



Project Exploration creates transformative learning opportunities for youth underrepresented in the sciences –particularly students of color and girls – by equipping them with the skills, practices, and mindset needed for a lifelong pursuit of learning. STEM@Home makes activities around science, technology, engineering, and math accessible and fun to do at home. This STEMbook activity, resources, and more are available at www.projectexploration.org/stemathome.

In this activity, you will:

explore the tallest buildings in the world and how they were designed and constructed. You will then work on your own to develop the tallest tower!



Supplies Required:

Kindergarten through 4th Graders

Alternative materials for younger scholars:

5 – 10 Cups
Modeling clay
Tape or glue
2 Sheets of paper

*Any other materials around the house that you can stack

5th through 8th Graders

20 Straws
20 Pipe cleaners
1 Tape
1 Scissors
1 Golf ball
2 Sheets of paper

*Substitutes for golf ball can be similar objects, like an orange for example

Video

Learn more about skyscrapers, statics, and dynamics here: <https://tinyurl.com/uwaqb2f>
Watch the tower challenge video here: <https://tinyurl.com/v2lee57>

Overview

This activity explores the concept of engineering; you will learn to identify several different structural engineering principles relating to skyscrapers. You will also learn to match design principles with famous skyscrapers; and appreciate the challenges and difficulties in building tall structures.

Imagine you are part of a team of engineers given the challenge of building the tallest tower you can build using only 20 straws, 20 pipe cleaners, and tape. You do not need to use all the materials, but your tower must support the weight of a golf ball for two minutes. The golf ball must be supported near the top of the tower. K - 4 graders can design and build a tower using alternative materials or any materials around the house.



Instructions



Kindergarten through 4th Graders

1. Plan: Think about the different ways you can use your materials and put them together to build the tallest tower. You can use alternative materials.
2. Design: On a blank sheet of paper draw your plan for the tower.
3. Construction phase: Build your tower and see how long it last before collapsing.
4. Record your observations.

5th through 8th Graders

1. Plan: Think about the different ways you can bend or change the shape of straws and pipe cleaners. You may cut these items, and you can use tape to connect them together.
2. Design: On a blank sheet of paper draw your plan for the tower.
3. Construction phase: Build your tower and test it to see if it can support the golf ball. See how long does it support the golf ball without collapsing.
4. Record your observations.

Additional Resources

Think about it! How similar was your design to the actual tower you built? If you found you needed to make changes during the construction phase, describe why you decided to make revisions.

1. Learn more about skyscraper basics: <https://tinyurl.com/sd5kqld>
2. Visit some of the greatest towers in the world: <https://tinyurl.com/tz3l3aa>
3. Watch the Crash Course about civil engineering: <https://tinyurl.com/yaf487p6>

Share It Out

Talk about it with your family and friends and share your design ideas.

Share on social media: take a picture of your tower and post the results online using the hashtags:

#TowerChallenge
#ProjectExploration
#StemAtHome

Tag a friend and challenge them to build their own tower!

Share via PE's website: Students who complete STEM@home activities and share what they learned with the PE team via our website will earn points which can be traded in for cash prizes at the Explore Store. Your project number is 405. Learn more at www.projectexploration.org/explore-store

Join PE's character contest!

Design a STEM character who will lead kids through activities and be featured on our website and in our STEMbooks. Cash prizes will be awarded to the top 3 finalists. Learn more at www.projectexploration.org/character-contest.



Call or text us for help: 312-772-6634



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