

# CHALLENGE: "CARDBOARD TOWER"

TEACHER  
INSTRUCTIONS

## TEACHER PLANNING

Approximate Time: 40-60 minutes  
+ Extra if time is available and students are engaged.

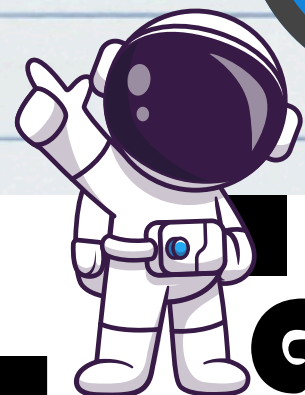
### Supplies:

- Cardboard (various sizes), but give each group about the same amount
- Cardboard Cutter
- Scissors

## QUESTIONS TO INITIATE BRAINSTORMING

How can we attach cardboard without using tape or glue? -Create slots or notches in the cardboard to allow pieces to slide together

When we think of a tower, how do we make something tall, but still strong? -Wide base. Connected pieces throughout the tower to add stability.



"CARDBOARD TOWER"  
**PROJECT  
CHALLENGE!**

SHOW  
STUDENTS

**What is the tallest tower you can build using only cardboard?**

Each group will get approximately the same amount of cardboard, scissors, and a cardboard cutter, but **NO** tape or glue.

Our Process:

- Brainstorm
- Create
- Reflect
- Re-Create

SHOW  
STUDENTS

# REVIEW: CARDBOARD CUTTER SAFETY



Make sure fingers are clear of the cutter. Always cut away from your body.



Make sure to work at a table, not walking around while you are cutting.



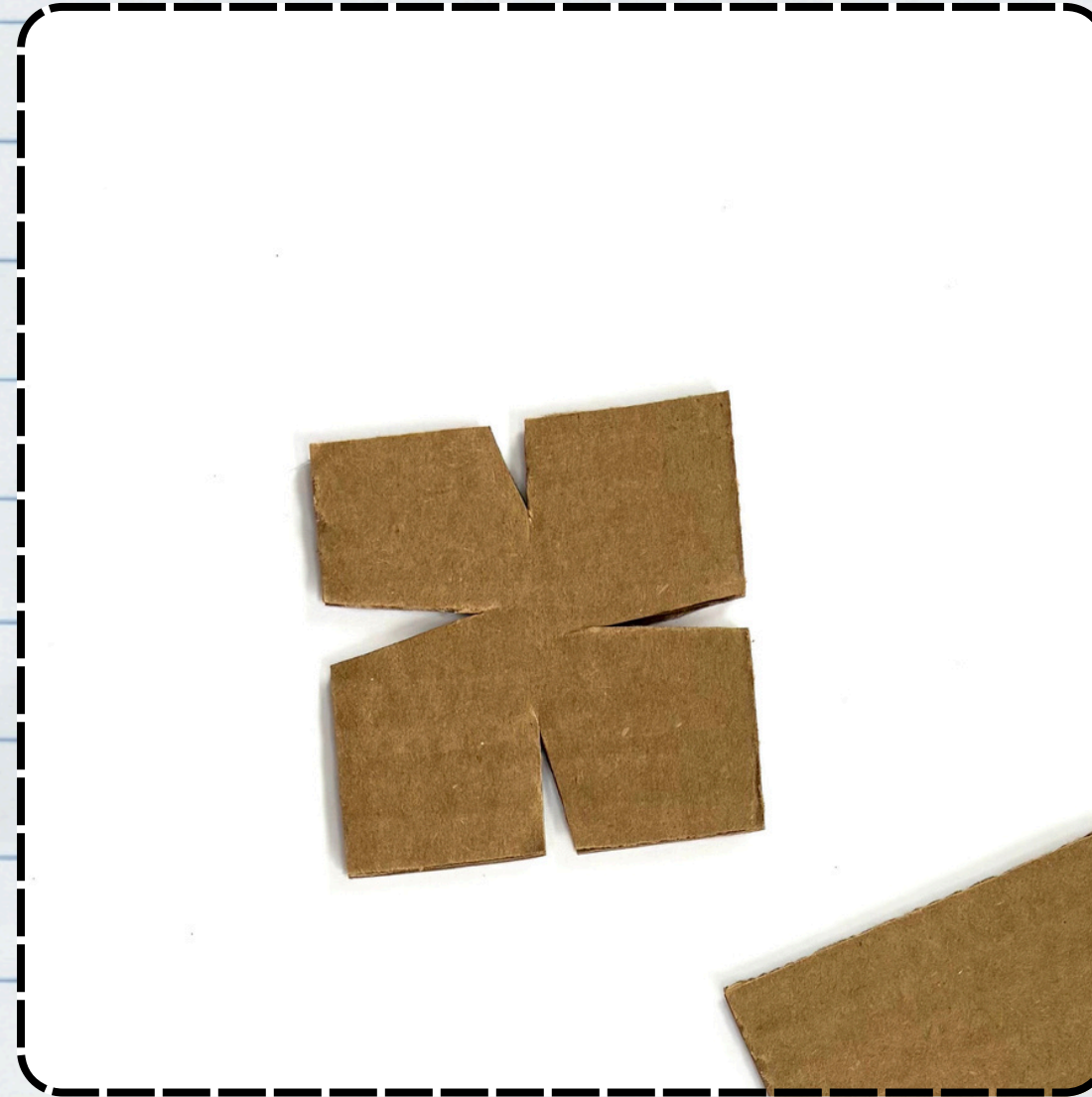
Always have a good grip with at least one hand on the cutter and one hand on the cardboard you are cutting.

# CHALLENGE BROKEN DOWN INTO STEPS:

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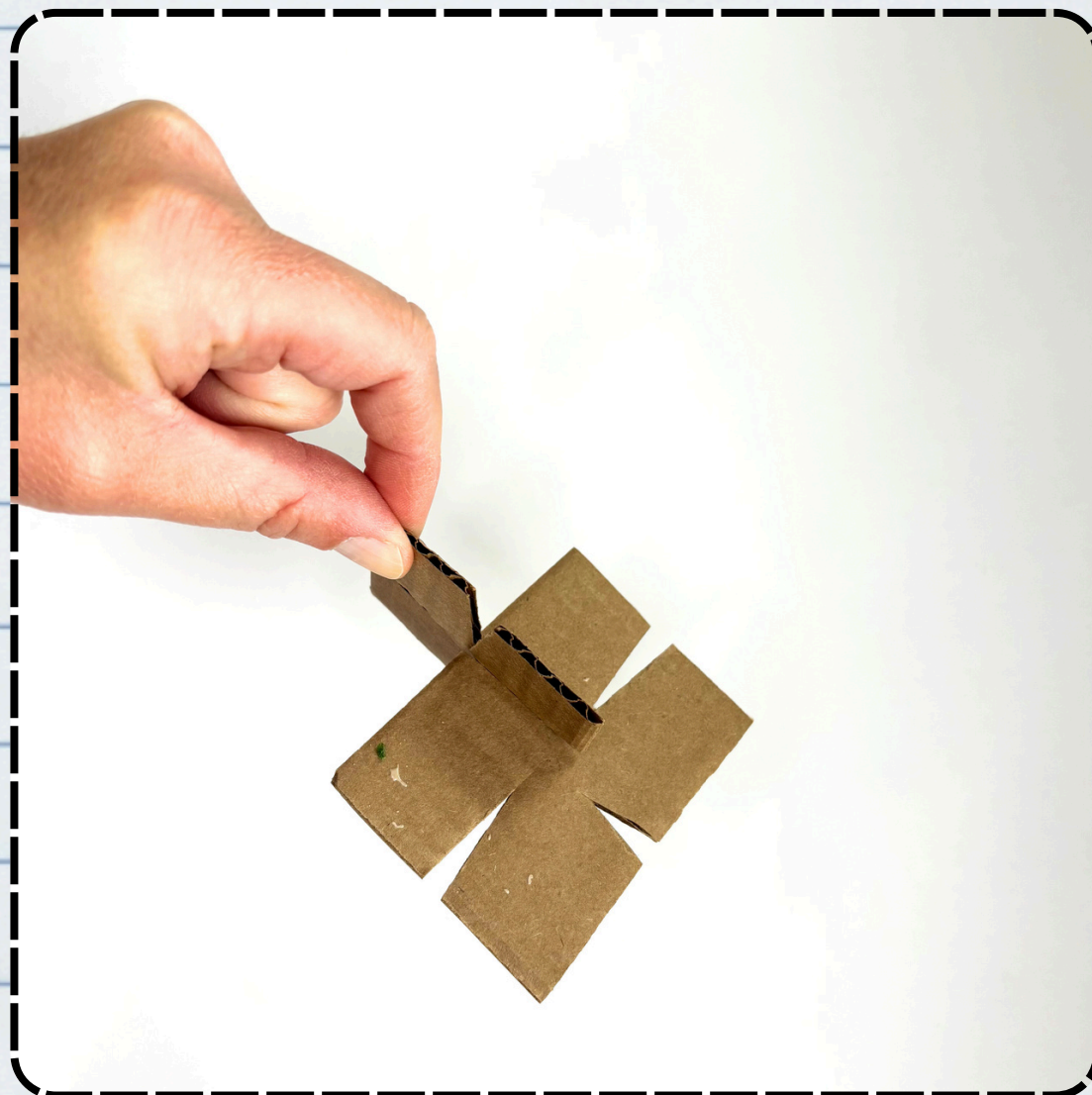
Collect Cardboard.



Cut slits or notches into different sides of the cardboard.

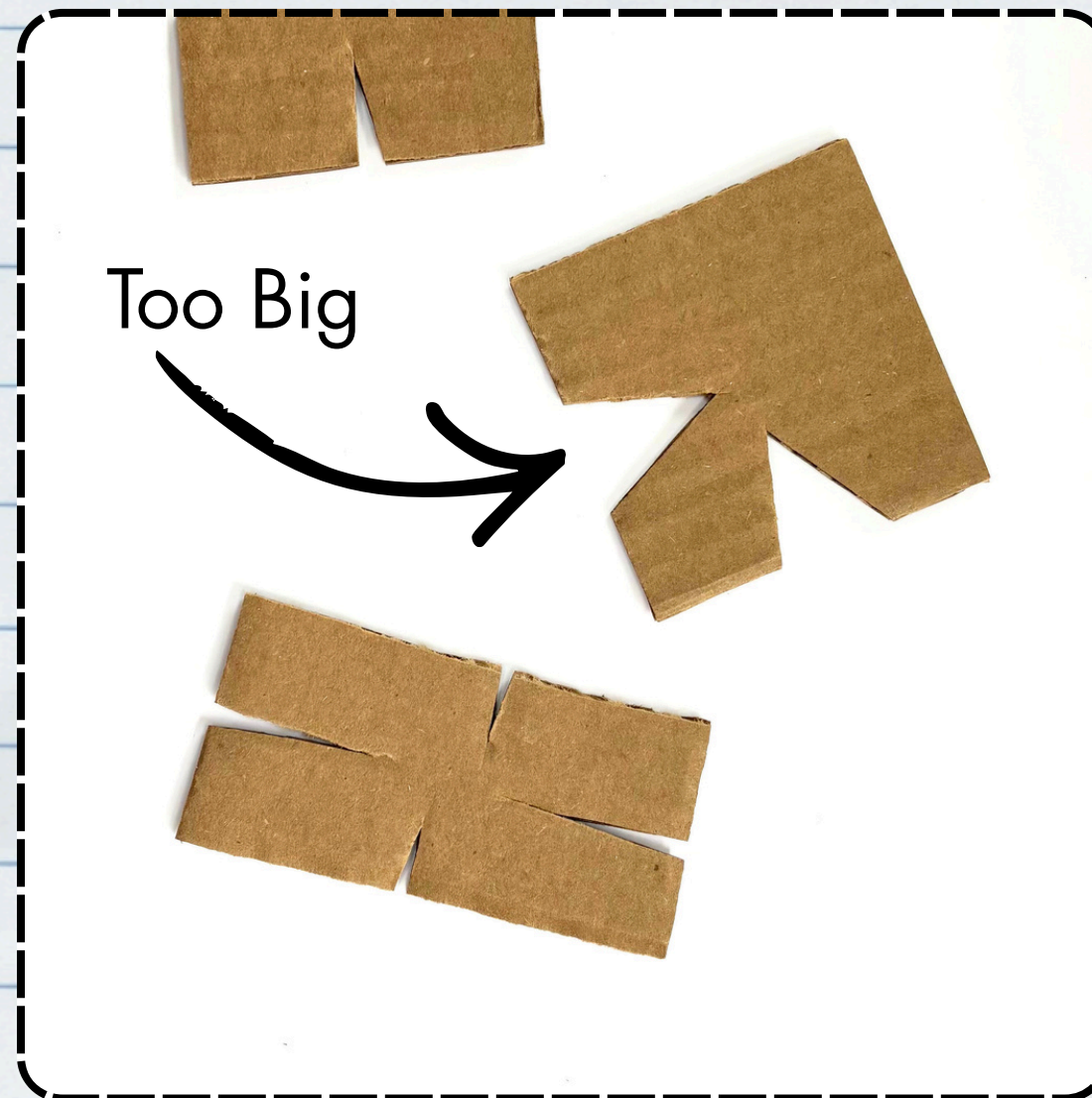


Students can cut the cardboard down smaller or try to leave pieces larger.



Use the notches to connect the cardboard without tape or glue.

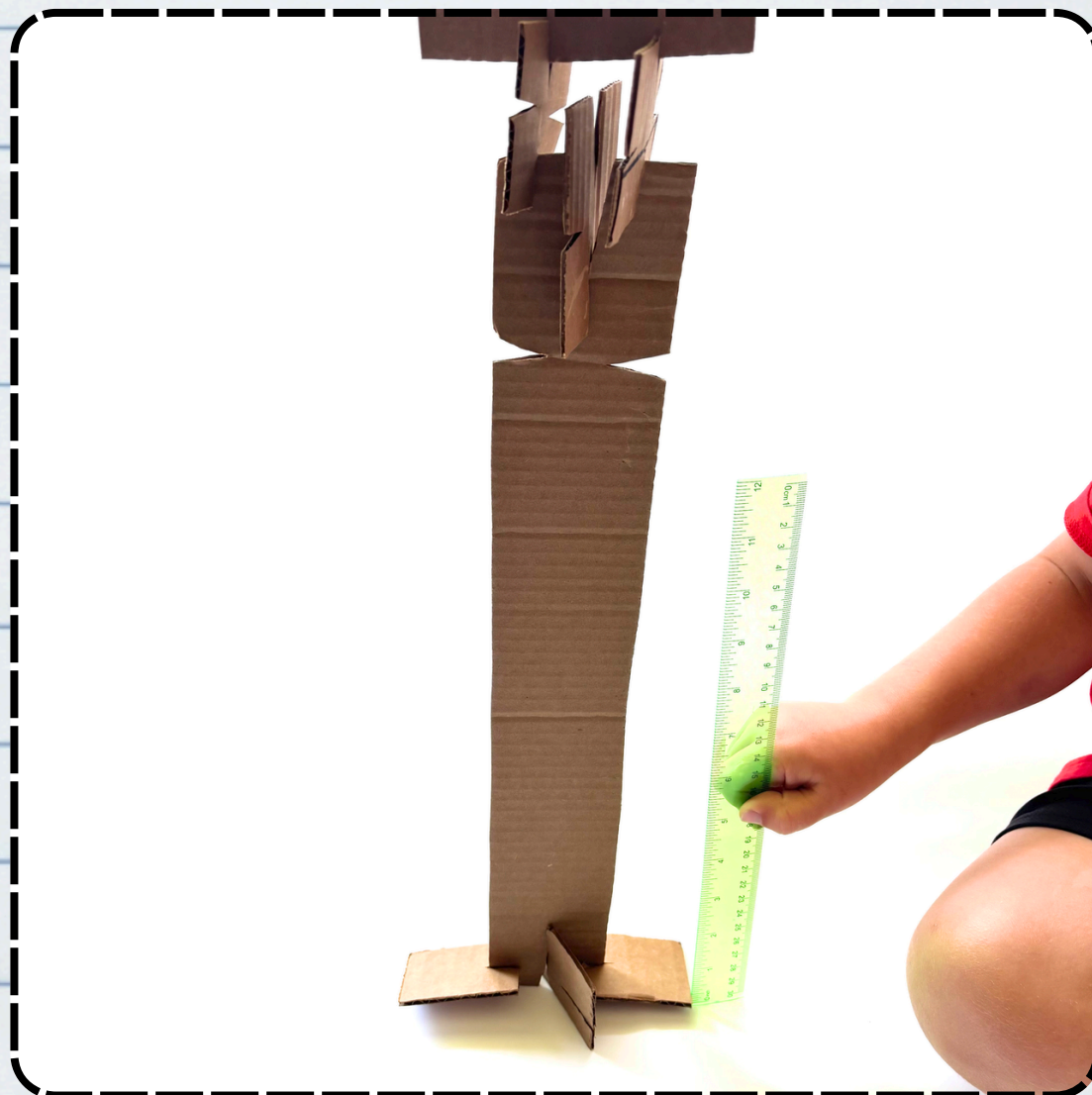
**ASK:** Do the two pieces make a tight fit?



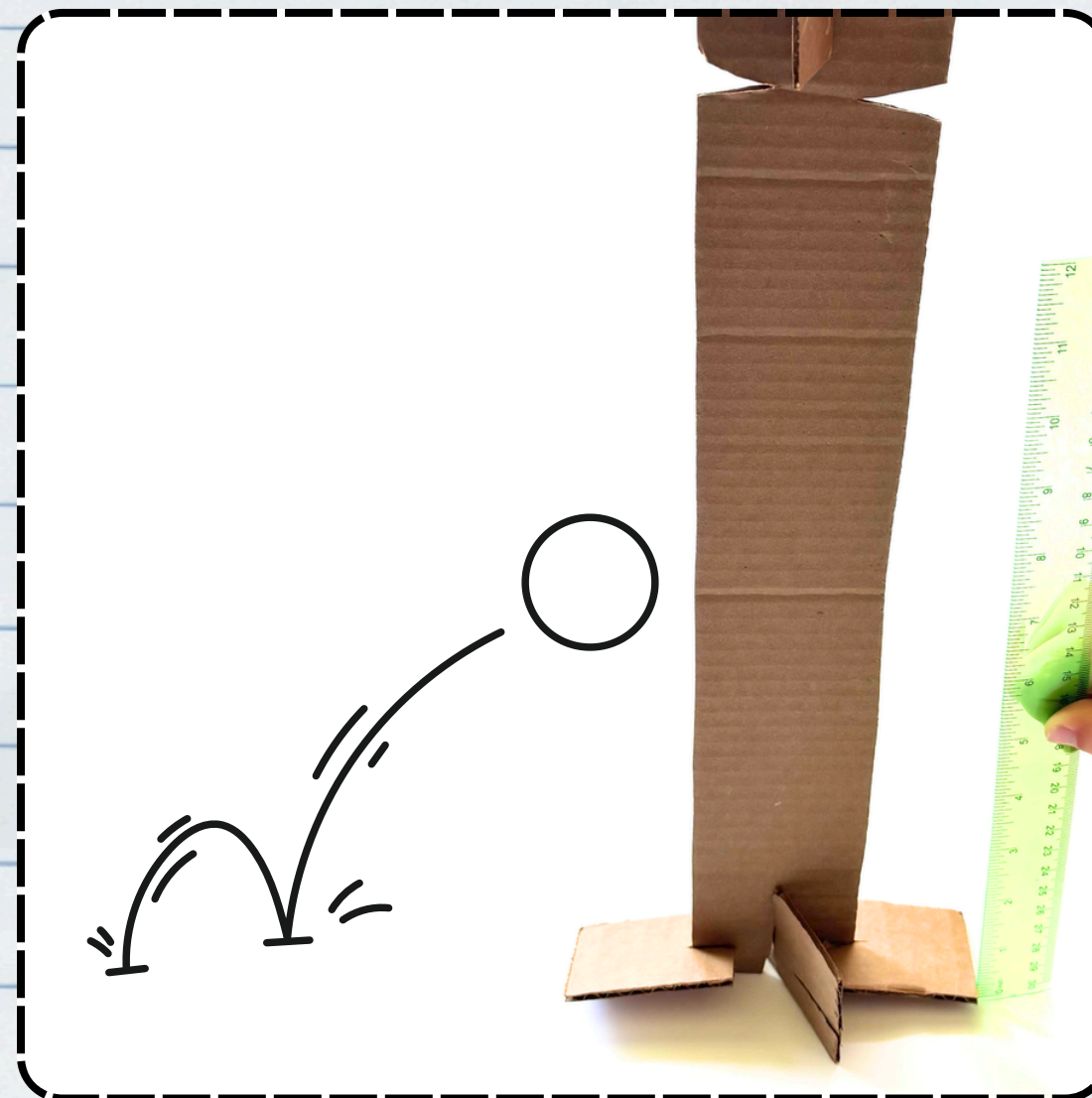
If the notches are too big, the connection will be too loose. It must be a snug fit to continue building up tall and not have the tower fall over.



Continue connecting pieces to add height.

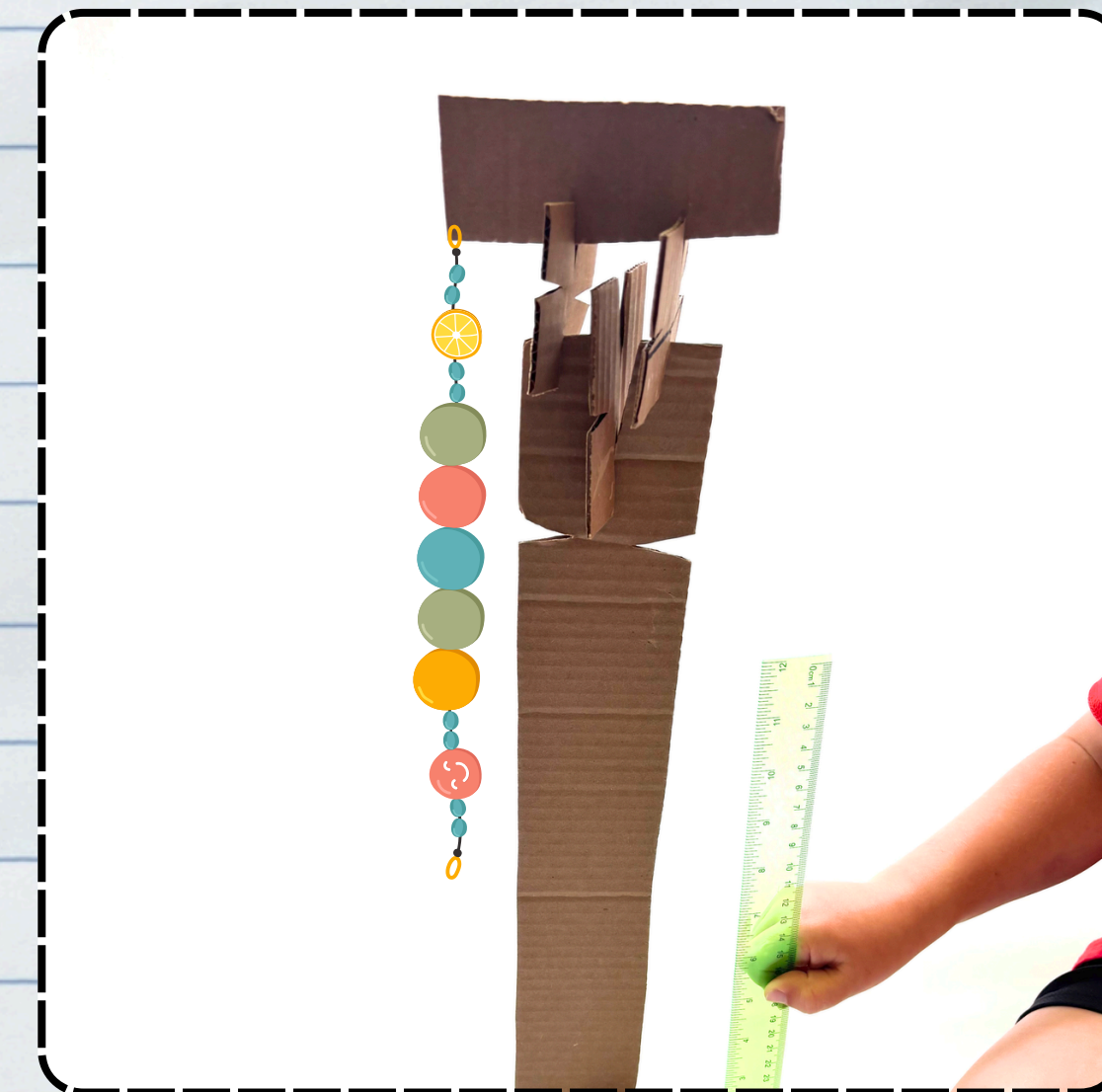


When finished, use a ruler or measuring tape to measure the height.



### EXTRA TIME?

Test the strength of the tower with a bouncing ball, rolling ball, a fan, or whatever else is easily accessible.



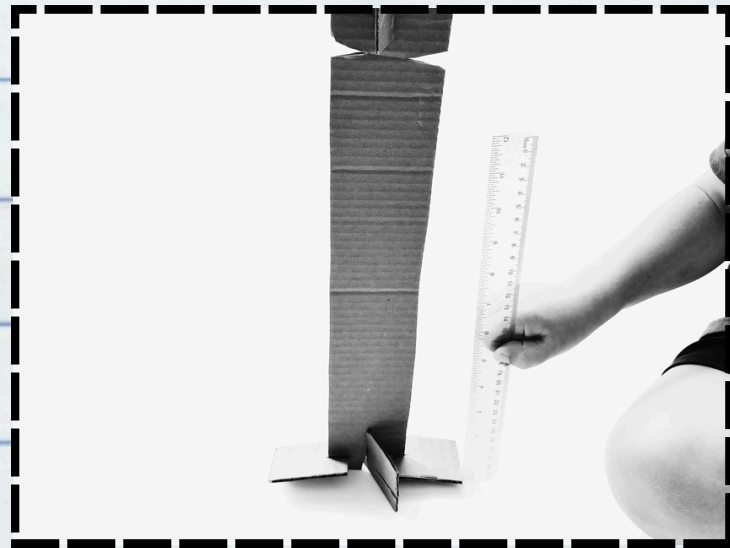
### Bouncing ball too chaotic?

Students could count how many beads or strands of beads they can hang from their tower before it falls.

# EXTENSION OPTIONS:

SHOW STUDENTS

## CAN YOUR TOWER WITHSTAND A CRASH?



Think you have a strong tower? Let's test it!

Build a small Lego brick car and see if your tower can withstand a car crashing into it.

## SMALL BASE CHALLENGE



Can you keep your tower standing tall with a small base?

Build your tower as tall as you can with your base being no larger than 4 inches in any direction.

## GIVE YOUR TOWER A THEME



Give your tower some design with a theme or purpose. Pick an idea from below or come up with your own.

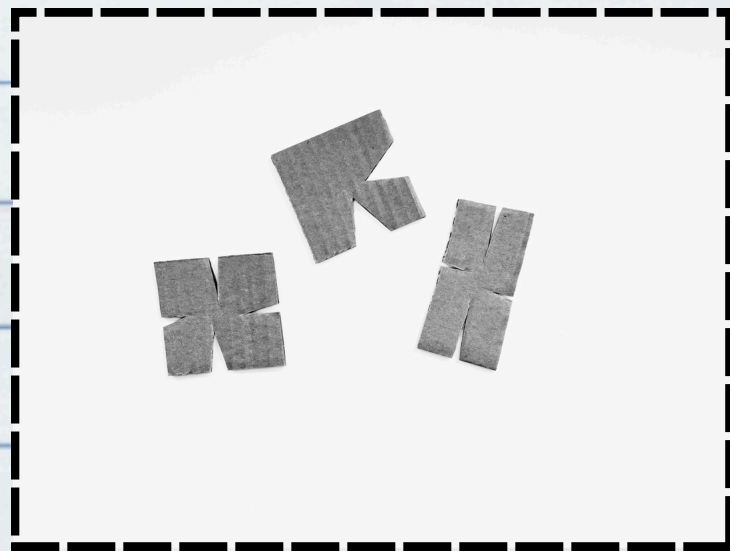
Ideas:

- Castle tower
- Lighthouse
- Skyscraper

# KIDS HAVING TROUBLE?

TEACHER  
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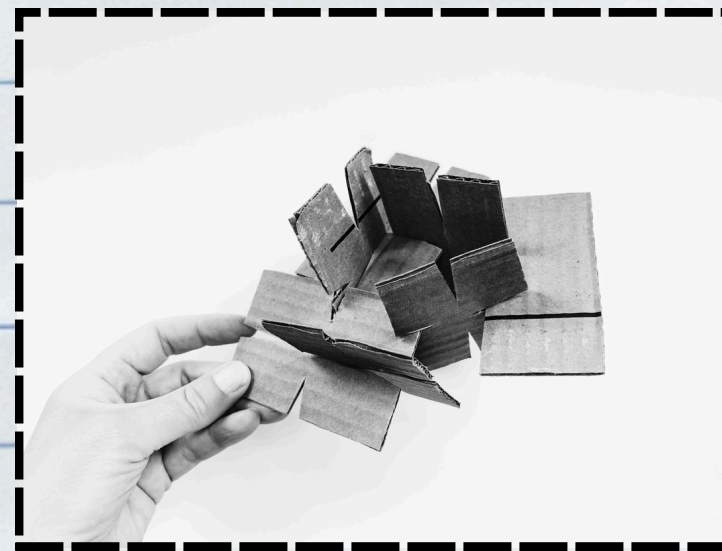
## PIECES NOT STAYING TOGETHER?



If the notches are too big, the connection will be too loose. It must be a snug fit to continue building up tall and not have the tower fall over.

**ASK:** Why do you think the pieces aren't holding together? What can you do differently?

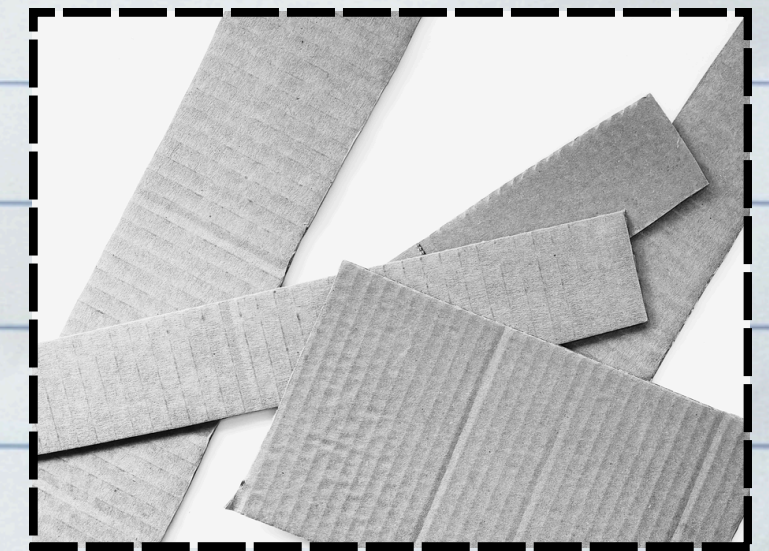
## TOWER FALLING OVER?



They will need a strong base. It is a common mistake to build up too quickly and the tower lack stability.

**ASK:** Where do you think the widest part of your tower should be? Why?

## TOO DIFFICULT AND CAN'T EVEN GET STARTED?



If kids are really struggling, you can give the option to add tape. We recommend a limited amount to still focus on the challenge of proper construction.