Museum of Science.

EiE | Families and STEM Events

Engineering at Home:

Pass the Peppers!

FOR AGES 4+

Try engineering as a family!

Makayla and Andre have a problem. They need to get fresh peppers over to Grandma but the stairs are exhausting! Thankfully, they know how to think like engineers. **Engineers are people who figure out how to make things that solve problems.** Try this activity as a family and you'll be thinking like engineers too!

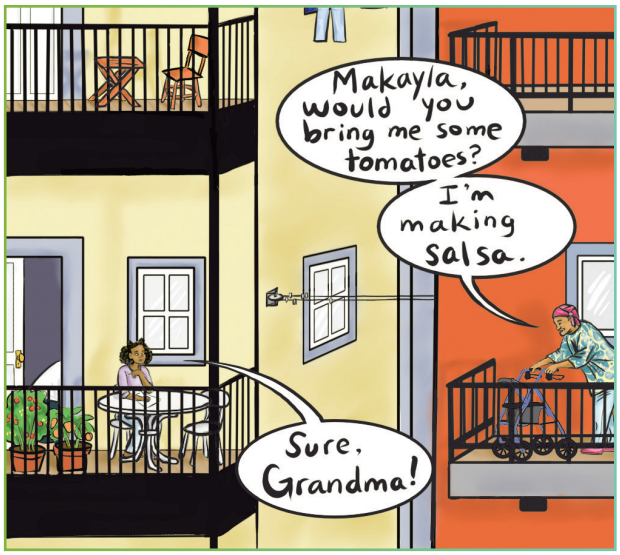
Pass the Peppers! challenges you to design a way to get something from one place to another. What will you design? A zip line? A catapult? A pulley system? Here's what you'll need to get started:

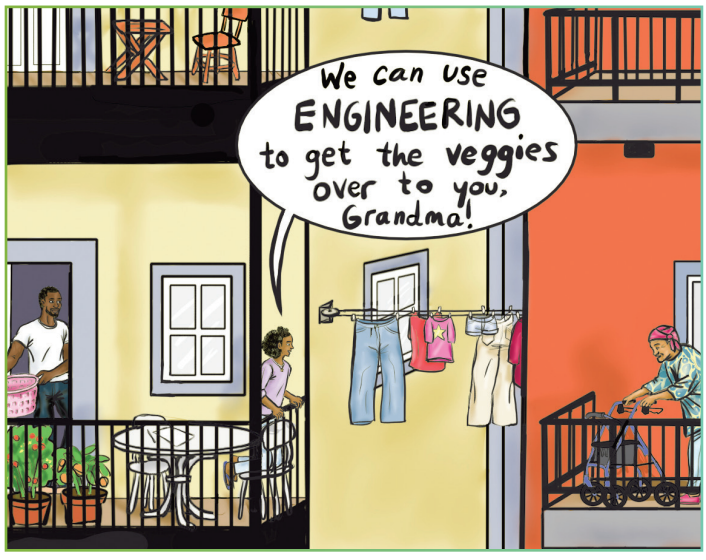
- **Materials** – You'll need to gather some materials that your family can use to create your design. Cheap, non-breakable items work well. The more materials you gather, the more creative you can be!
- **Testing Station** – In the activity, Makayla is passing the peppers from porch to porch. You might want to start with something easier. Two chairs, placed a few feet apart, are an easy way to represent the porches. Increasing the distance between the chairs is a quick way to make the challenge harder!
- **The Peppers** – You'll need to find something to "pass." Consider items that are small, lightweight and won't break if they get dropped. Notice how the size and shape of the items affect your design requirements.

Engineers use a variety of skills when they design solutions to problems. This activity supports the development of critical thinking, communication, creativity and persistence among children. Best of all, it's a fun way to connect as a family!

Children as young as four can participate, though they may need a bit more support. You can read this activity book with your child, or if they're ready, let them read it to you!

For more engineering resources, visit www.eie.org/families.

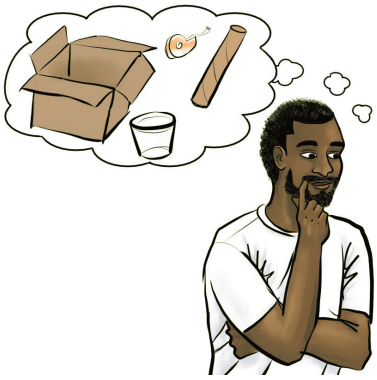




Turn the page to help Makayla *pass the peppers*!

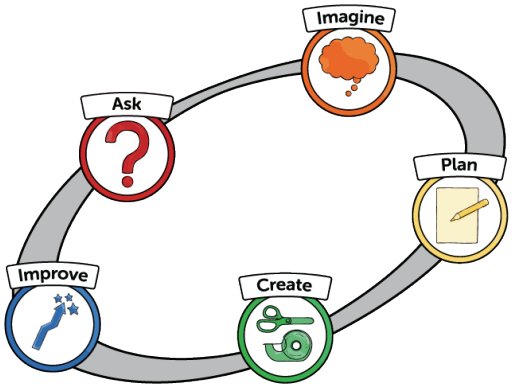
Engineers are people who figure out how to make things that solve problems.

They break the problem down into steps that are easy to follow. First, they **ask** questions about the problem...



...then, they **imagine** possible solutions.

Next, engineers make a **plan**...



...then, they **create** and **test** their solution.

Finally, they **improve** it to make it better!

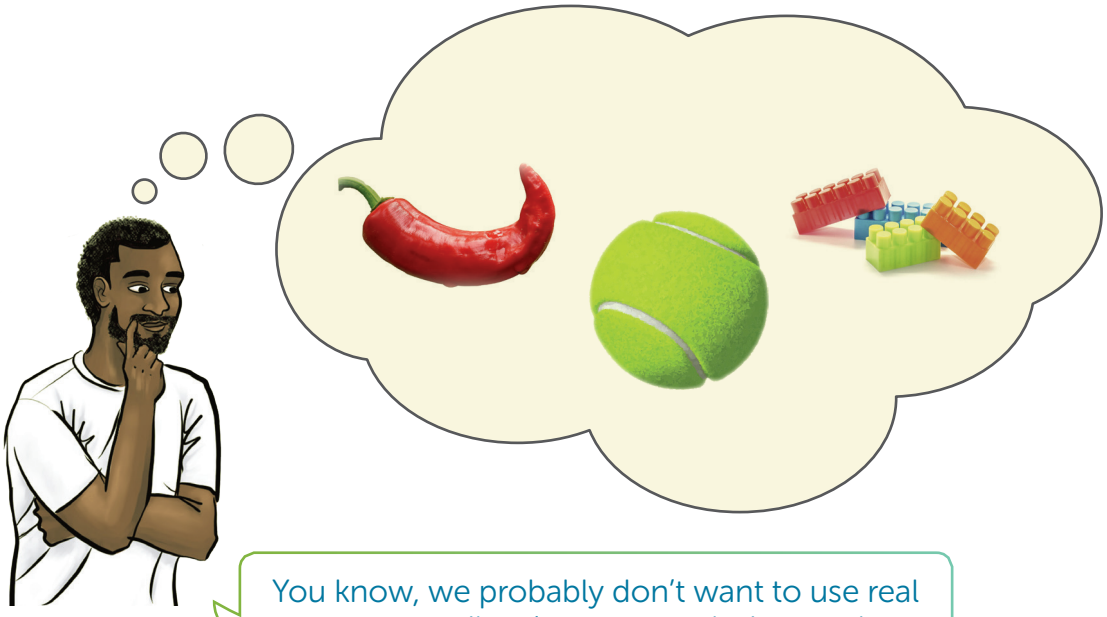
Let's think like engineers! We'll follow these steps to make something that passes the peppers to Grandma!

We can work together! Let's start by **asking** questions.

Ask

Hmm...what do we need to know to get started?

How far apart are those porches? Maybe we should put two chairs that far apart to test our idea.



You know, we probably don't want to use real peppers until we're sure our design works.

What should we use to test our idea?

Where will you test your design?
What will you be "passing"?

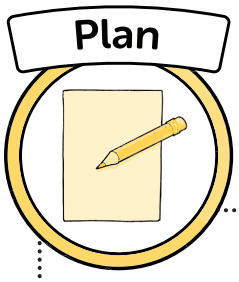
Find something to represent the porches and the peppers.

I know what's next! Engineers **imagine** many creative ideas to solve the problem before they pick one.

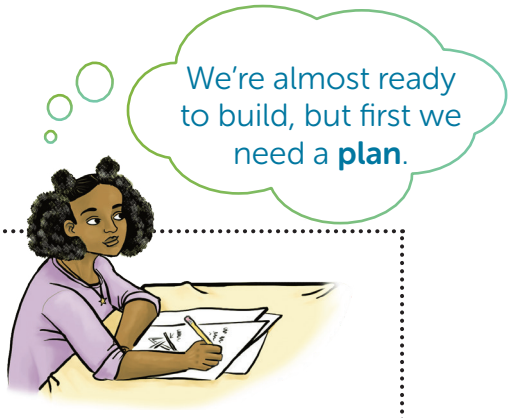
Hmm...what are some ways to get things from one place to another?

What ideas do you have? Write or draw them above.

Talk as a family about what you want to try.
Find some materials you can use to build it.



What will your design look like?
Draw a picture of your plan!

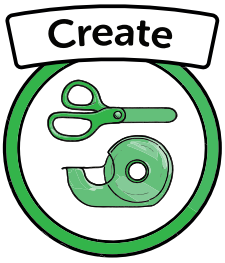


List your materials here.

_____ _____

_____ _____

_____ _____



It's time to **create** our design!

We're so excited to see if it works!

Build and test your design! Did it work?
Talk as a family about how your design worked.
What worked well?
What didn't work well?

If it doesn't work, that's okay. We can always **improve!**

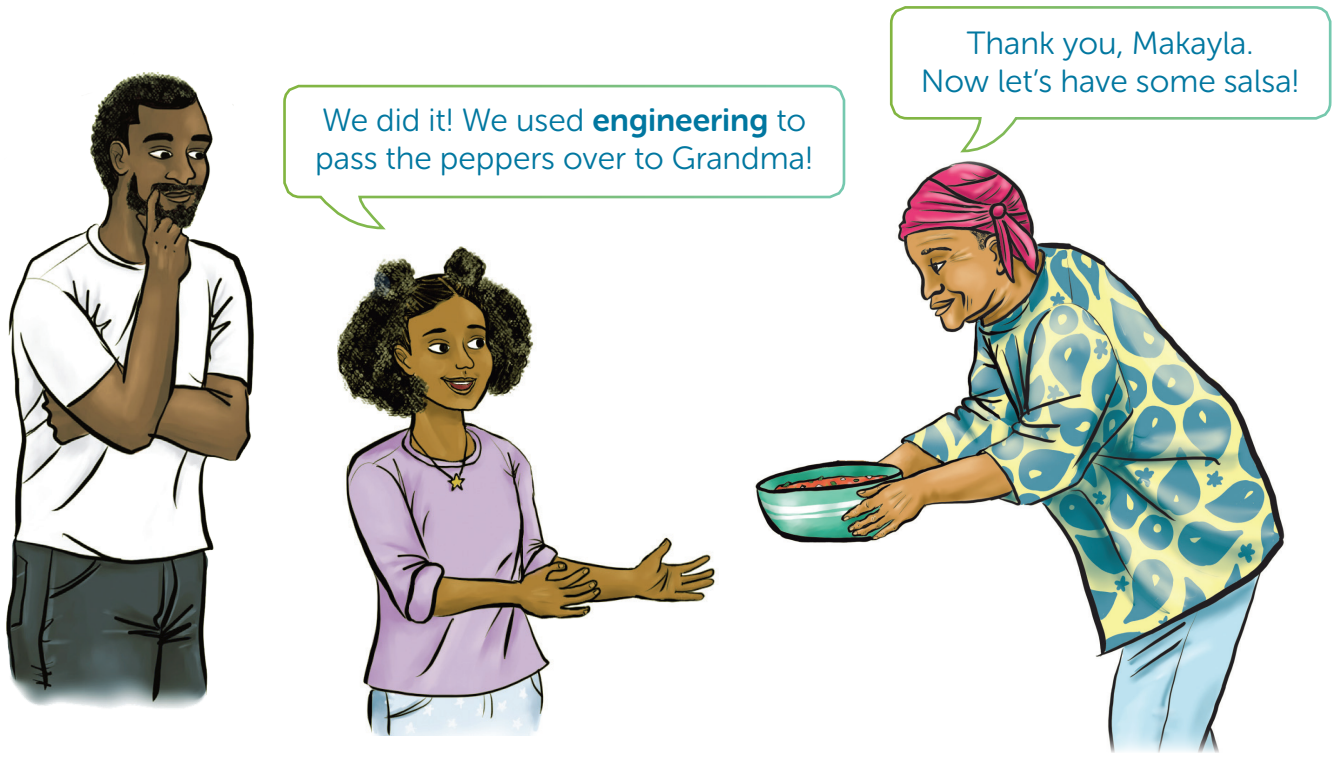
Engineers LOVE to **improve.** They learn from their mistakes and make their design even better!

How can you make your design even better?

Talk about it together or draw a picture of your new idea. Then create and test it again!

Congratulations!

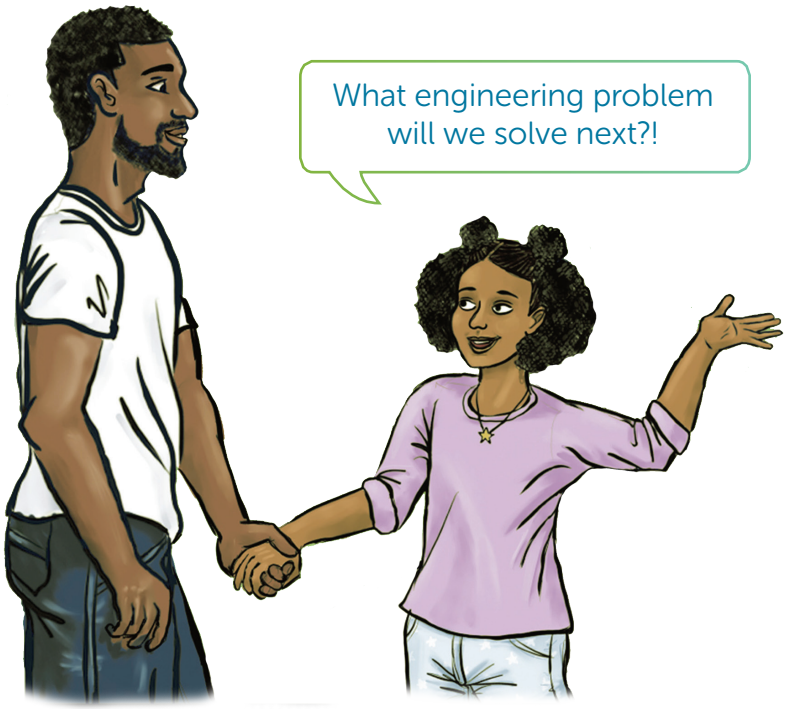
You followed the steps of the engineering design process and solved a problem!



Turn the page to go further→

Engineering activities like *Pass the Peppers!* are a great way to develop useful skills like critical thinking, communication, creativity, and persistence. They're also a lot of fun! Here are a few ways that you can extend the activity and continue the fun as a family.

1. **Do you like to share your ideas?** Tell friends or other family members about your design. You can take photos or videos to show them how it works.
2. **Do you like to create?** Find more materials and create a whole new design to help Makayla pass the peppers!
3. **Do you want a challenge?** Make the activity harder by pushing your "porches" further apart. Or, make your "porches" different heights!
4. **Do you like to draw?** Draw your own comic to show how Makayla and her dad, Andre, solved the problem.
5. **Do you like solving problems?** Think about a new problem you can solve using engineering.
    - What's the problem?
    - What could you create to solve it?
    - What materials will you need?
    - How will you test your design?



Keep engineering together!

Visit www.eie.org/families for more free engineering activities from the Museum of Science, Boston.