

# A Hero's Home

WEEK

6

## Experiment: Newspaper Fortress

Every hero needs a fortress, either for solitude or for super cool superhero parties. Use some basic engineering skills to build a surprisingly strong fort out of seemingly flimsy materials like newspapers and masking tape.



## MATERIALS

- Lots of newspaper, about two full papers (traditional broadsheet size, like the *Chicago Tribune*)
- Masking tape
- Stapler
- Sheet or plastic table cloth (optional)
- Pipe cleaners (optional)
- Craft sticks (optional)

## INSTRUCTIONS

Make newspaper rolls from two sheets of flat newspaper. Use open, two-page spreads, not single sheets. Roll them tightly from corner to corner; the tighter the roll, the stronger the support. Secure the end with tape.

Use three newspaper rolls to make a triangle, attaching at each corner with staples. Each triangle should be strong and not bent or folded. These triangles will be the basic units that you will use to construct your fortress.

Before building your fortress, decide what you want it to look like. It might help to draw out a design. How big will it be? Will you be able to go inside? Will the walls be covered? How many triangles will you need?

The newspaper triangles can be connected to each other in a lot of different ways using tape and staples. Try building flat walls, or putting four triangles together to form a pyramid with triangle sides (a shape called a tetrahedron). You can make a pentagram by attaching five triangles so that their bottom edges form a line, then standing the row up and forming the five-sided shape.

Once you get good at making triangles and tetrahedrons you can put them together in infinite ways to make whatever type of fortress you want! Ask one or more people to help hold the pieces in place as you slowly construct your fortress. The structure will become sturdy and upright as you add layers and secure corners with tape, pipe cleaners or even craft sticks.





## WHAT'S HAPPENING?

Triangles are considered the strongest shape because they can handle heavy loads without collapsing. Hold one of your newspaper triangles and apply some force on the sides; the triangle should feel sturdy and hold its shape. If you put force on a square or rectangle, the shape can tilt or collapse. The triangle's strength is why architects use it often in structures.

Bridges are made up of trusses, which are triangles that share sides and connections. Look for triangles the next time you see a bridge or a building being built. You can also find them in a geodesic dome, which is a spherical or partially spherical structure formed from triangles. You can find geodesic domes on playgrounds as climbing structures. Another example is the giant sphere at Epcot.



## SAVE THE DAY!

Make several newspaper fortresses of different designs to create a superhero city. Give a tour of your fortress—record a short video clip and share it with us at [summerbrain@msichicago.org](mailto:summerbrain@msichicago.org) or [facebook.com/msichicago](https://www.facebook.com/msichicago).

## LEARN MORE

Try your hand at architecture and building challenges in MSI's LEGO®-themed *Brick by Brick* exhibit.

## RECOMMENDED READING

*The Savage Fortress*,  
by Sarwat Chadda

*The Three Little Pigs and the Somewhat Bad Wolf*,  
by Mark Teague

