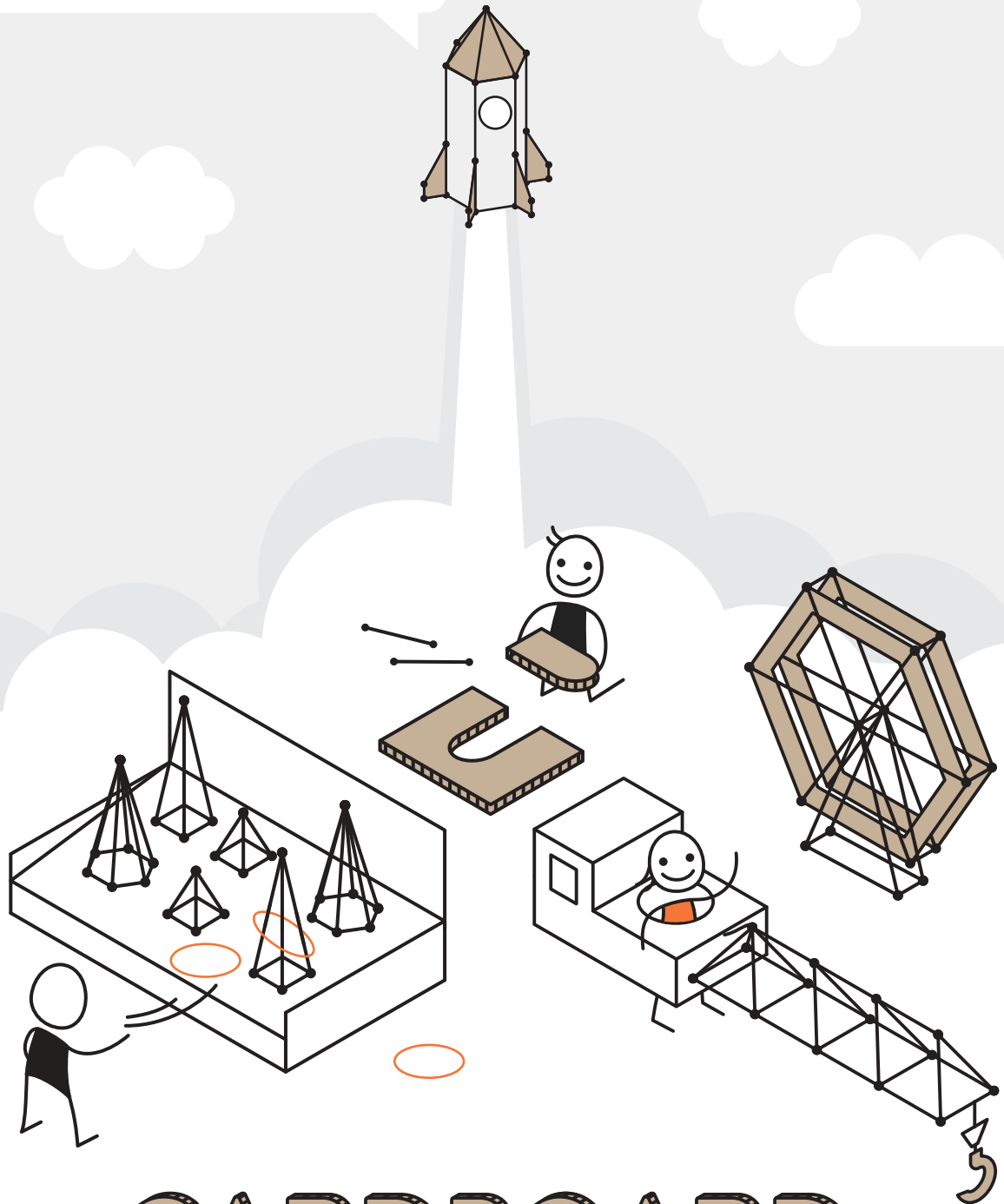


Full lesson plans on  
[learning.strawbees.com](http://learning.strawbees.com)



# CARDBOARD

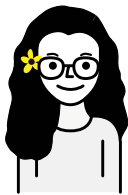
SCHOOL KIT



# EDUCATION TEAM

We are committed to empowering teachers to help **students believe in their own ideas and DREAM BIG** in order to create our future.

## COMMUNITY, CONTENT, COURSE & LESSON PLANS



**Lindsay Balfour**  
Content and Community Manager



**Carl Bärstad**  
Community Outreach

## EDUCATIONAL SALES & EVENTS



**Angelica Rådman**  
Sales Manager



**Joakim Larsson**  
Sales Support

## INVENTORS & TECHNICAL DEVELOPMENT



**Erik Thorstensson**  
Research & Development

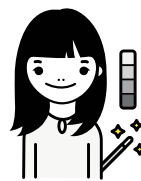


**Kristofer Hagbard**  
Chief Product Officer



**Paulo Barcelos**  
Chief Technology Officer

## ARTWORK, DESIGN & CONCEPTUAL IDEAS



**Qianxin Zhang**  
Designer



**Dan Henriksson**  
Art Director

## CONTACT

[strawbees.com/support](https://strawbees.com/support)

## ONLINE LEARNING PLATFORM AVAILABLE AT

[learning.strawbees.com](https://learning.strawbees.com)

# DEAR TEACHER

## Education is changing

Groundbreaking technology creates new opportunities for and expectations on us humans. When today's children grow up they will work in professions that no one has yet heard or thought of. In order to make a living in the future, humans will need to be more creative than robots. Everyone will need to understand more about technology and this will have a big impact on teaching.

## When Learning is Fun We Grasp More

Effective learning also requires us to create safe spaces where questions and experiments are encouraged and all students feel supported. When students are encouraged to dream and set their own goals their potential for learning is virtually unlimited.

## Explore Together With Your Students

Your students will likely come up with ideas for projects that we didn't imagine. Different age groups are intrigued by different features and opportunities. In addition to programming, there are ample opportunities to learn more about mechanisms, construction, design and interaction. Enjoy your students becoming construction and programming experts - teaching you. You will not need to know all of our materials before you start exploring.

## Supporting Students

You help students set up their hypothesis and designs, find the tools to put them to the test, and reflect upon the result. With our open ended learning system you can also encourage learning through play - by testing and making, observing what became and modify the result in an iterative process.

## Full Lesson Plans & Activities For All Student Ages Online

You can introduce basic tricks to your students, or you can simply ask them to investigate the different ways to use Strawbees are before starting your first challenge. Most of our lesson plans can be broken down into two 45-minute sessions, totaling about 2 hours. Should you want more inspiration we provide full course and lesson plans categorized by age ranges - 5-7, 8-9, 10-13, 14-16, as well as 17+ at [learning.strawbees.com](https://learning.strawbees.com).

Welcome to our global teacher community supporting the creators of our future - happy making!

The Strawbees Education team

## BUILDING CREATIVE CONFIDENCE

### ANYONE CAN BECOME AN INVENTOR

How many times have you heard someone say that they are not creative, good at mathematics or technology?

The interesting thing about our brain and nervous system is that it gets really good at whatever we repeat time after time. We can think of the things that we do seldom as hard to find paths in the woods or jungle. They are barely visible and may be hard to find and follow. The things that we do every day, or even several times a day - like brushing our teeth or chew - turn into super broad and fast highways that we find and follow easily and without hesitation.

**There is actually no such thing as a 'uncreative' person or someone who can not learn mathematics.** Start observing and examining stuff in your surroundings. Modern science has proven again and again that we become proficient at what we do. Ask yourself how they work and get building and exploring - and this will be the abilities that you cultivate. With time it will feel easier and more natural to come up with new ideas.

### CHALLENGE YOUR FEARS

What we do not recognize, are not used to, or do not feel confident doing sometimes feels scary, but this is normal. What can we do to dare to step into new directions anyway? Even the smallest thing that we recognize may help. Almost all teachers and students are familiar with straws and cardboard. Perhaps you have not yet used them to realize your dreams. Using familiar tools and materials often lowers the threshold and get people into the new game. **We learn more when we are not certain about what is going to happen.** What is more exciting to your students than experiments when not even you, the teacher know what to expect?

### CELEBRATE ANY RESULT

One of the most effective ways of inspiring students is for the teacher to reveal his or her own mishaps, or silly outcomes. There are not really any failures, only learning opportunities. Ask what happened, or what didn't happen? Have a laugh. Some of the most treasured inventions in human history are the results of "mistakes."

## WELCOME TO OUR ONLINE PLATFORM

We hope that you will find this inspirational guide useful. Welcome to our online Teaching Center and community which also provides detailed course and lesson plans for students of all ages.

### USING OUR APPROACH TO ANY SUBJECT

As you learn about and try out, or come up with your own new ways of using Strawbees

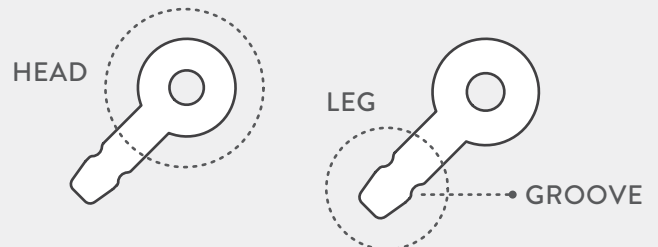
connectors new opportunities unfolds. How many different ways are there? What materials can you incorporate into your creations? On our learning platform you can also find ideas for how to incorporate our materials into mathematics, physics, chemistry and lots of other subjects.

# STRAWBEES TIPS AND TRICKS

This is a collection of tips and tricks you can use for understanding the basics of using the connectors. Try making each part as you read through in this guide.

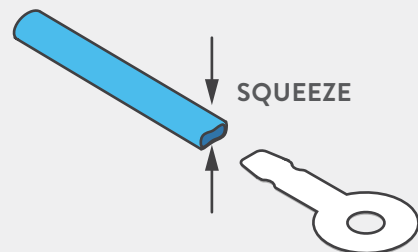
## STRAWBEES CONNECTORS

Strawbees are connectors that can be used for combining straws, connectors, cardboard, and many types of materials.

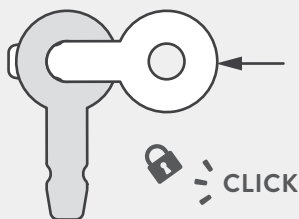


## CONNECTING TO STRAWS

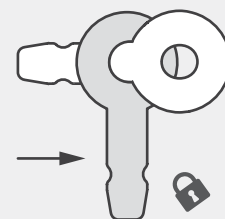
Squeeze the opening of the straw for easy insertion.



## CONNECT & LOCK



OR

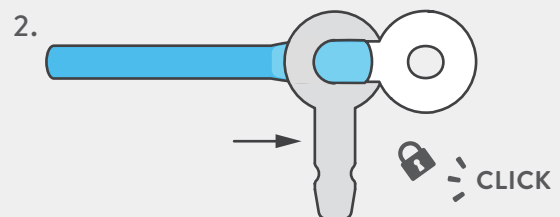
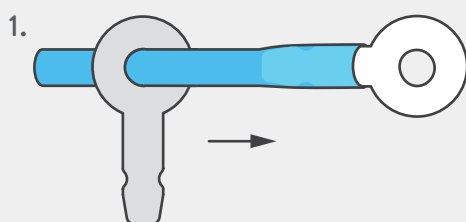


Slip the head into the groove of the leg and **listen for the click**. This will secure connectors and allow rotation.

Push the leg all the way through the head to lock in place. The connectors are limited in rotation.

## LOCKING STRAWS

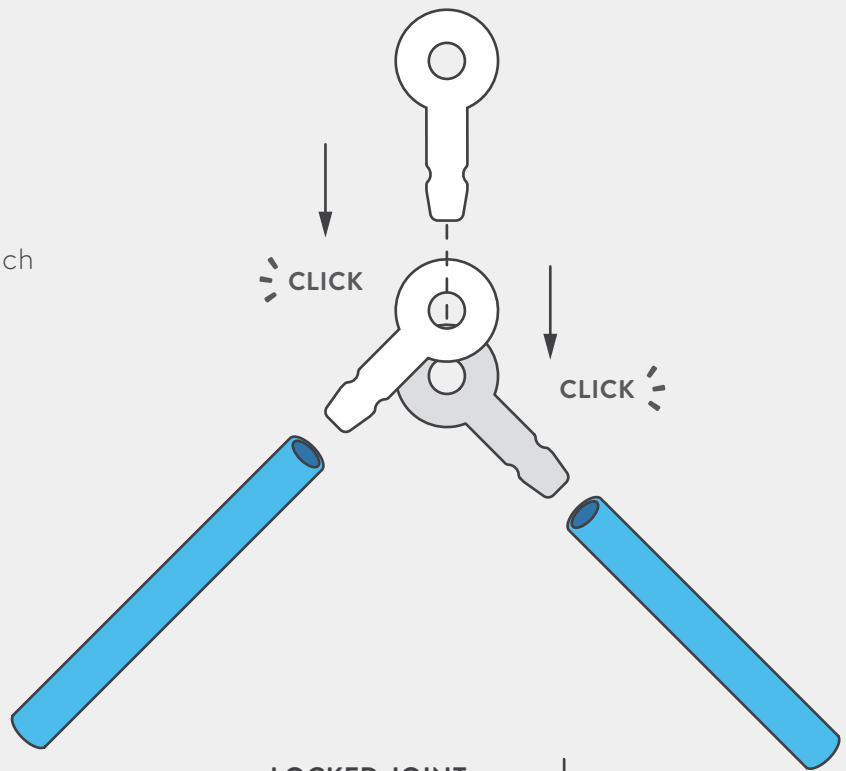
You can lock the straws in place to prevent slipping.



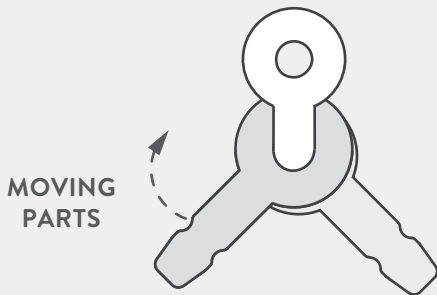
Snap onto the **groove**.

## JOINTS

Push the Strawbee leg through each head **one at a time**.

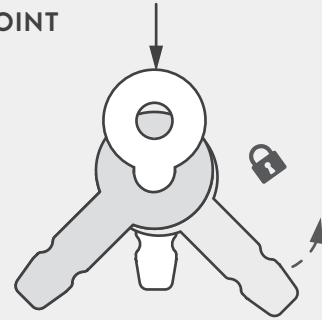


## MOVING JOINT



Snap the heads of connectors into the groove of another connector to create a fully rotating joint.

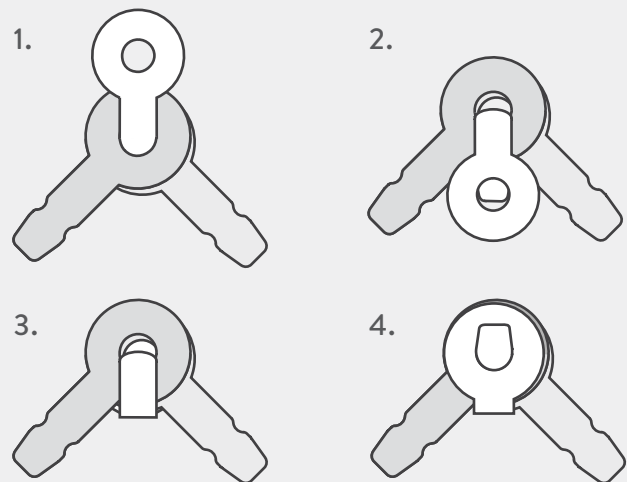
## LOCKED JOINT



Push the leg all the way through to create a joint with limited movement.

## FRICITION LOCK

**With the moving joint** fold the head over to the other side and snap it into the groove to create a friction lock. The legs will shift and hold in different positions.



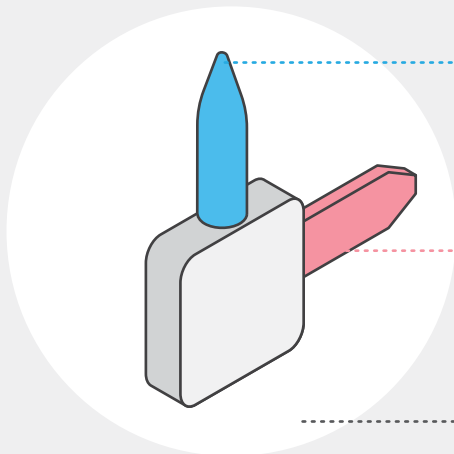
FOLD THE HEAD  
ALL THE WAY TO  
THE BACK

PUSH THE LEG  
THROUGH THE  
HOLE TO LOCK

# TRICKS USING CARDBOARD

This is a collection of tips and tricks you can use for understanding the basics of using the connectors. Try making each part as you read through in this guide.

## CARDBOARD TOOLS



### • ROUNDED-HOLE PUNCH

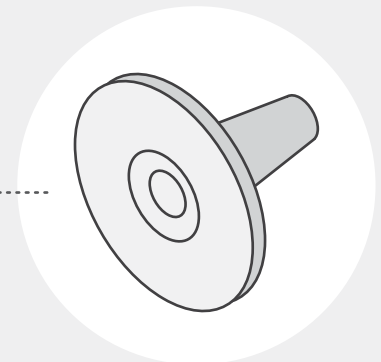
A rounded punch for the mobility of Strawbees for a moving joint. Best used to create pieces for rotating and spinning.

### • STRAWBEE PUNCH

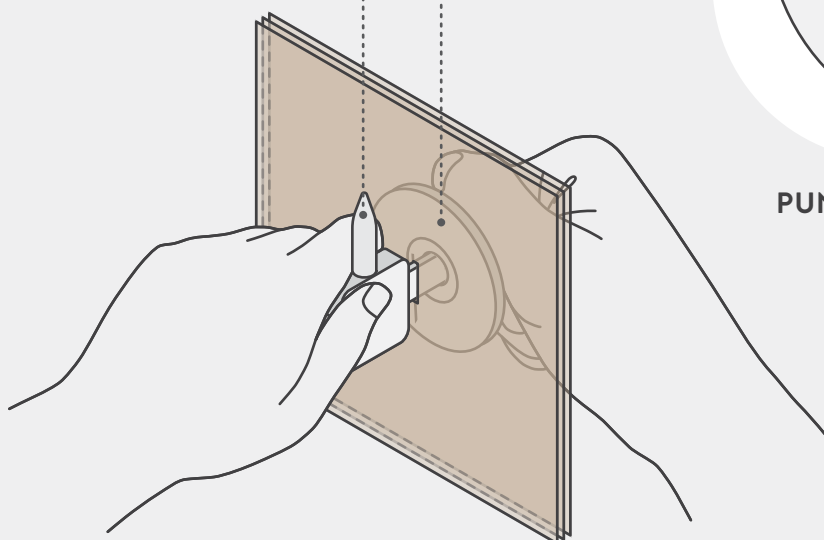
A flat punch to make a thin slot for the insertion of Strawbees. Best used for parts to be locked in place with little-to-no movement.

### HOLE PUNCHER

A multi-use double-sided punch for cardboard constructing with Strawbees.



### PUNCH HOLDER

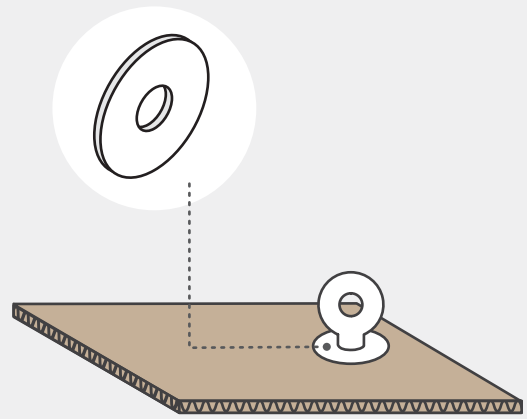


You **can** use the holder with the punch to poke a hole through the cardboard and into the holder. You can safely punch through multiple layers of cardboard at a time using it as a base, and it is **especially useful when one hand is hidden inside a box or behind a big piece of cardboard.**



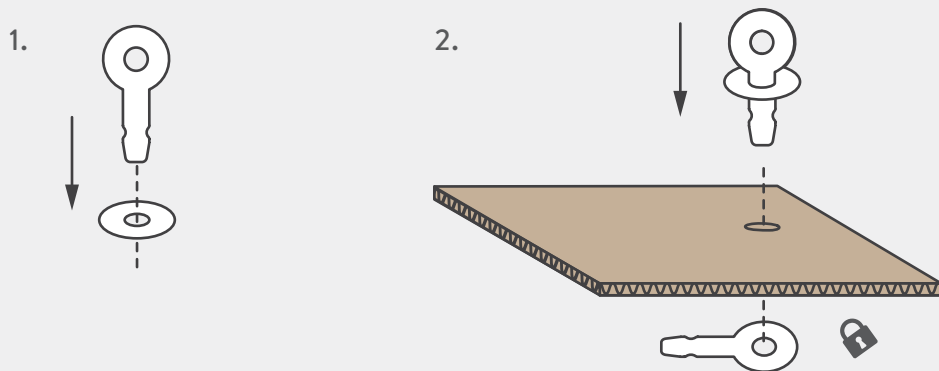
## WASHER

A Strawbee connector with no legs can be used to anchor pieces of cardboard together. These are a useful tool to strengthen the connection and prevent tearing and weakening of the edges of the punched hole, especially for moving pieces. **You can also use a regular Strawbee as a washer.**



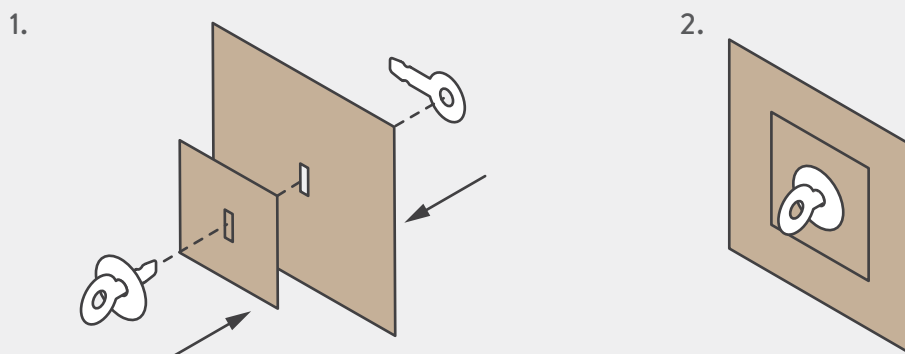
## CONNECTING CARDBOARD TOGETHER

When getting started on making joints, before using the cardboard itself it's the easiest to **slip the leg of a Strawbee through the washer first**, making sure the washer goes all the way up against the head and is locked into position. Once the leg is through the cardboard holes secure with a Strawbee on the other side.



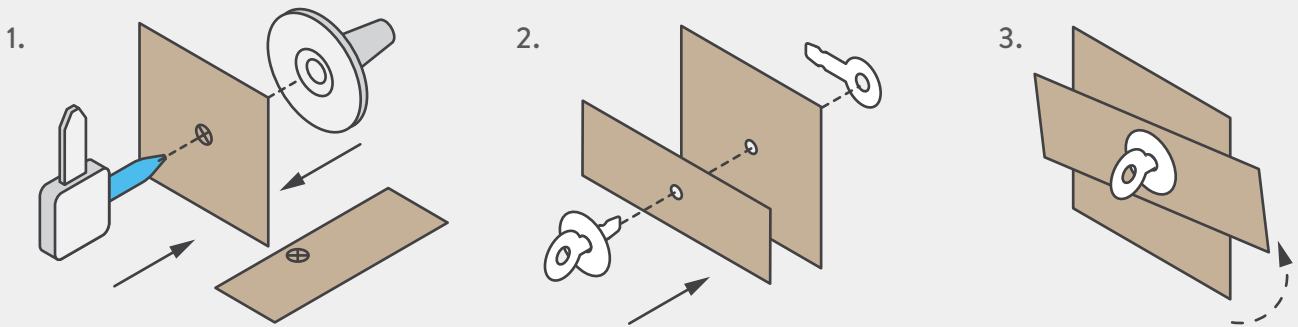
## COMBINE

You can combine two or more pieces of cardboard in many ways. But basically you make a hole, push a Strawbee with a washer through the hole and snap a Strawbee on the back.



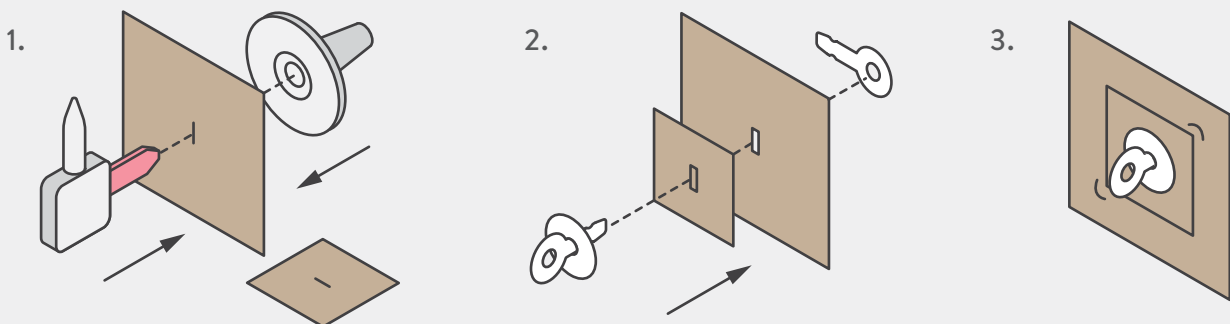
## ROTATING JOINT

Connecting pieces of cardboard with a single Strawbee makes a rotating joint. You can use the **rounded-hole punch** to poke a circular hole for the leg to spin more freely. If the joint is difficult to rotate detach everything and punch through the hole once more.



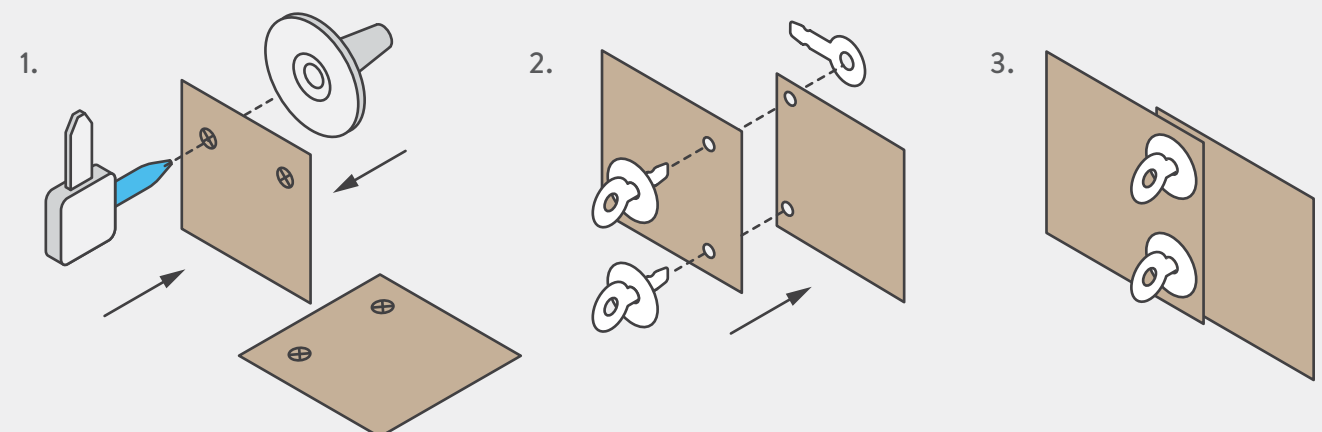
## SPRINGY JOINT

Lock cardboard into position using the flat end of the **Strawbee punch** to poke a small slot for a Strawbee connector to be in a fixed place. The slot must feel snug around the leg when slid through. The Strawbee makes a springy connection between the cardboard pieces.



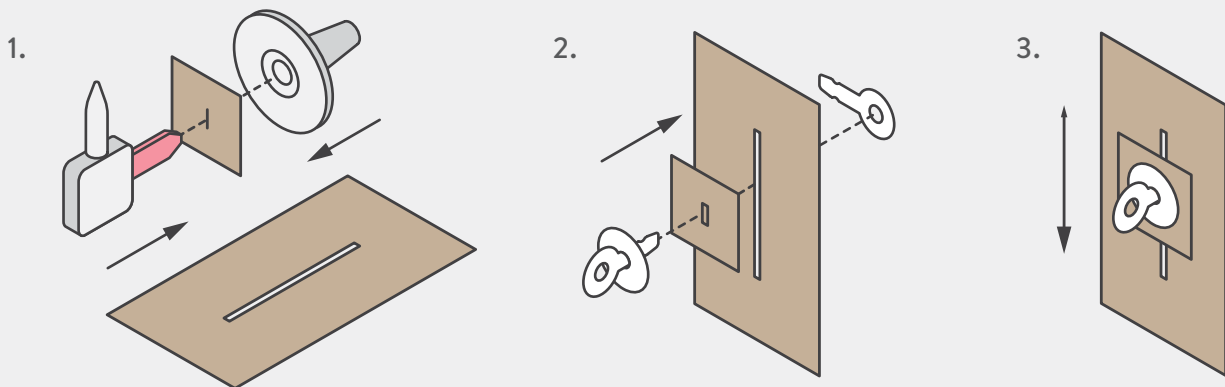
## LOCKED JOINT

Connecting pieces of cardboard **with two or more holes** makes a rotation locked joint. The farther they are apart the stronger the lock against rotation. This can also be useful for extending cardboard pieces.



## SLIDING JOINT

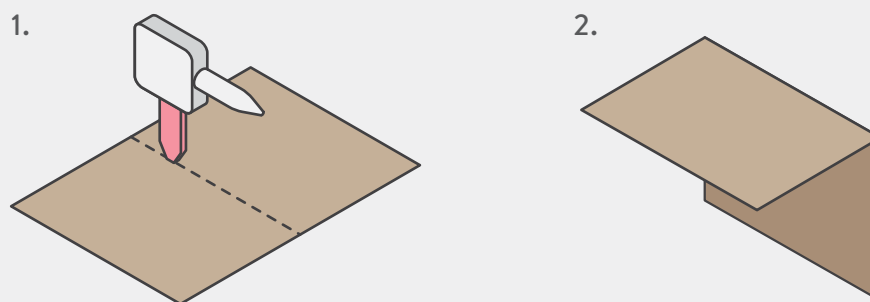
Create a special joint to slide along the path of a long slot. Score a line and cut through to make a long slot for Strawbee connectors to slide along. Slide the **Strawbee punch** through the slot to make a little wider and lessen the friction.



## BUILDING TECHNIQUES

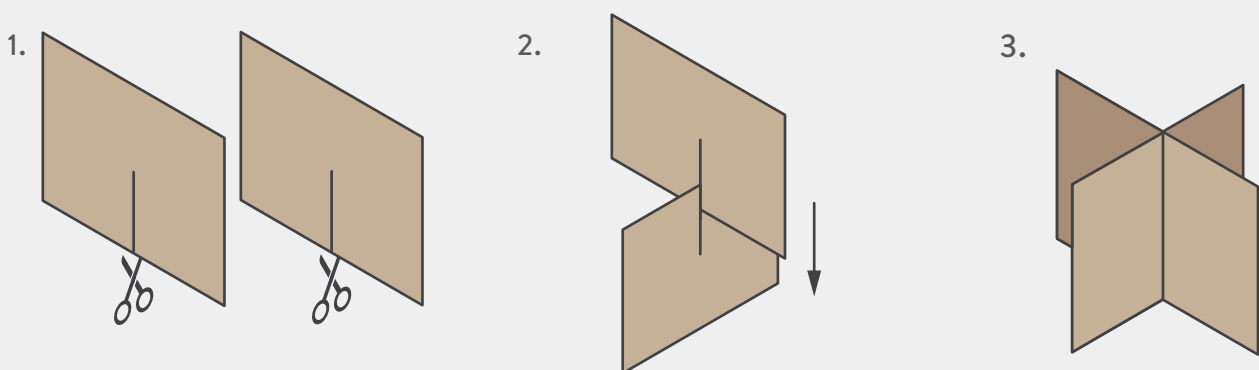
### SCORING CARDBOARD

You can use the edge of the Strawbee punch to score sheets of cardboard and allow them to bend easily without cutting through. Use a ruler to score a straight line or freehand lines for creating shapes.



### SLOTS

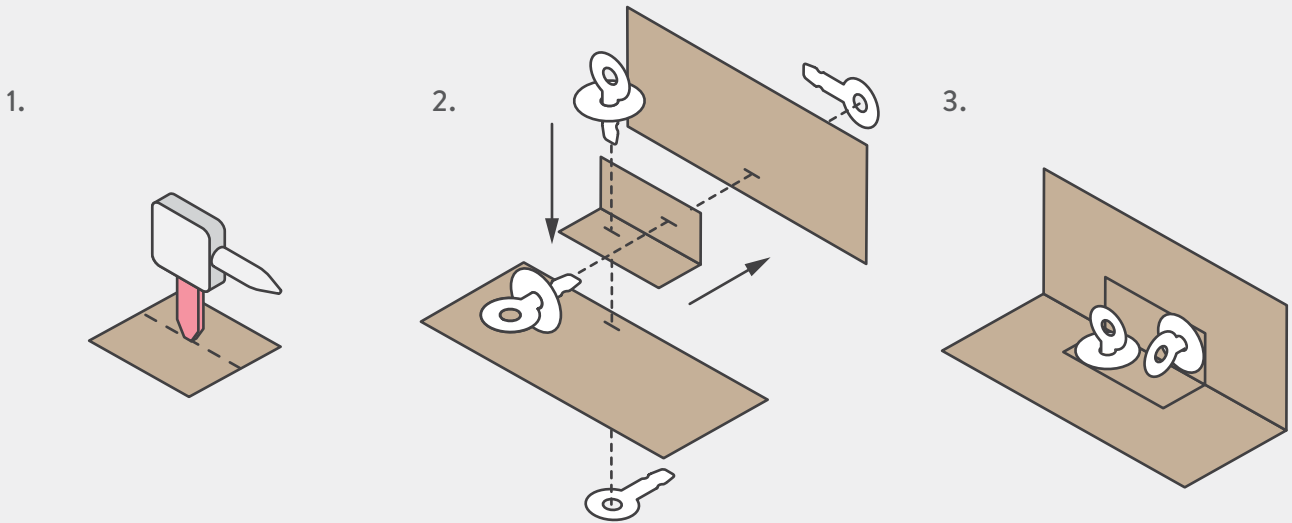
A slot is an incision in cardboard. Easy to disassemble.



YOU CAN SLIDE TWO SLOTS TOGETHER

## HINGE

You can use an entirely separate piece of cardboard to connect two different pieces together. The hinge is useful if you have sheets of cardboard rather than full boxes in your space.

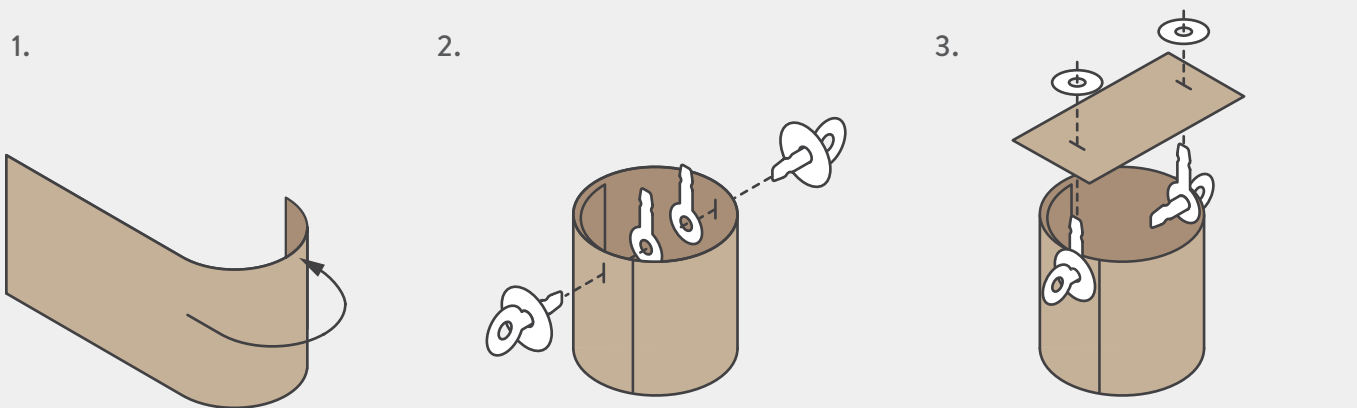


**SCORE A SMALL PIECE OF CARDBOARD AND FOLD.**

**ATTACH TO TWO PIECES AND HAVE IT OPEN AND CLOSE LIKE A HINGE.**

## FUSING

Fusing is useful for adding rolled up cardboard to boxes as pillars and arms.



Roll the cardboard along the corrugated lines then overlap the seam.

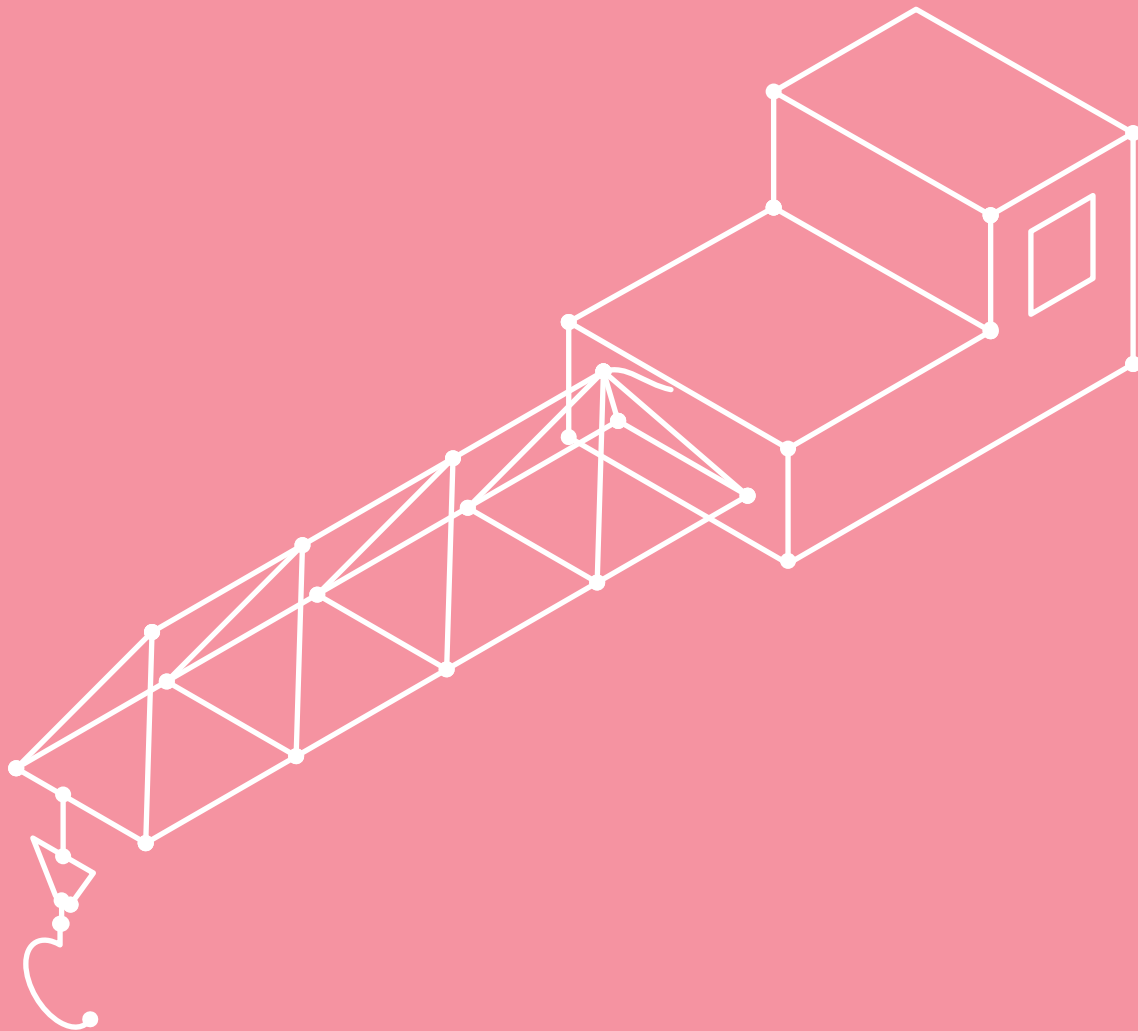
Use the Strawbee punch create holes through both layers close to the edges of the rolled cardboard and secure the seam with Strawbees. Add another Strawbee on the opposite side of the edge you want to connect to another piece of cardboard.

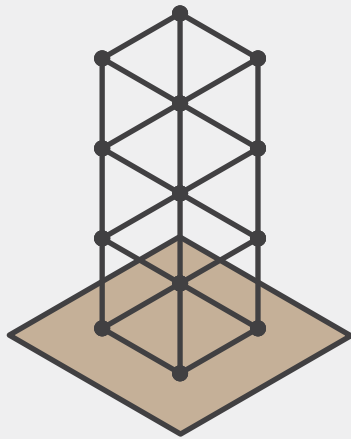
Make new holes on another piece of cardboard corresponding to the legs of the Strawbees connected to the rolled cardboard piece and secure together.

# LESSON PLANS



You can find and print full lesson plans at [learning.strawbees.com](https://learning.strawbees.com) with the keyword of each lesson.





## INTRO TO CARDBOARD & STRAWBEES

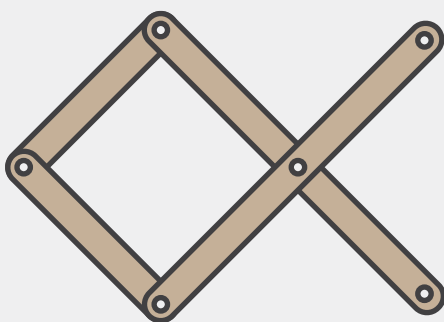
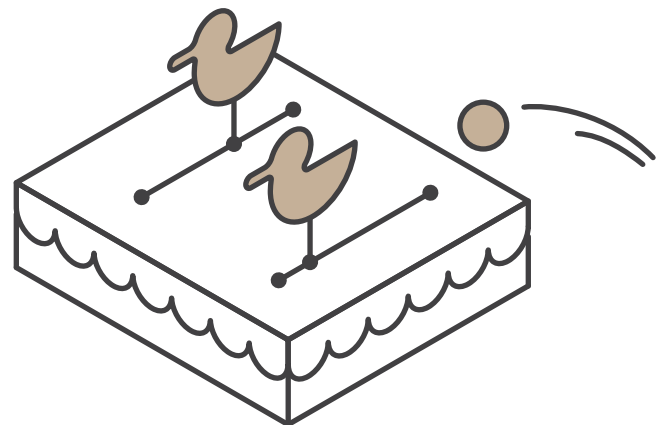
Combine the power of cardboard together with Strawbees to enhance construction techniques. Engage in a building challenge to identify the elements in existing inventions and draft a design through a cardboard base.

🔍 Search for “**Strawbees Cardboard**” at [learning.strawbees.com](https://learning.strawbees.com)

## CARDBOARD CARNIVAL

Launch a carnival with classic games for the audience to engage with. Assemble a ring toss, claw machine, amongst other favorites. Challenge friends to multiple rounds of games and engage in game design to change the level of difficulty.

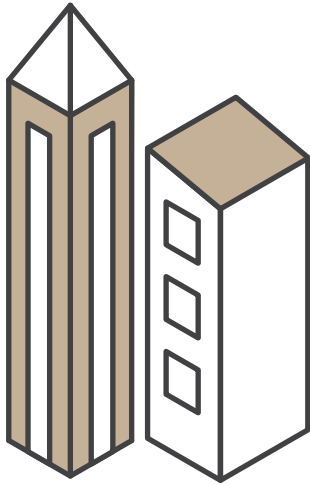
🔍 Search for “**Carnival**”



## CARDBOARD MECHANICS

Prototype mechanical elements with cut strips of cardboard. Transform solid and rigid materials into mobile structures connected with basic Strawbees linkages to animate them.

🔍 Search for “**Cardboard Mechanics**”



## CITYSCAPE

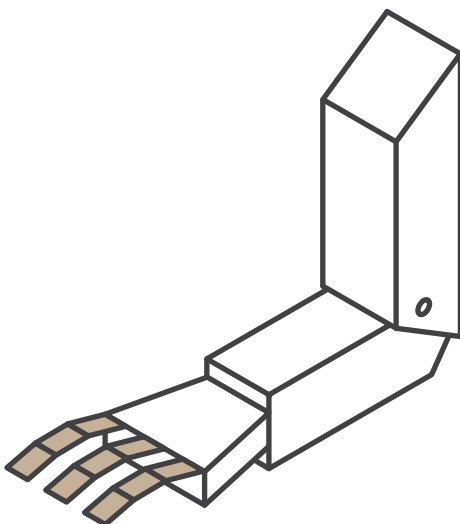
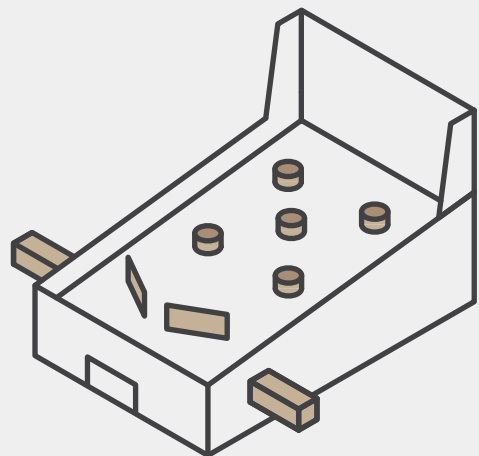
Design with a cardboard base and create the truss and structural system with straws to build a city inspired by skyscrapers and towers.

🔍 Search for “**Cityscape**”

## PINBALL MACHINE

Construct a simple version of a cardboard pinball game with Strawbees mechanics to score the most points possible.

🔍 Search for “**Pinball**”



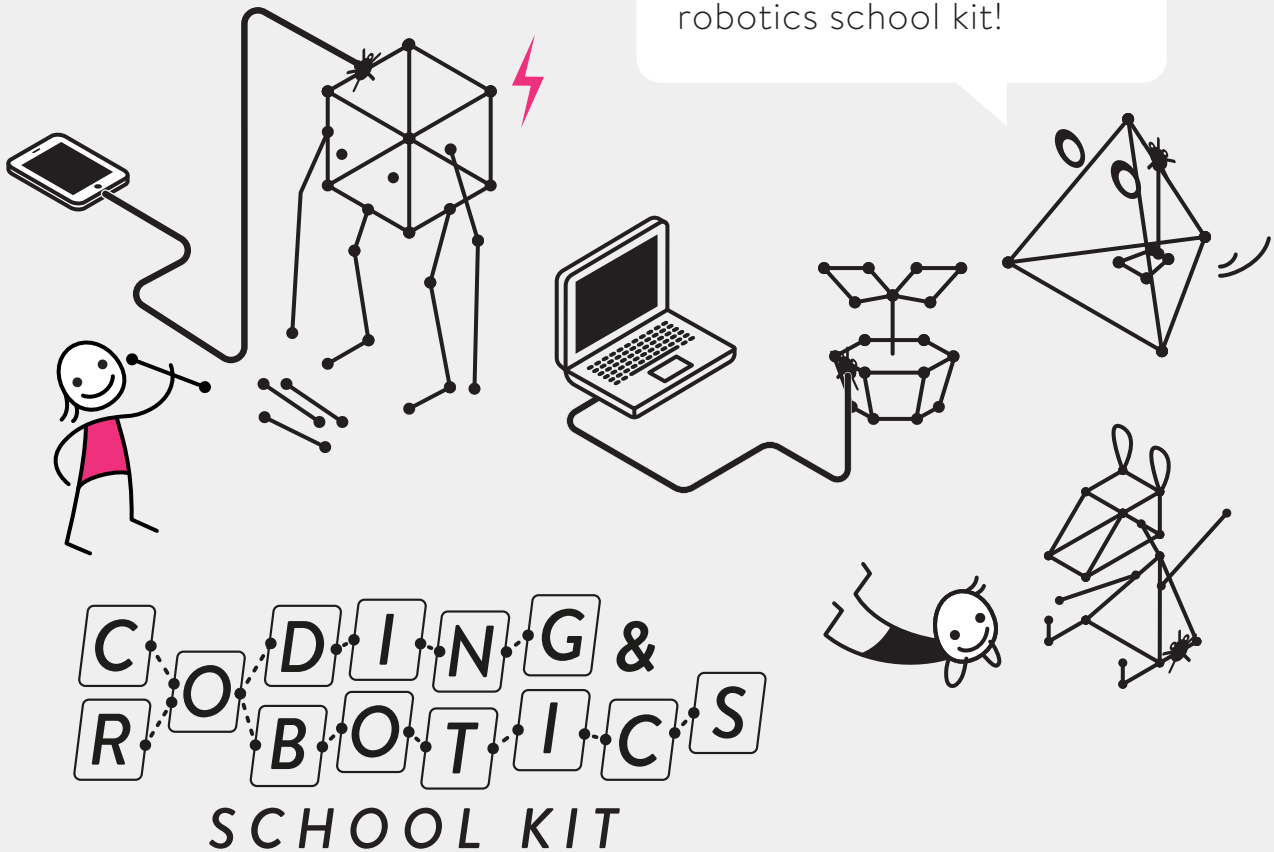
## WEARABLES

Create a fabric of cardboard used to construct textures for dresses, hats, and the body for robots.

🔍 Search for “**Wearables**”

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EXPERIENCE WITH OUR OTHER KITS!**

Bring your class creations  
to life with the coding and  
robotics school kit!



**UNLEASHING CREATIVITY AND  
MAKING PROGRAMMING EASY**