getting started with

BRIGHT LIGHTS
WELCOME!

Your toys are about to come to life with Circuit Cubes, the electronic building blocks that add power, motion, and light to your creations. Designed by teachers, Circuit Cubes can turn a light on, power a motor, or make wheels spin — plus they work with all your LEGO® bricks.

Getting Started

Build a super bright flashlight and then use it to make other super cool projects. Create your own nightlight, explore the dark, make puppets, and more. Illuminate your imagination with just a wheel, a motor, and an LED!

Projects

Once you’ve mastered the ten projects in this booklet, go online to find others: tenkalabs.com/circuit-cubes/build. Tag your projects with #circuitcubes to share.

WARNING: Some of these projects require the use of scissors. Please have a parent or guardian supervise when you’re working with sharp objects.
MEET THE CUBES

These three Circuit Cubes are all you need for endless projects and hours of fun!

Battery Cube

The rechargeable Battery Cube powers your projects for up to an hour of active play time! If it’s green, it’s charged and ready to go; if it needs charging, plug it into the MicroUSB charger in the kit. Works great with all your LEGO®’s.

Motor Cube

A perfect fit for your LEGO® gears and wheels, the Motor Cube is fast — in both directions! Or slow it down by swapping out gears — a large one for a small one, it’s changing the gear ratio (like you do on your bicycle!)

LED Cube

Snap this ultra-bright oversized LED onto your LEGO® bricks and get thousands of hours of light to light up your builds, from easy flashlight set-ups to tricky projects only you can think up.
Get to know Circuit Cubes with these fun, easy builds.

1. Connect the Battery + Motor:
   Get things revving!
2. Connect the Battery + LED: Instant light!
3. Connect the Battery + LED + the Motor:
   Lights and action!
4. Connect the Motor + LED + Wheel:
   Turn the wheel to generate electricity!
5. Connect the Battery + Motor + Wheel + Wires:
   Your Circuit Cubes can take on anything!
**FLASHLIGHT**

Get started by constructing a simple flashlight with a super bright LED light that you can use to explore in the dark. Once you’ve mastered this simple project, you’re ready to build all kinds of cool things!

**HAND-CRANK FLASHLIGHT**

Mod your flashlight by replacing your energy source! Swap the battery for the wheel, allowing it and the motor to produce the electricity that turns the LED light on. Remember, LEDs have polarity. That means it will only turn on if you spin the wheel in the correct direction.
TELESCOPE FLASHLIGHT

Get ready to experiment with light by adding a paper tube and cap to your build! Notice that if you extend the telescope, the beam pattern gets narrower and shines farther. What happens to the beam when you collapse the telescope?

GOBO

A gobo is a stencil that you can add to beam your own images with your flashlight. Take a piece of clear plastic and draw whatever you want on it. Use the telescope feature to focus the image so it looks clear and crisp. If you spin the cap and rotate the image, you can also build a kaleidoscope!
Lighthouses help ships avoid danger near the shore at night. Yours uses all three Cubes and one wire to make it rotate. The motor can spin really fast, but you'll wire it up so that it slows down to the perfect speed and then add a wheel to keep it all standing up straight.

**MATERIALS**

1. [Image of materials]
2. [Image of materials]
3. [Image of materials]
4. [Image of materials]
5. [Image of materials]
NIGHT LIGHT

Make your own nightlight and add flair to your room. By keeping the battery plugged in with a charging USB cable, you will have power all night long!

MATERIALS

Step: 1

Step: 2

Step: 3

Step: 4

Step: 5

Step: 6
SPINNING LIGHT CAR

This car goes crazy in the dark, adding motion to your light project!

MATERIALS

1

2

3

4

5

6

15
DESK LAMP

Make homework more fun by building your own adjustable lamp! With two different ways to move, your lamp can be placed the way you like it. Plug it in with your USB cable and it will work as long as you do!

MATERIALS

Step: 1

Step: 2

Step: 3

Step: 4

Step: 5

Step: 6

1

2

3

4

5

6
**SHADOW PUPPETS**

Once you build a lamp that can stand alone, you’re ready to project its light onto the wall for shadow puppet fun. Added to make the lamp taller, your motor doesn’t spin for this project. Use connector pins to help the LED sit up.

**MATERIALS**

1. 
2. 
3. 
4. 
5. 
6.
MOTORIZED GOBO

Add rubber bands and a motor to take your gobo to the next level! This is a tricky build, but you’re ready for it. Make sure your wheel sits flat on the cardboard cap and it will spin the gobo for you!
Sign up for our free Cube Club — we call it C3 — and never miss an update, discount, or piece of insider info.

We’ve got lots of great ideas for more Cubes and kits. We can’t wait to share them with you.

When you join the C3 community, you’ll be the first to hear about our newest Cubes and kits as they come out. You’ll get special discounts, extra info, and a chance to reserve new Cubes before they even hit the shelves. Plus, you’ll be able to share your Cube builds and projects with other C3 members.

Want to know about our super-secret Super Spy kit? Want to use Bluetooth to connect your Cubes to the world around you? C3 members get first access to these and more! Go online to tenkalabs.com/circuit-cubes-club or email us: c3@tenkalabs.com.

Join our C3 community today! We can’t wait to meet you.

Keep building!
tenkalabs.com/circuit-cubes/build
Invented by two teachers, Circuit Cubes’ unique design provides visibility so that kids can literally see how the connections are made to complete a circuit to drive a motor, light an LED, or engage a sensor. Only Circuit Cubes, with magnetic corners on multiple sides, enable kids to build horizontally, vertically, or diagonally. Circuit Cubes’ design fully integrates with authentic LEGO® style bricks and Mattel’s MegaBloks.

Find us online @circuitcubes: