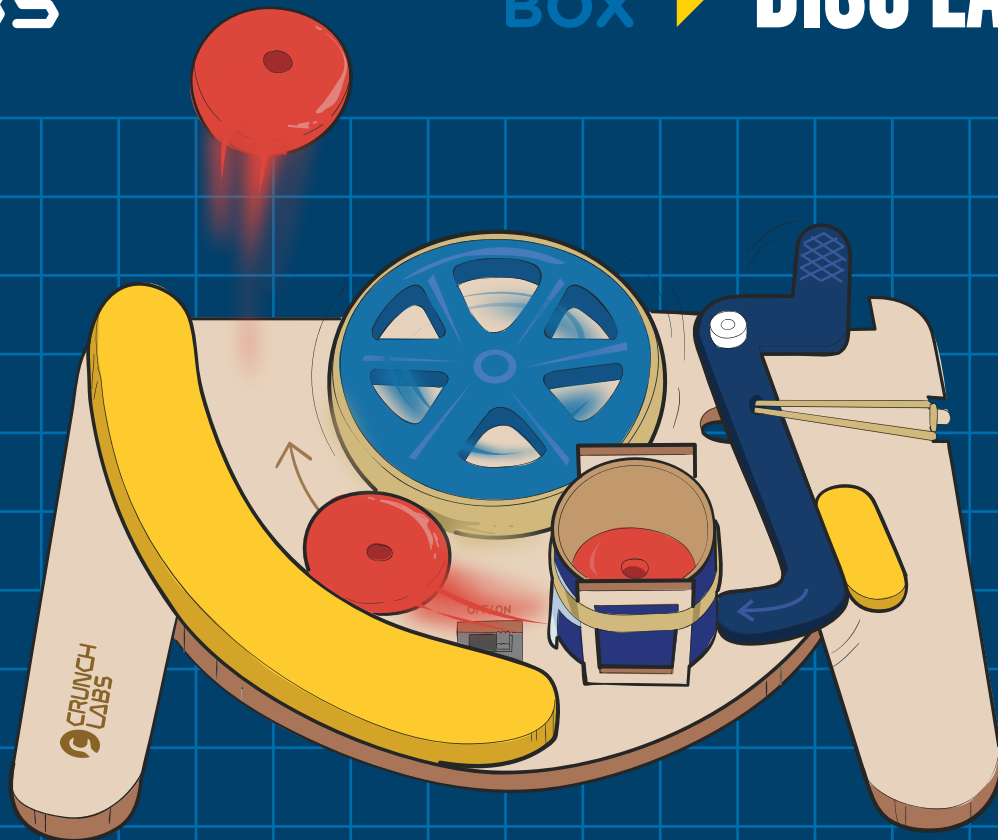




BUILD
BOX



DISC LAUNCHER



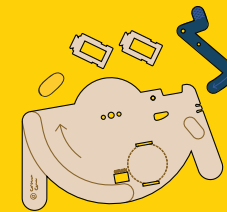
EXCLUSIVE VIDEO

BUILD ALONG & LEARN WITH MARK ROBER

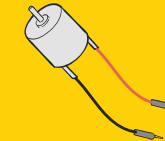


[CRUNCHLABS.COM/DISC](https://crunchlabs.com/disc)

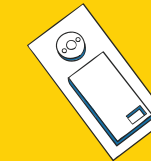
PARTS



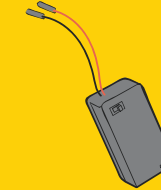
wood pieces



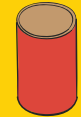
dc motor



adhesive foam



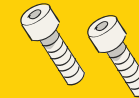
battery pack



motor tube



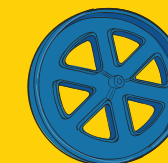
guard rail



bolts



nuts



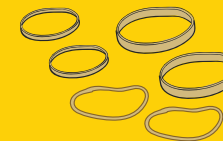
flywheel



disc tube



o-rings



rubber bands



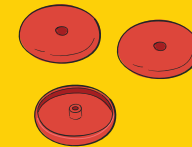
tabs



steel bolts

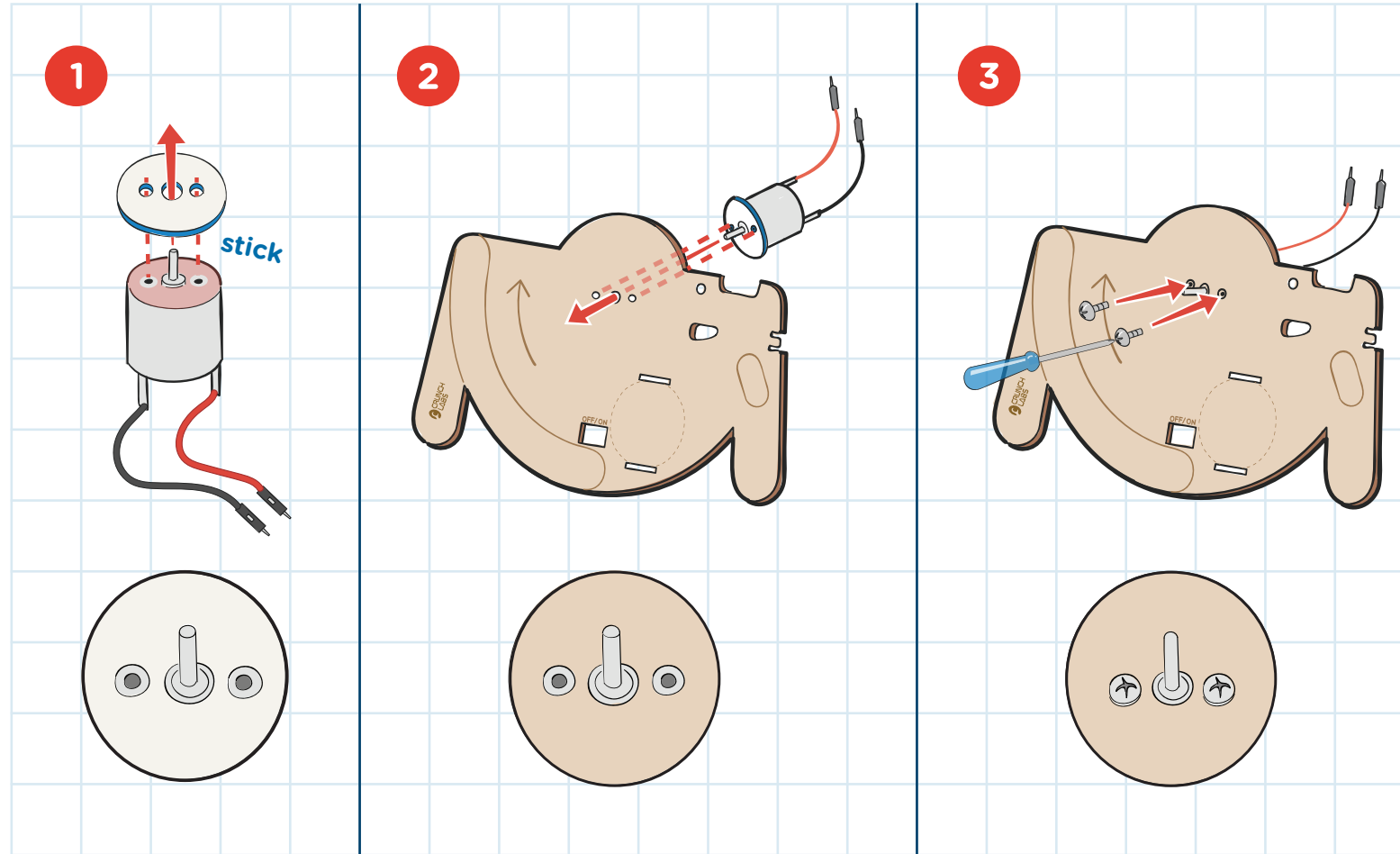


screw driver

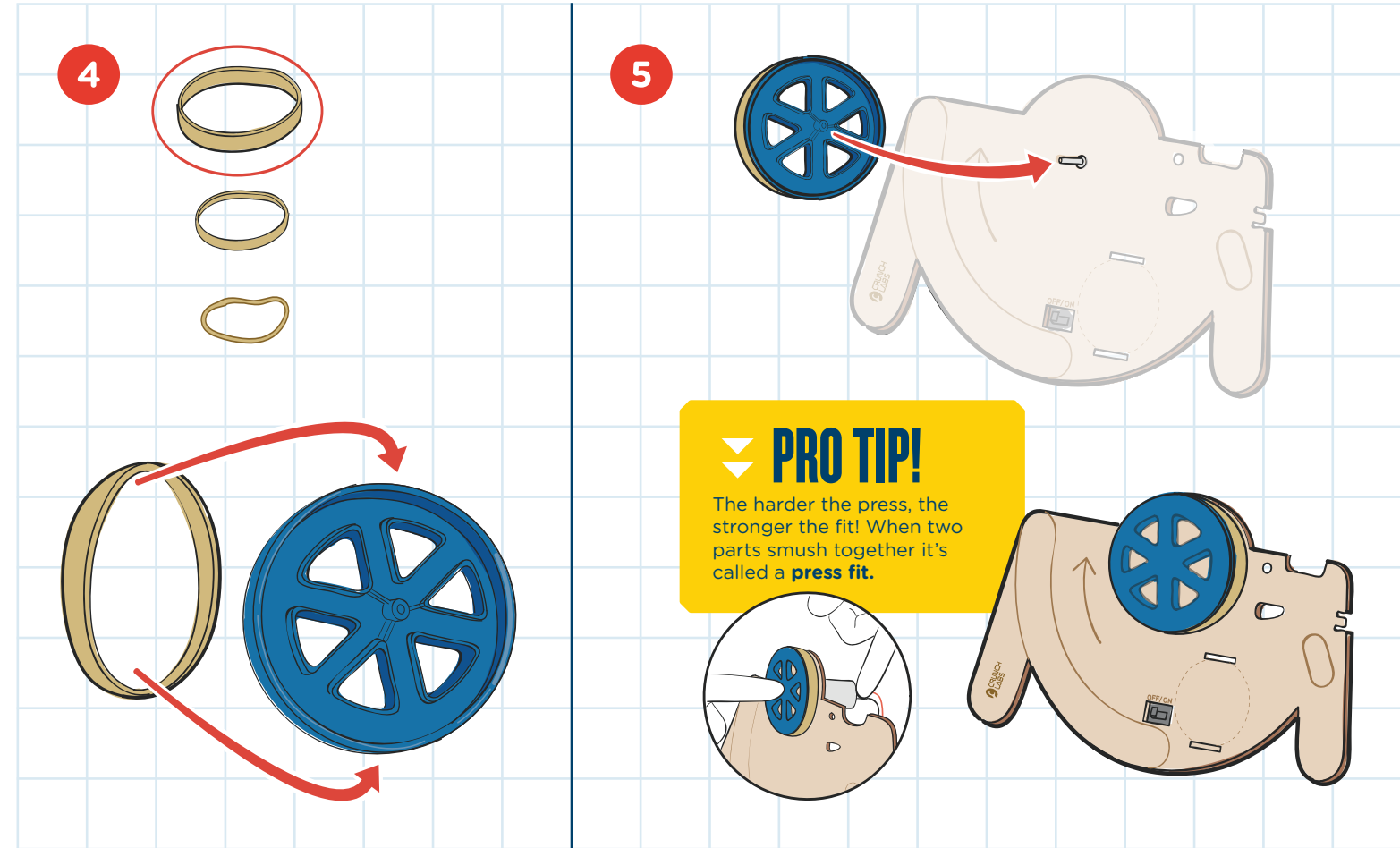


discs

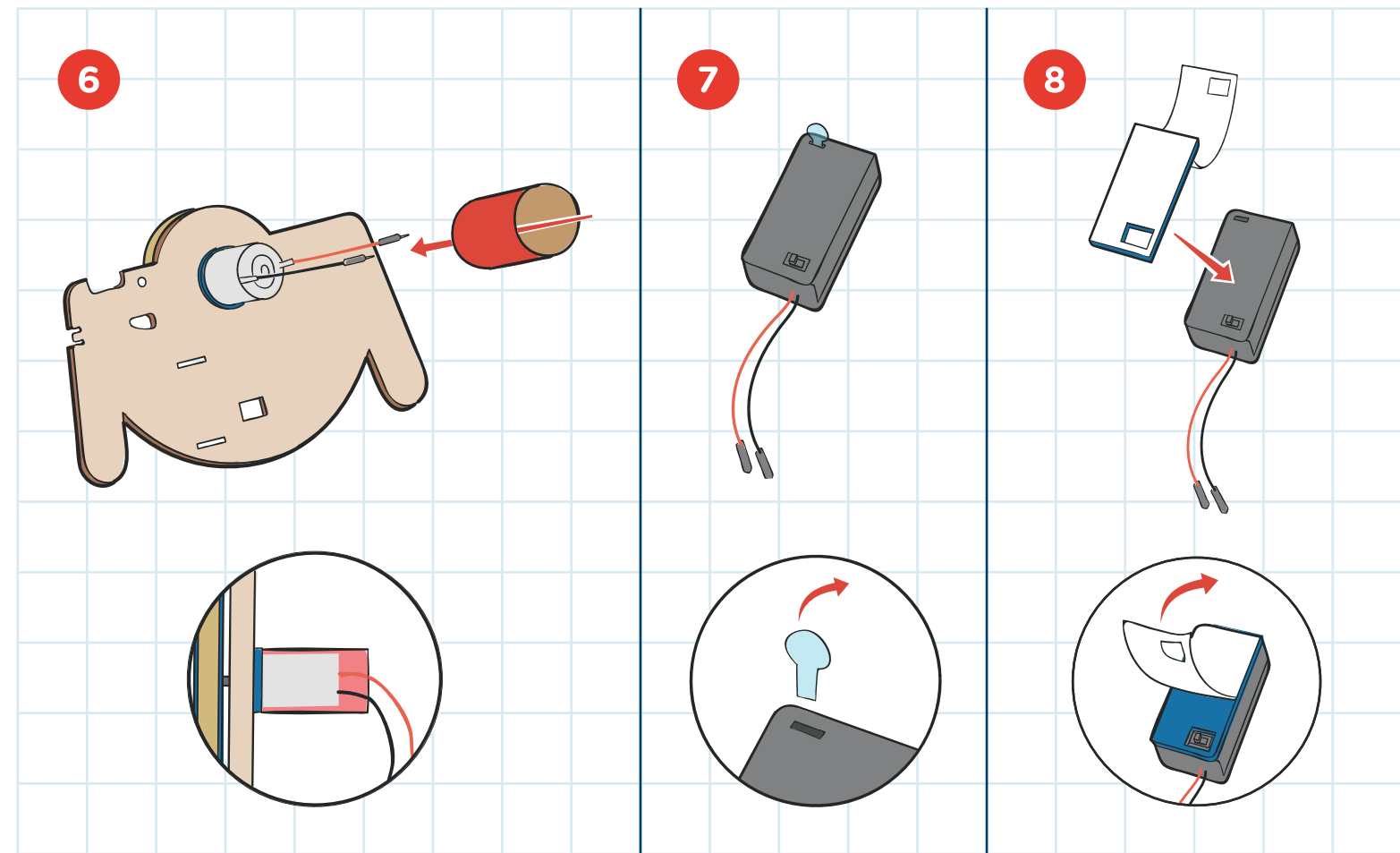
BUILD



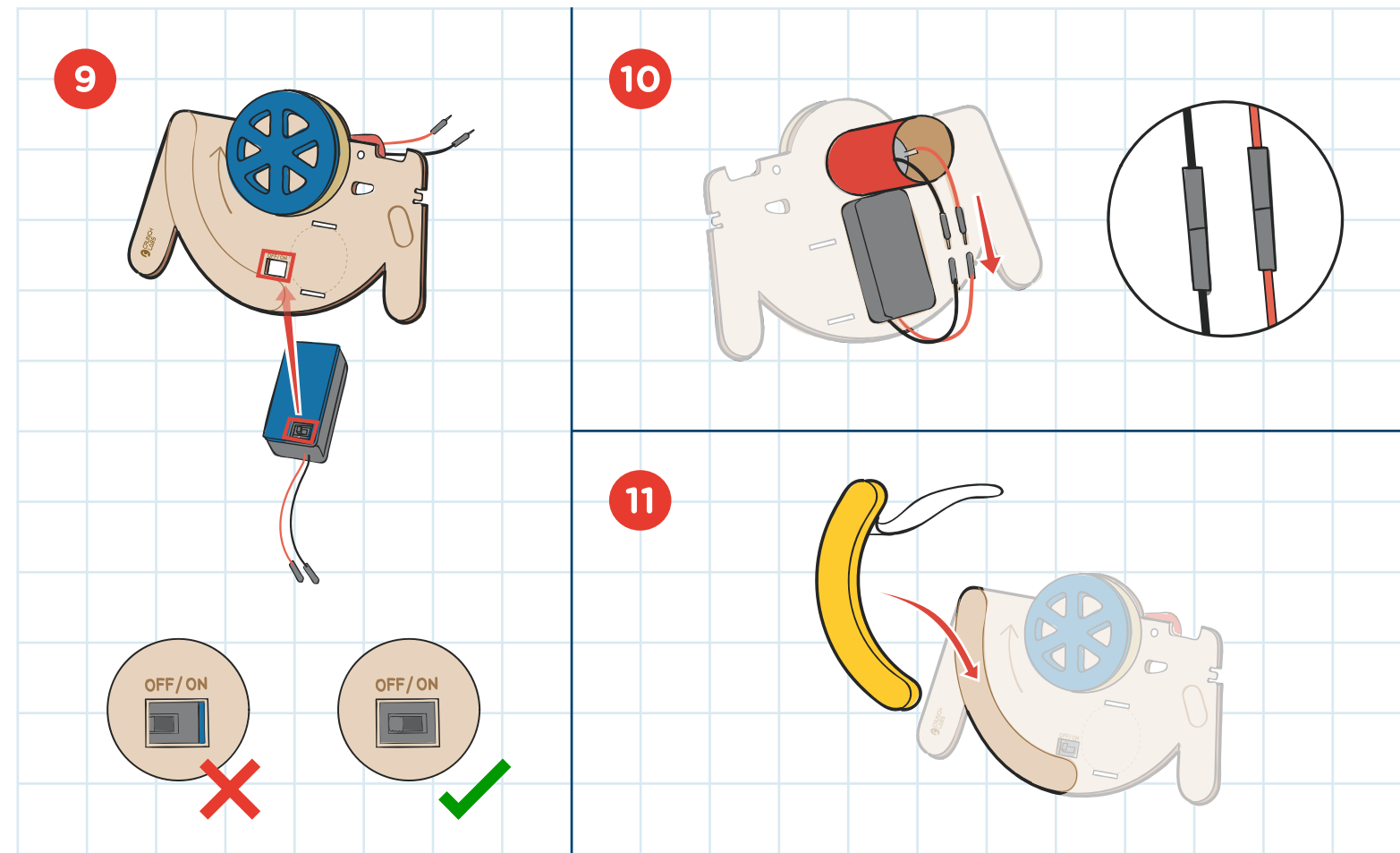
BUILD



BUILD

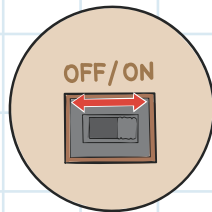


BUILD



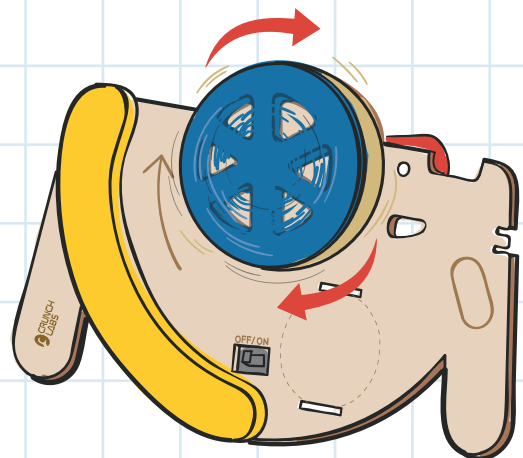
BUILD

12

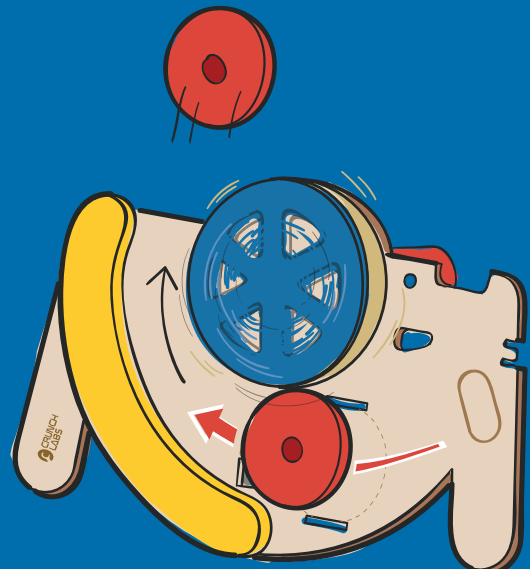


PRO TIP!

You can reverse the direction that a DC motor spins by swapping the wire connections.



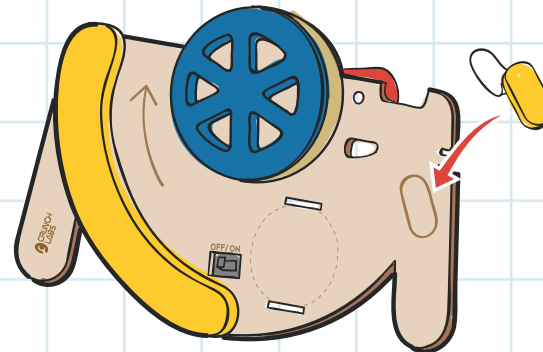
TEST



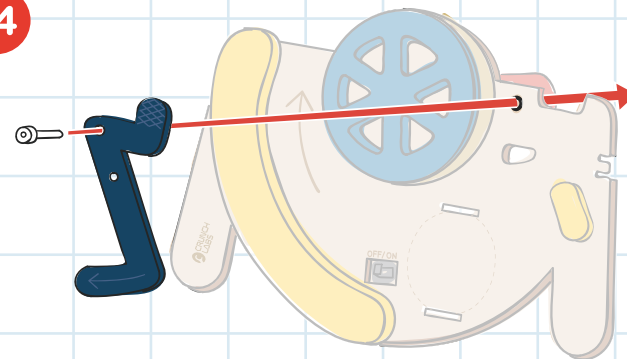
Having trouble? Watch the video at crunchlabs.com/disc

BUILD

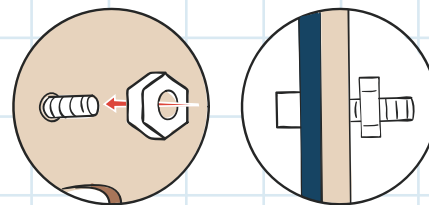
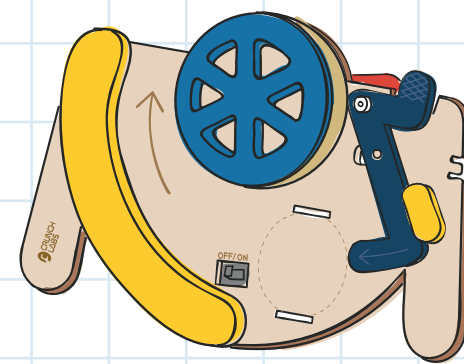
13



14



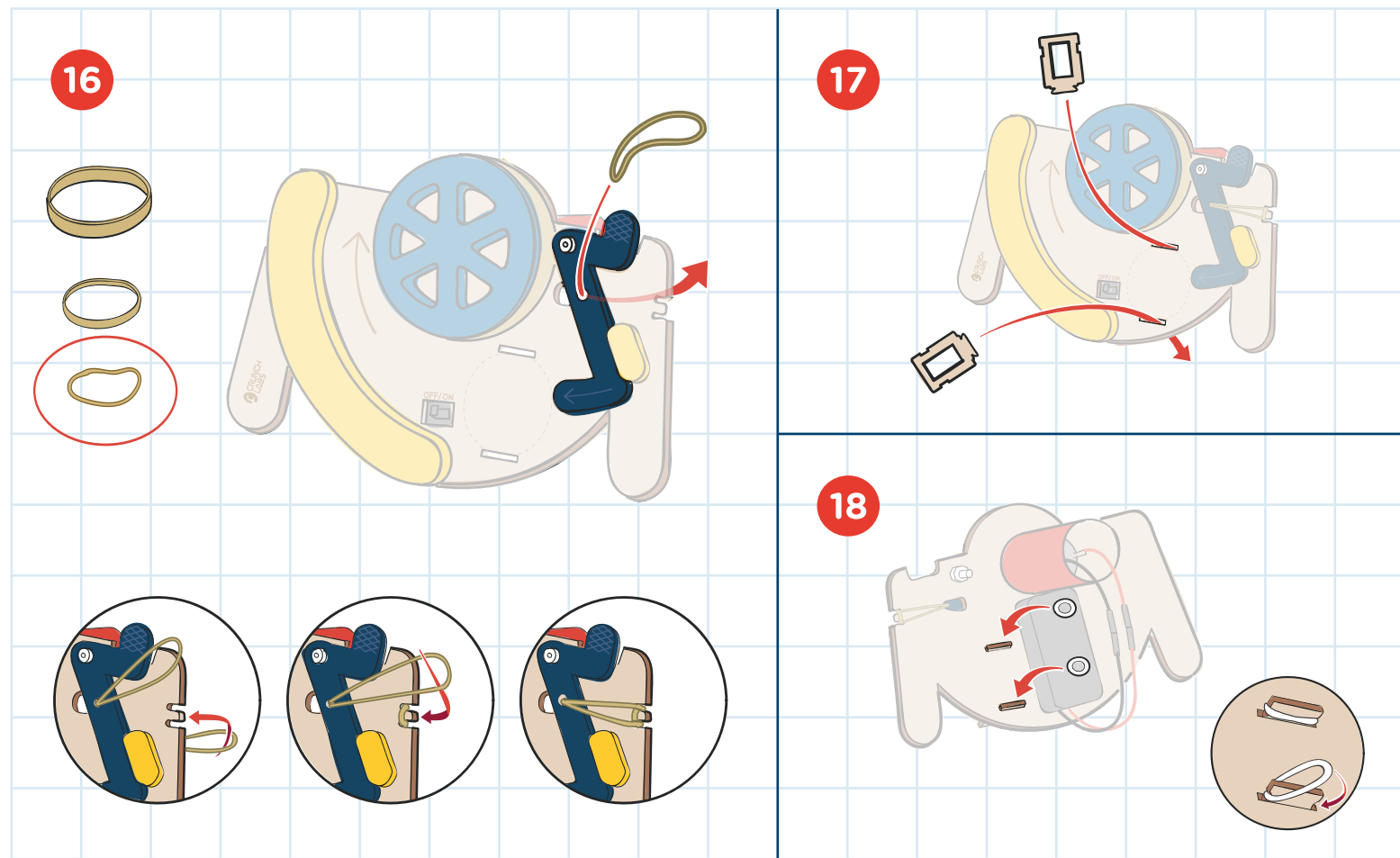
15



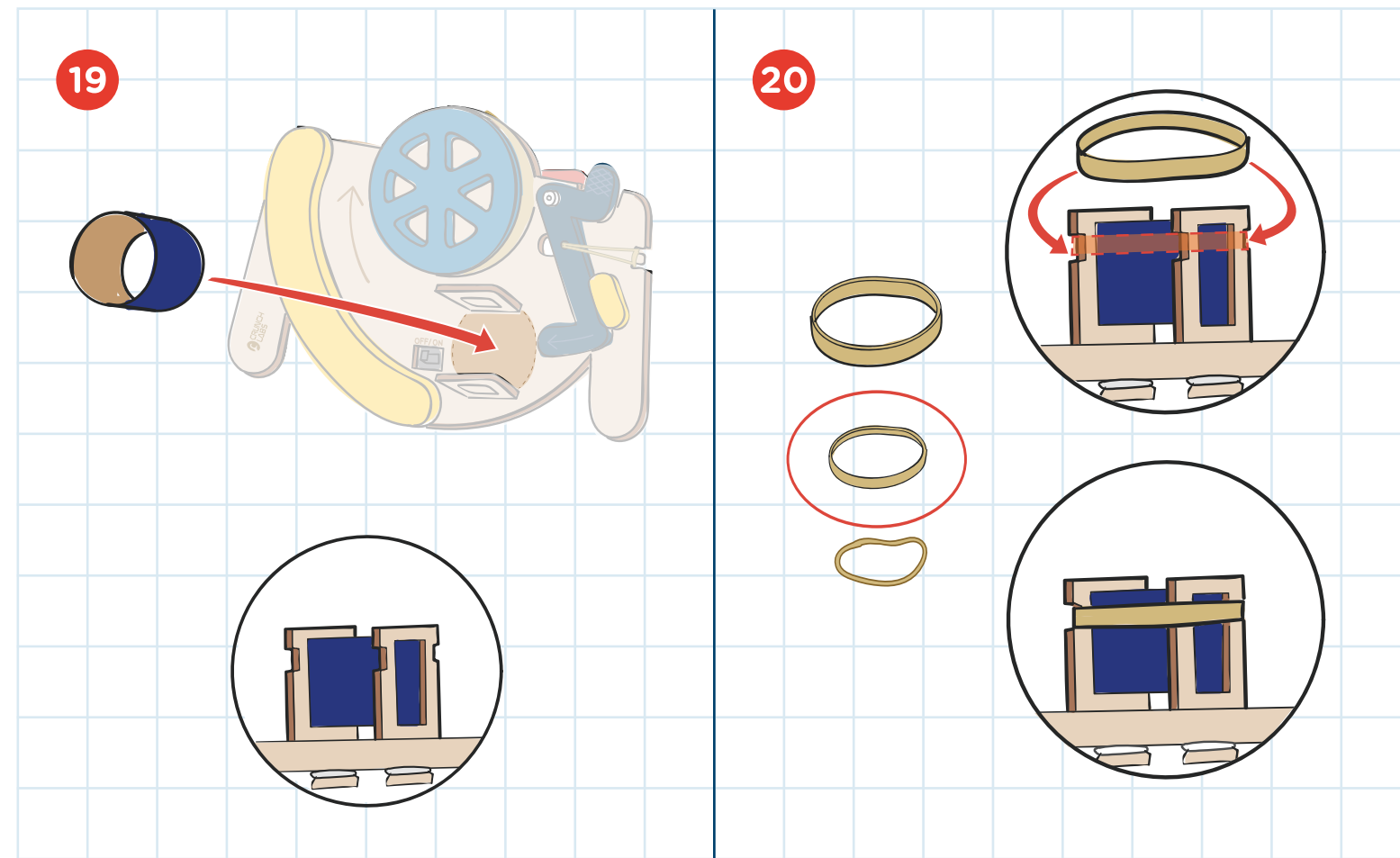
PRO TIP! ▲

An **axle** is a pin that allows parts to rotate. Bolts can be used as axles, as long as the nuts are not too tight.

BUILD

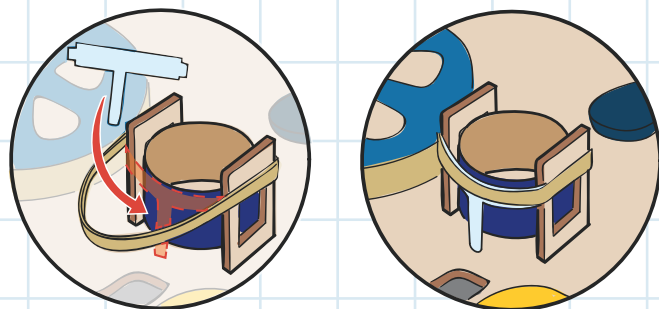
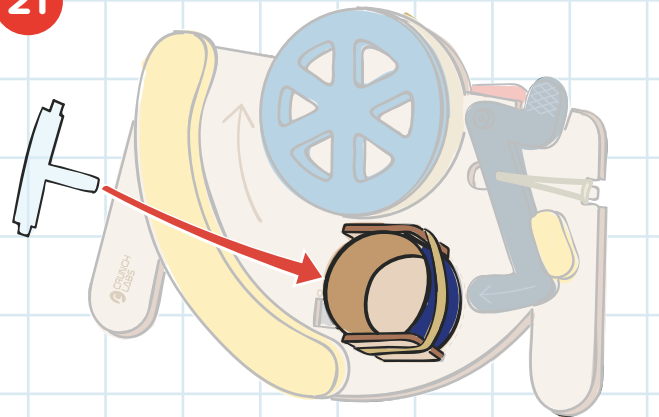


BUILD

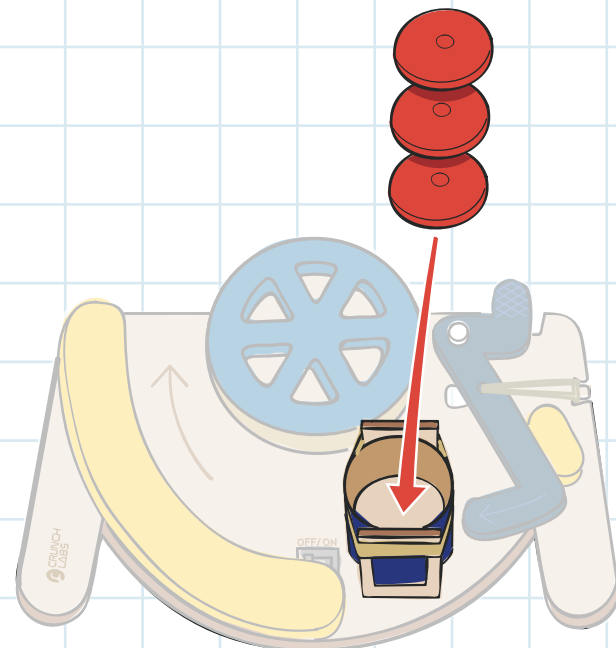


BUILD

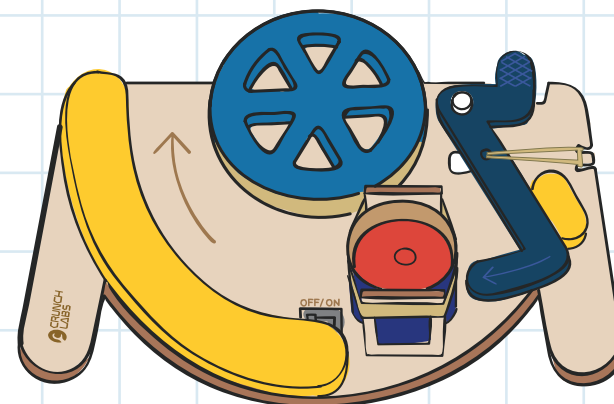
21



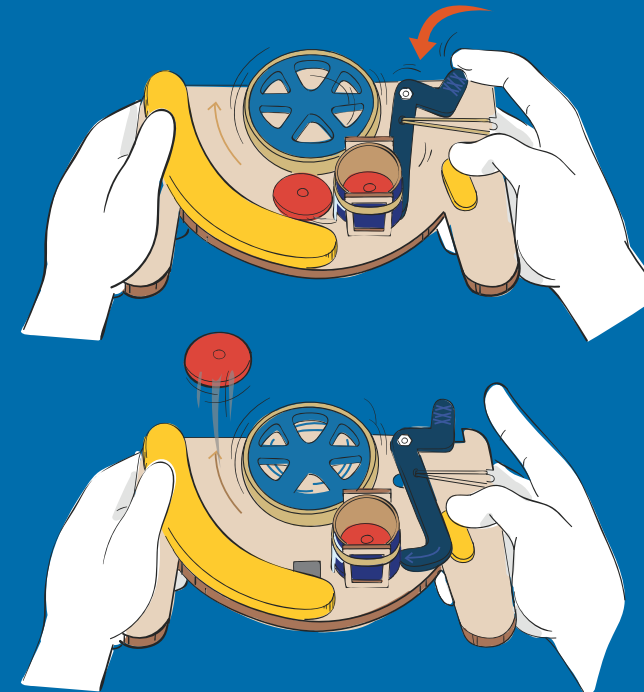
22



BUILT!

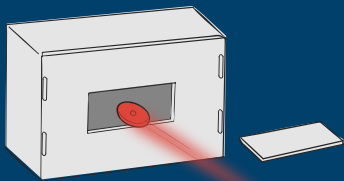


TEST



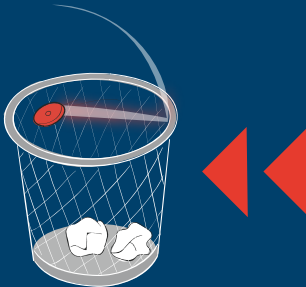
Having trouble? Watch the video at crunchlabs.com/disc

PLAY



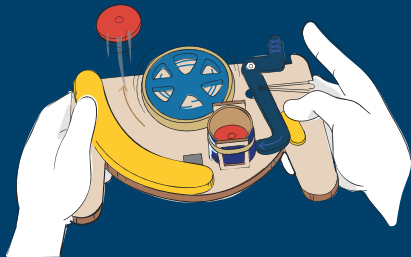
BOX GOAL

Punch out the rectangle in the bottom of the box and use it as a goal. See how far away you can score. Use a measuring tape to record your farthest shot!



HOME GOAL

Having fun using the box as a goal? Get creative and look for other things you can use as targets. Baskets and bins work great!



ENGINEERING HUSTLE

Challenge someone to a disc throwing competition, but don't show them your disc launcher... yet. After they fail, bust out the disc launcher for your epic win.

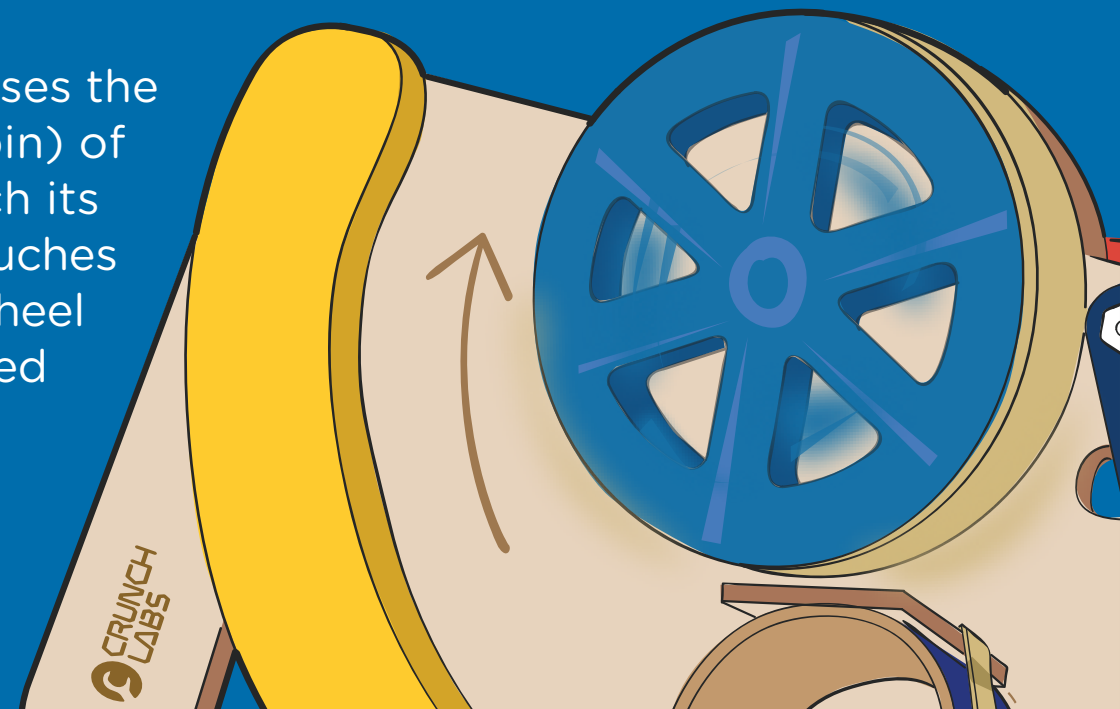
THINK

A flywheel is a mechanical device that stores rotational energy.

Basically, it stores energy by spinning.

Your Disc Launcher uses the rotational energy (spin) of the **flywheel** to launch its discs. When a disc touches the flywheel, the flywheel gives some of its stored energy to the disc.

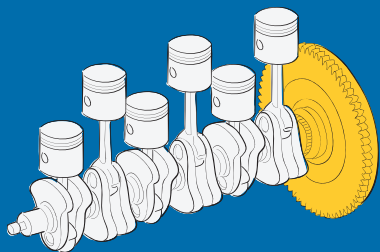
Whoosh!



THINK

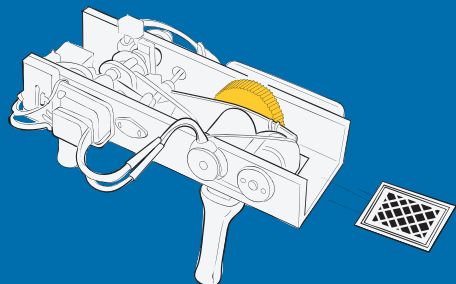
Find flywheels in other machines!

Since flywheels are awesome at spinning (storing rotational energy) they are an essential component to many machines. Sometimes they take energy **in**, and sometime they send energy **out**. Either way, flywheels help things run smoothly.



COMBUSTION ENGINE

Cars that use internal combustion engines are powered by tiny explosions! A flywheel takes those tiny explosions **in** and helps turn them into even motion. This makes for a smoother ride.



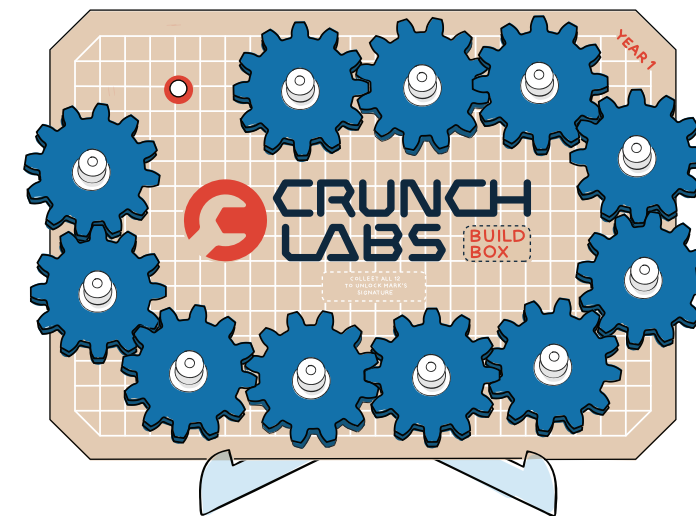
CARD LAUNCHER

Mark built a machine that uses a flywheel to launch playing cards. The flywheel grabs cards and launches them **out**. The machine is powerful enough to make the playing cards stick into apples!

THINK

CONGRATULATIONS!

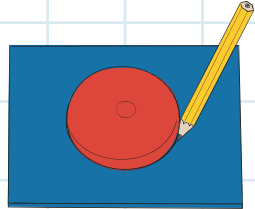
You earned a gear badge for flywheels



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

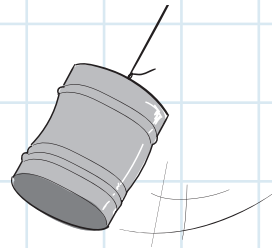
CRUNCH

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



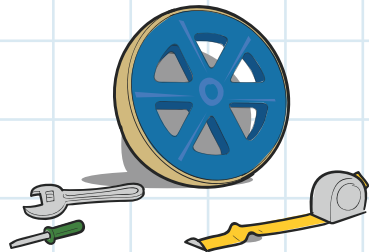
EXTRA DISCS

Make more discs out of a safe material like craft foam. Use one of your discs as a template by tracing around it.



MOVING TARGET

Challenge yourself by building a moving target with materials from home. Try making one that swings!



DREAM BIG

Dream up a new machine that uses a flywheel. Try drawing your ideas, like an engineer!

SHOW OFF YOUR BUILD



Share your craziest trick shots and coolest mods!

#crunchlabs #disclauncher    



WARNING: Improper assembly can short circuit batteries. Do not aim at eyes or face.

BATTERY SAFETY

Remove exhausted batteries. Do not mix old & new batteries. Do not mix alkaline, standard (carbon-zinc), or rechargeable batteries. Do not recharge non-rechargeable batteries. If using rechargeable batteries, remove them from the toy before charging. Rechargeable batteries should be charged under adult supervision. Do not short-circuit supply terminals. Do not connect this toy to a power supply greater than two AA batteries. **How to remove batteries:** 1. Remove screw and lid from battery pack. 2. Remove batteries. **How to insert batteries:** 1. Remove screw and lid from battery pack. 2. Insert two new batteries into the battery pack with correct polarity (+ and -). 3. Replace lid and secure the screw on the battery pack.

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.