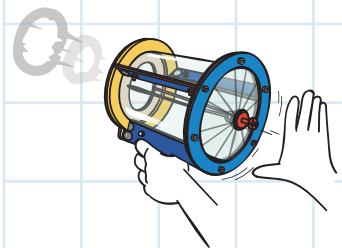
CRUNCH

It's crunch time! Use your engineering superpowers to keep building.



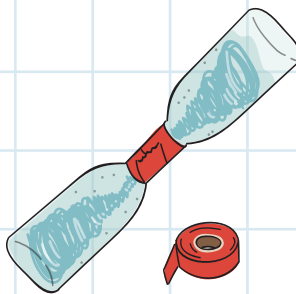
ADD SIGHTS

Try adding sights or a laser pointer to your vortex cannon. That might make it easier to aim!



SMOKE RING

If you use incense or a fog machine, you can fill the vortex cannon with smoke. Then when you fire it, you can see the vortex travel through the air!



BOTTLE VORTEX

Here's another cool way to experiment with vortexes. Fill a bottle halfway with water, and tape another bottle on top of it. When you flip it upside down and give it a swirl, you will see a vortex!

SHOW OFF YOUR BUILD



Share your funniest moments & coolest mods!
#crunchlabs @crunchlabs    



WARNING: Do not aim at eyes or face.

SWEEPSTAKES

Each CrunchLabs build box contains the chance to WIN a trip to visit CrunchLabs with Mark Rober! Sadly, you are not a prize winner this time. Check inside your next build box for another chance to win.

Trip includes roundtrip transportation and two (2) night's hotel accommodations for a family of four (4). Approximate value: \$4,500.

NO PURCHASE NECESSARY. Open to legal U.S. residents, 18 years of age or older. Void where prohibited. For complete Official Rules, including promotion end date and information on how to obtain a free game ticket, visit www.crunchlabs.com/win.

This toy is intended for use by children over the age of eight years. These instructions contain important information, do not throw away.

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