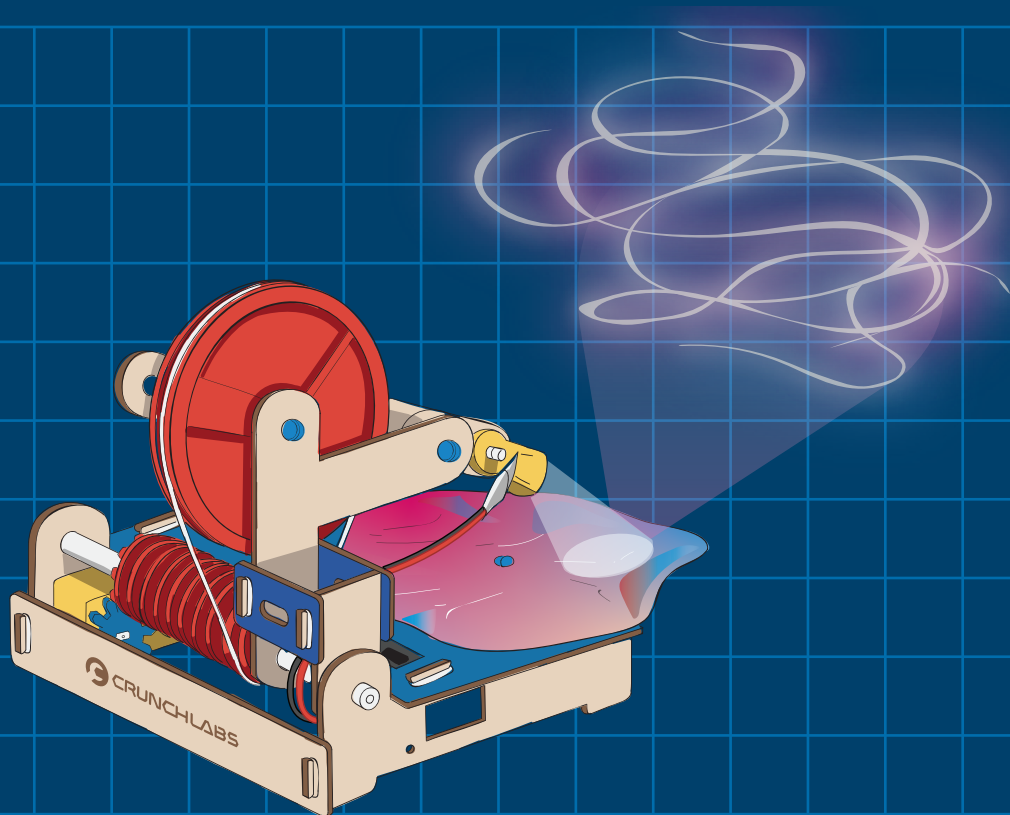




BUILD
BOX



AURORA
REFLECTOR



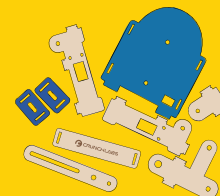
NEW VIDEO UNLOCKED

BUILD ALONG & LEARN WITH MARK ROBER



[CRUNCHLABS.COM/AURA](https://crunchlabs.com/aura)

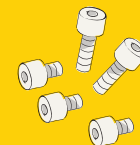
PARTS



wood pieces



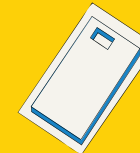
foam donuts



bolts



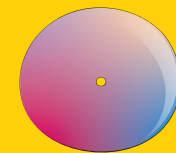
O-rings



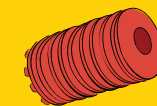
adhesive foam



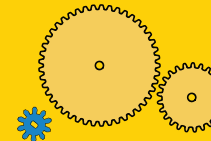
rivets



iridescent disc



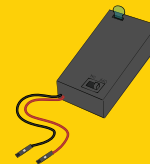
worm gear



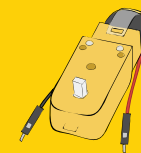
gears



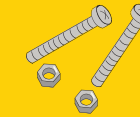
light kit



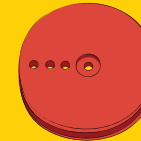
battery pack



motor



metal nuts and bolts

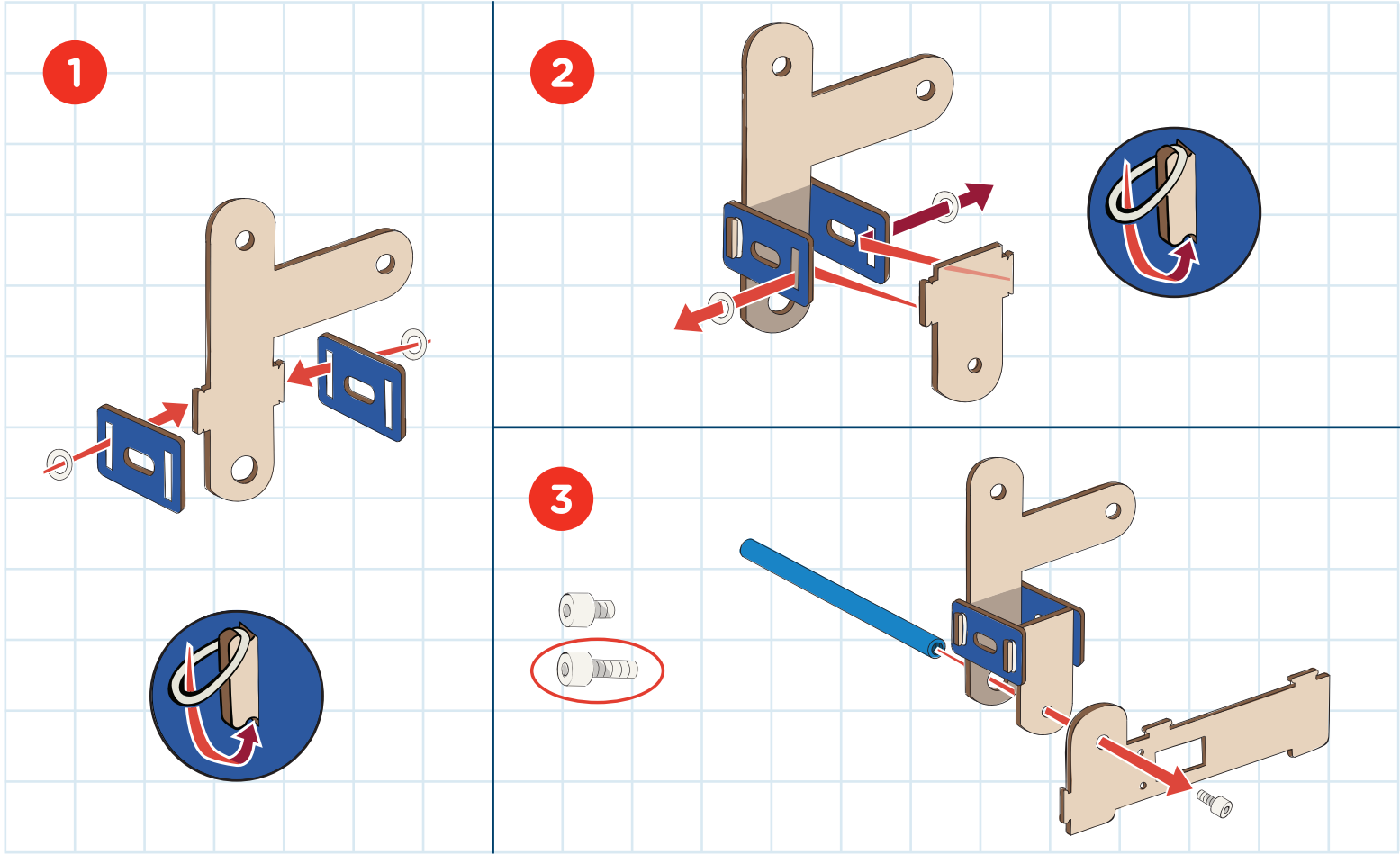


wheel

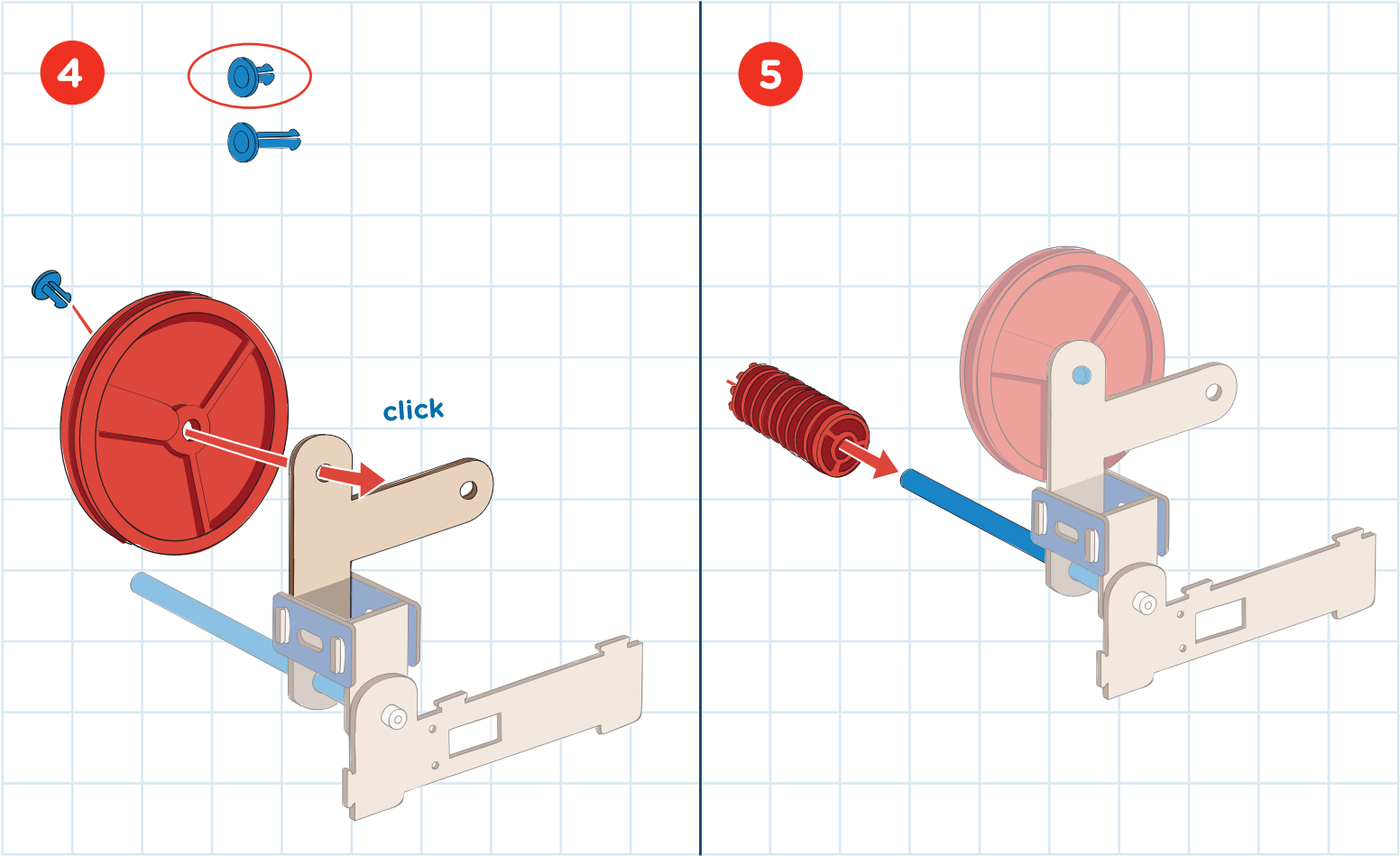


axle

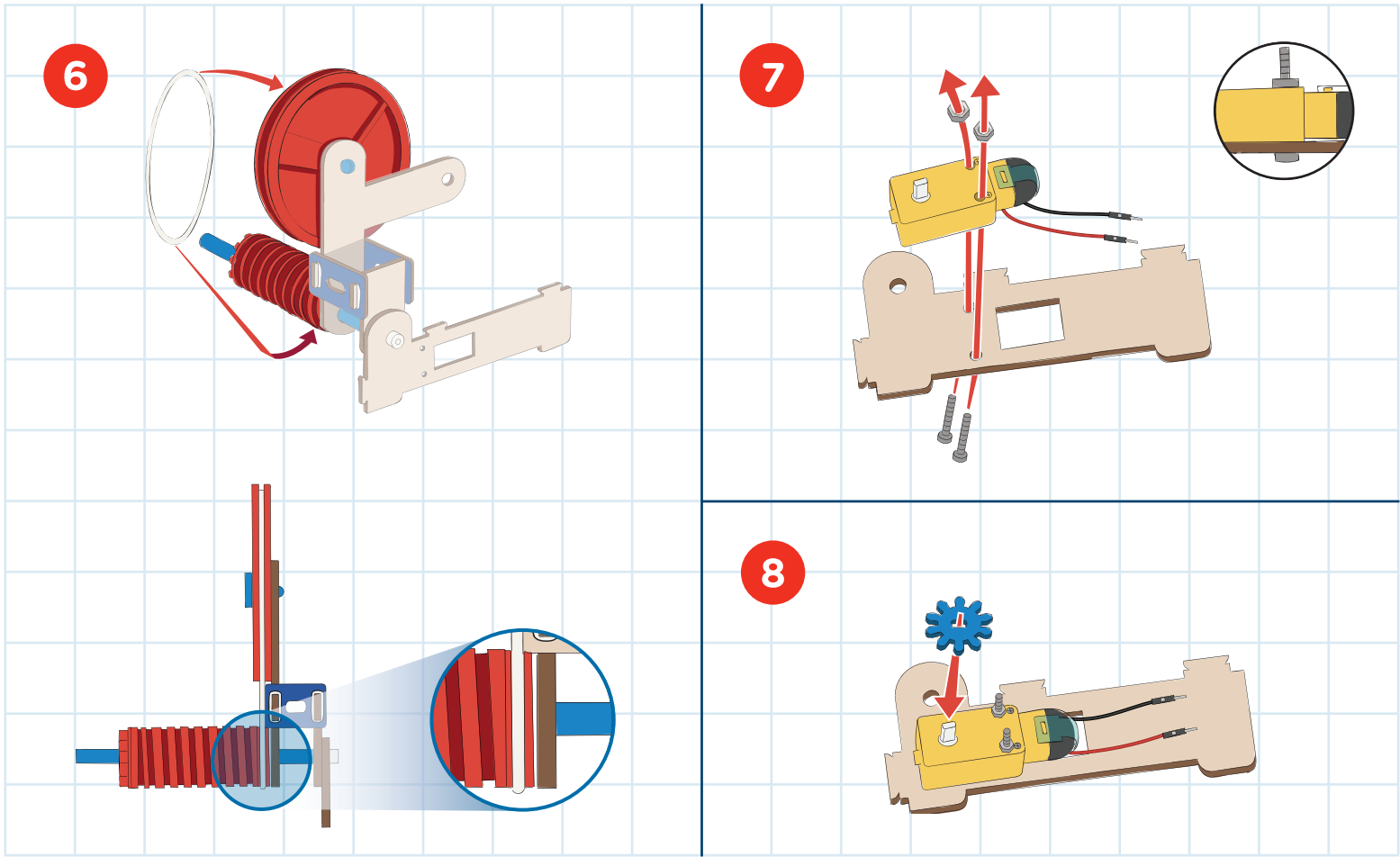
BUILD



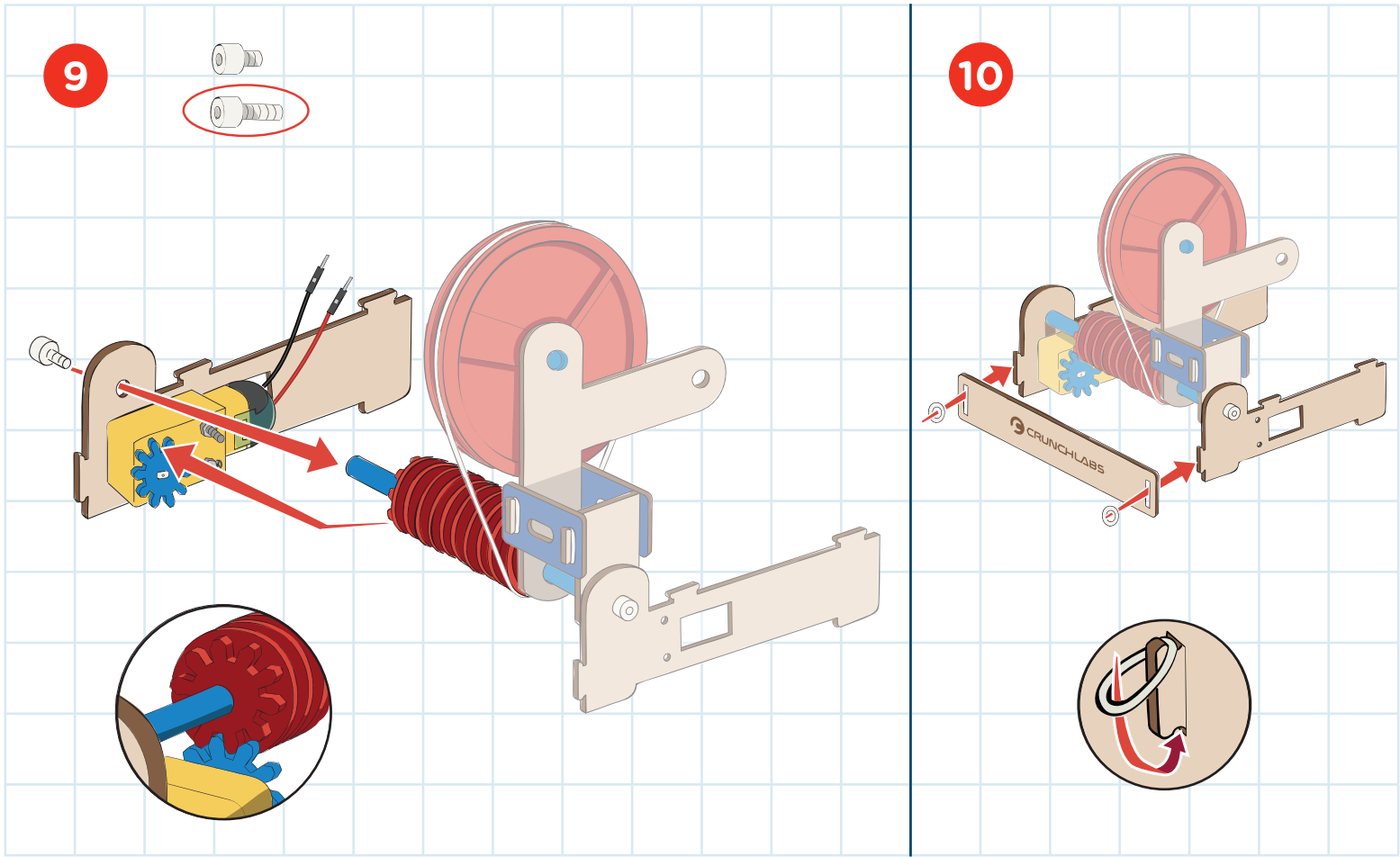
BUILD



BUILD



BUILD



BUILD

11

12

PRO TIP!
These holes change how fast the LED arm goes up and down.

13

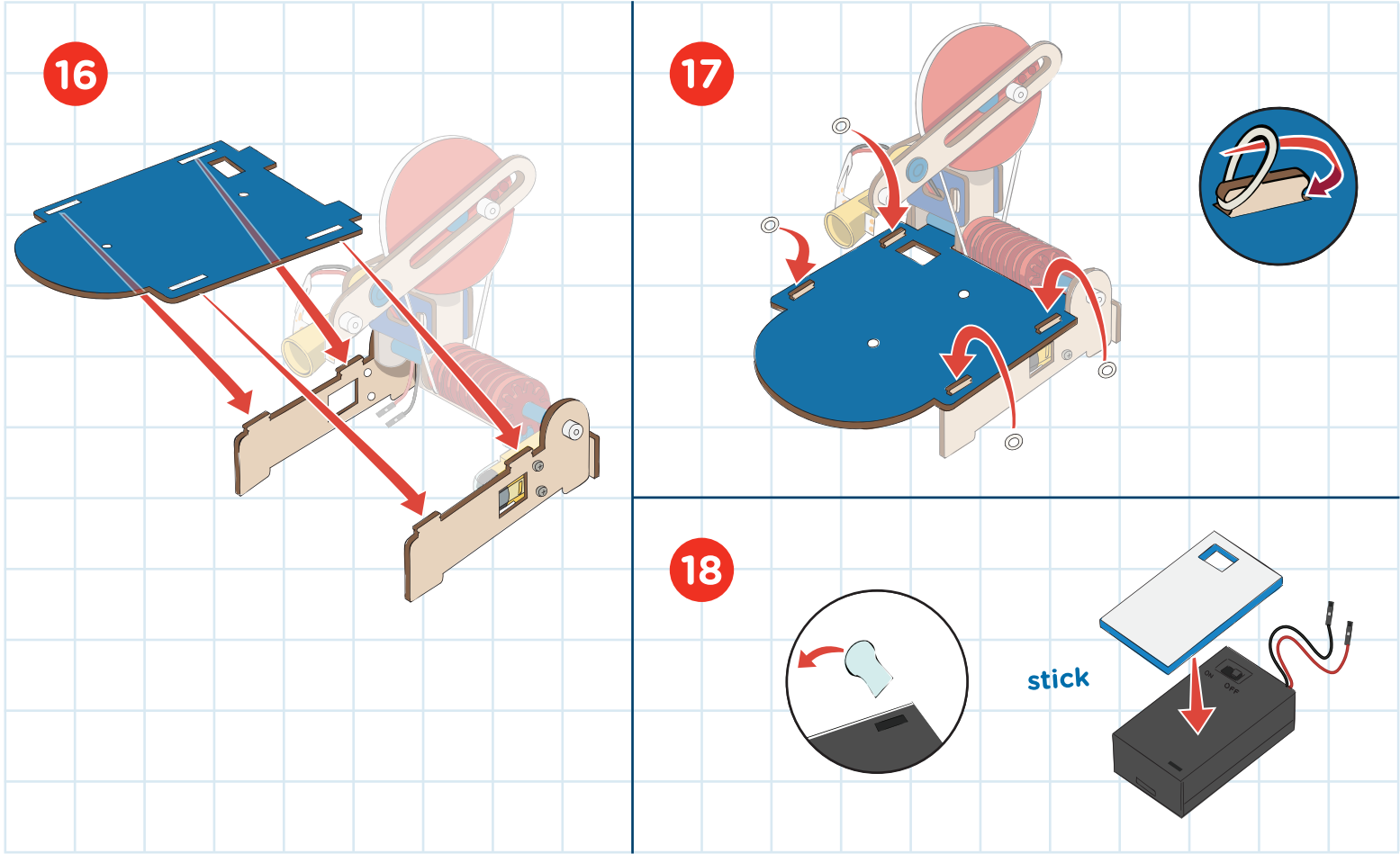
PRO TIP!
Adjust the lamp shade to move the reflection from the wall to the ceiling.

BUILD

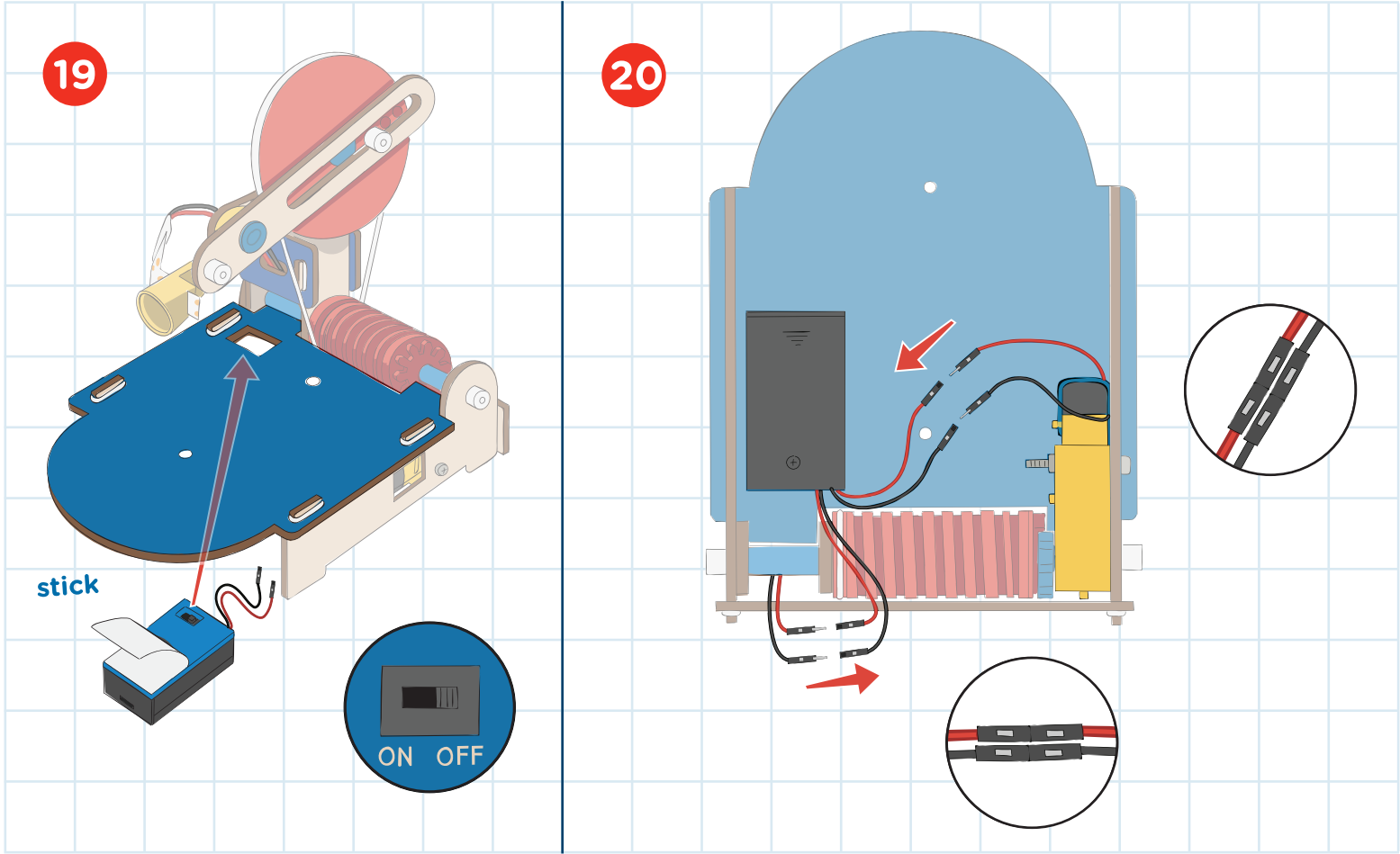
14

15

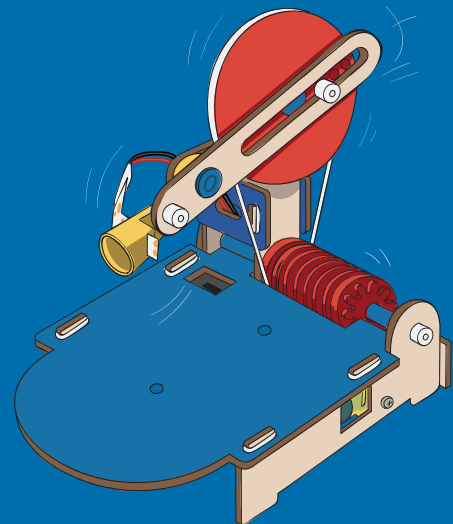
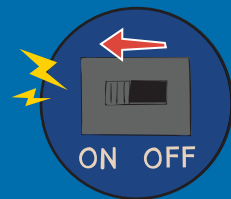
BUILD



BUILD

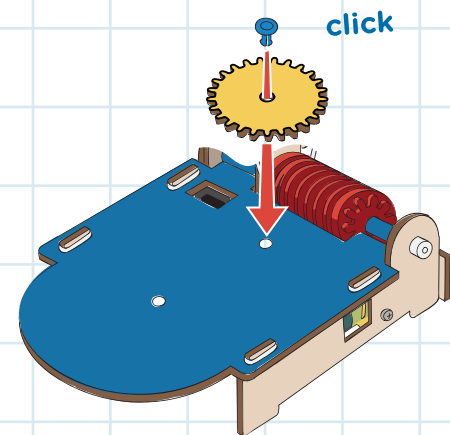
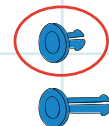


TEST

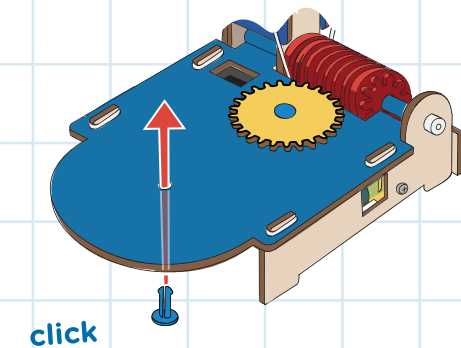
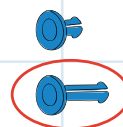


Having trouble? Watch the video at crunchlabs.com/aura

21

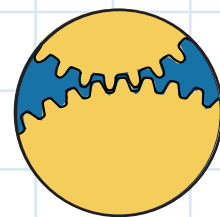
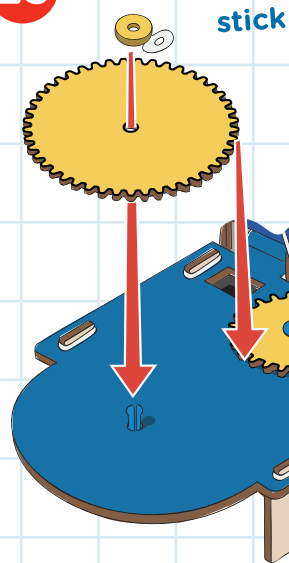


22

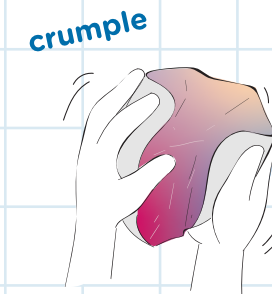
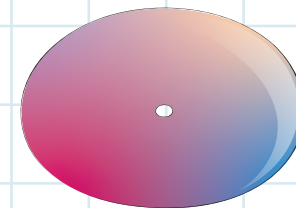


BUILD

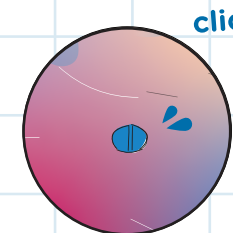
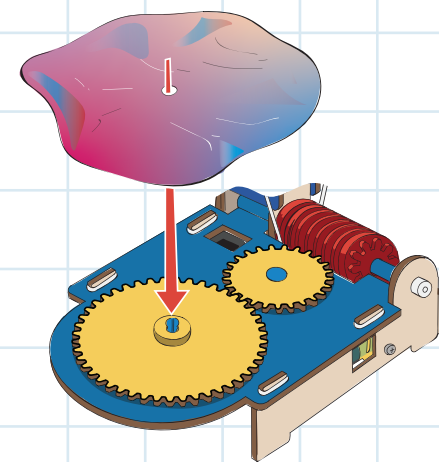
23



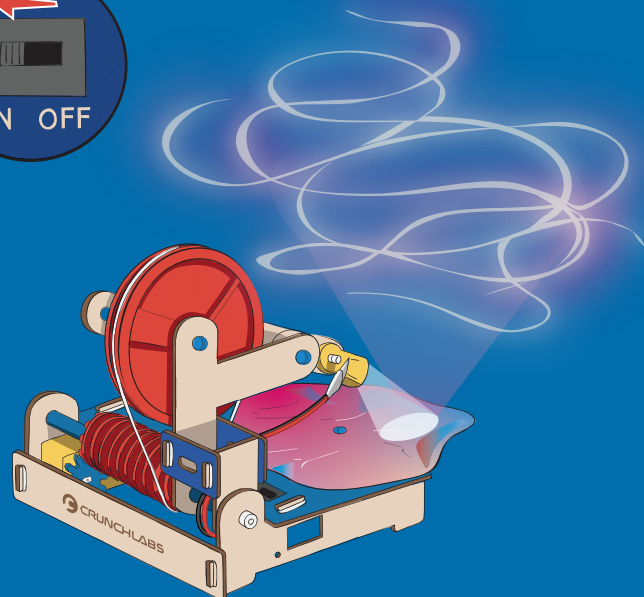
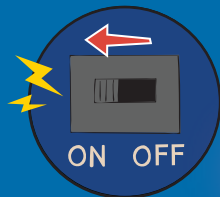
24



25

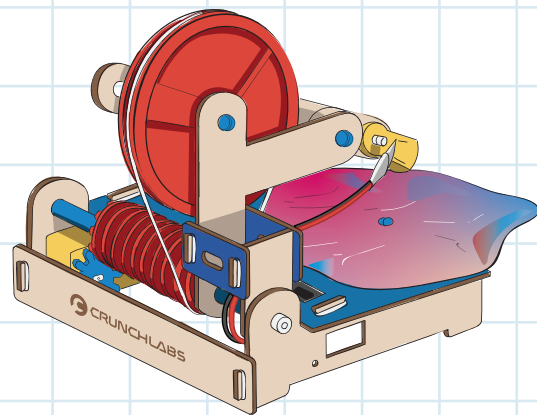


TEST



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

BUILT!

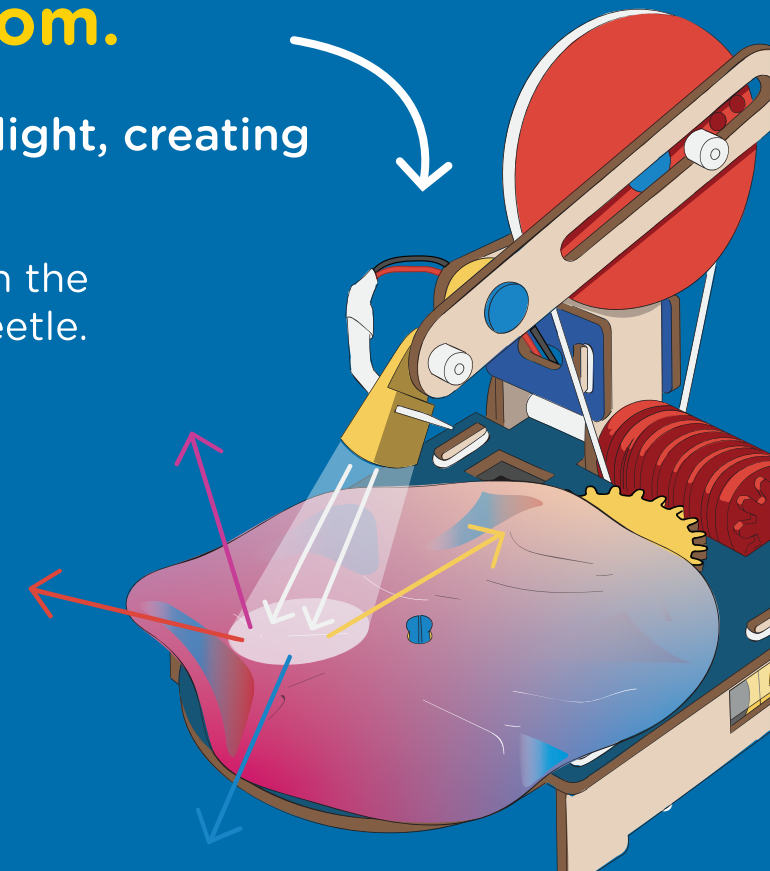


THINK

Iridescence is a property of some surfaces where they change color depending on the angle they are viewed from.

Basically, iridescent surfaces scatter light, creating lots of different colors.

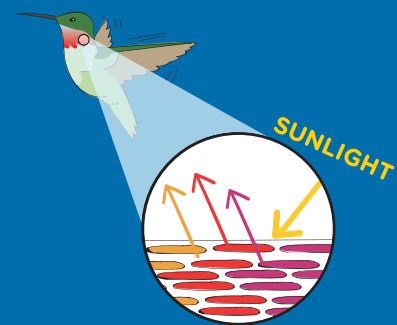
You might have seen iridescence before on the wings of a butterfly, or on the back of a beetle. These creatures have special structures on their bodies that reflect light in a way that produces this effect. Iridescence can also be found in man-made objects like CDs or even some car paints. In your Aurora Projector, the reflections on the wall change colors at different angles because the light bounces off of an iridescent reflector disc!



THINK

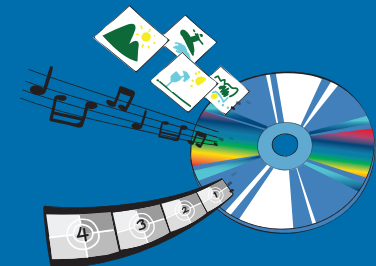
Find iridescence all over the place!

Iridescence is a useful and unique property that has been evolved by creatures in many different ecosystems, and even used by humans.



BIRDS OF A FEATHER

Hummingbirds, peacocks and pigeons all have iridescent feathers. This iridescence is caused by layered microstructures in the feathers which **reflect certain colors of light** to different angles. That's why the neck of a pigeon changes from purple to green as it looks around.



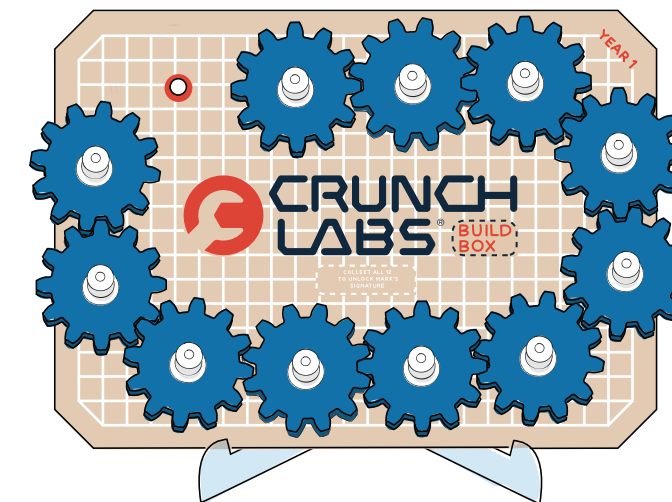
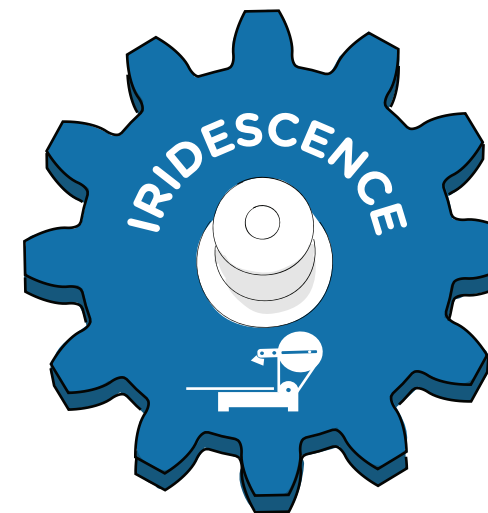
COLOR CODING

CDs and DVDs use iridescent layers to store information. The way light reflects off these layers creates patterns that can be read to play music and movies!

THINK

CONGRATULATIONS!

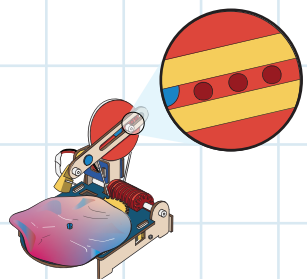
You earned a gear badge for iridescence



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

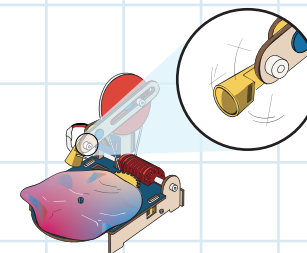
CRUNCH

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



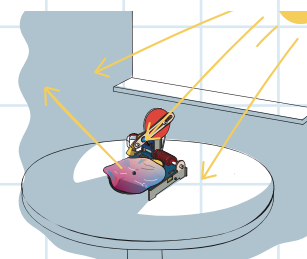
LIGHT SPEED

Change the rate at which the LED goes up and down by changing the position of the bolt on the pulley wheel.



WORK THE ANGLES

Change the angle of the hinge and LED to reflect the aurora up at the wall, ceiling, or other surfaces.



HERE COMES THE SUN

In the daytime, try putting your aurora projector on a window sill or the floor in direct sunlight. The sun is a lot brighter than an LED, so it can reflect a visible aurora even in brighter rooms.

SHOW OFF YOUR BUILD



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



WARNING: Improper assembly can short circuit batteries.

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.