

CURIOSITY AT HOME

CARDBOARD CITY



Put your imagination and engineering skills to the test with Cardboard City! Today's cities are highly varied throughout the world, ideally to best suit the needs of their residents. Each has different services, layouts, features, and styles. A cardboard city of your own design can become anything you desire!

MATERIALS

- Piece of black construction paper
- Cardboard
- Tape
- Scissors
- Scrap paper
- Markers
- Science notebook or paper
- Something to write with
- **Optional:** Additional materials and supplies you have. Ideas include hole punch, twist ties, paper cups, egg carton, fabric pieces, cardboard tubes, yarn, etc.

PROCEDURE

- Decide on who the residents of your city will be. Will you create a city for future humans? Your stuffed animals? Rabbits?
- Consider what your city's residents might do on an everyday basis. List these in your science notebook.
- Determine what features your city will need for your residents to be able to do each of these things. For example, do your city's residents go to work? Where do they get their food? Next to each daily task, write down what else your city needs to support this (examples could include a grocery store, a post office, or a gas station).

Experiment continued on next page...

Go **BIG**, like this city at PacSci's Tinker Tank!



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PROCEDURE *continued...*

- Consider the utilities that your residents need. For example, those living in your city will probably want to brush their teeth every day. Therefore, your city will need a way for its residents to access water, like a water tower or a reservoir. The same will apply for electricity, trash disposal/recycling, and transportation systems.
- Some other city systems to consider: housing, street layout, parks and nature areas, and entertainment or cultural experiences.
- Once you have some basic needs in mind, it's time to begin building! Use your materials to begin to build your city. You might start with what you think your residents will need the most or just what sounds the most fun to build!
- Cardboard cities work really well when created over a period of a few days. You will want to consider where you build your city so that you can leave it up and add to it over time. When building city structures, one idea will lead to another and soon your city will be a growing, interconnected hub!

Does your city have a landmark?



Or a transportation system?



Experiment continued on next page...



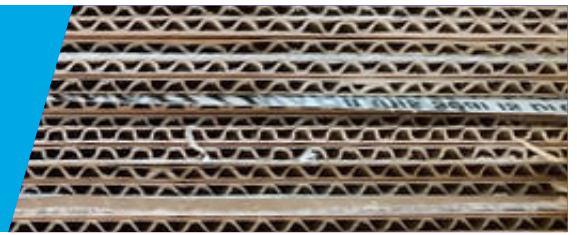
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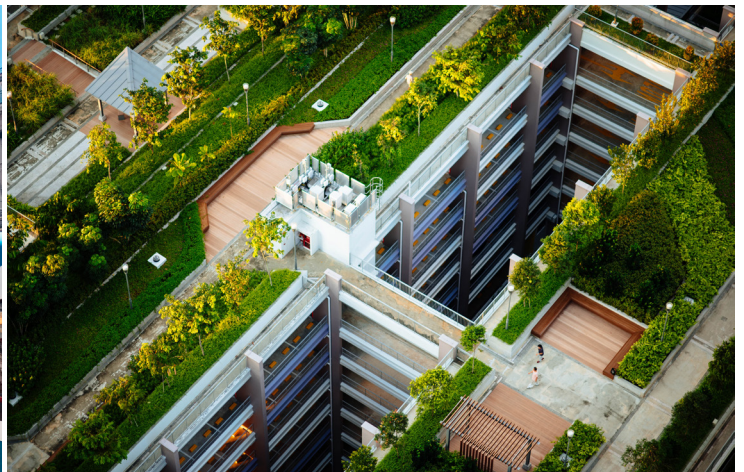


DID YOU KNOW

City planning can be used to help combat climate change. For example, the city of Zurich in Germany has modified their public transit system so that there are fewer cars on the road, meaning less pollution and decreased carbon dioxide production. Copenhagen, Denmark has prioritized creating sustainable architecture which includes creating buildings that recycle rainwater, grow plants, and manage waste efficiently. How can you take these concepts and apply them to your cardboard city?



Streetcar in Zurich, Germany



Roof-top garden



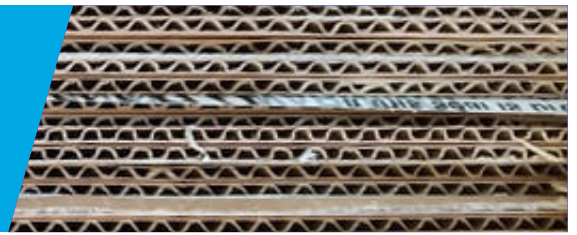
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K–2 GRADE EXPLORATION

Here are some questions you can explore together:

- Do you live in a city? A town? Outside of a town?
- What kinds of buildings exist near where you live? How do you usually get there?
- How will residents of your city get around? Build something to take them from place to place.
- Where in your city will you grow good, healthy food?
- What will you call your city?
- Explore materials and shapes when building structures.
What materials will make the strongest structure? How can you use tape to make them stronger? What shapes work for building strong structures? Explore triangles, squares/rectangles, and even circles.



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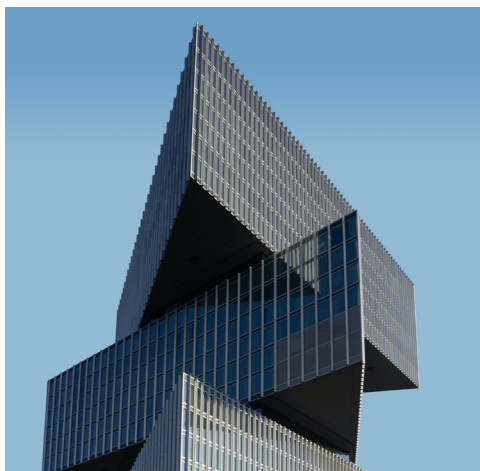
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3–5 GRADE EXPLORATION

Explore the following questions and write your city plans in your science notebook.

- How will residents of your city get around? Build something to transport them from place to place.
- Even if a city is well-planned when it is initially built, cities are always growing and changing. When more residents move into your city, where will they live? Where will they work?
- Consider what a city of the future might look like. How does this compare to cities we have today? What structures and systems might change in the next 10, 50, or 100 years?
- How will you protect the native plants and animals that live in your city?
- Ask a member of your household to add something to your city — a new building, a new freeway, or anything else they can think of. How does this change affect your city's residents? What else needs to change to accommodate this new feature?
- What will you call your city?
- Explore materials and shapes when building structures. What materials will make the strongest structure? How can you use tape to make them stronger? What shapes work for building strong structures? Explore triangles, squares/rectangles, and even circles.



Buildings in unique shapes



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6–8 GRADE EXPLORATION

Explore the following questions and write your city plans in your science notebook.

- How will residents of your city get around? Explore different modes of transportation, including buses, light rail, cars, or boats. Will cities of the future utilize these? What new mode of transportation can you invent for your city?
- Even if a city is well-planned when it is initially built, cities are always growing and changing. When more residents move into your city, how will you accommodate a larger population? How will this affect things like water use, housing, traffic, and food supply?
- Consider what a city of the future might look like. How does this compare to cities we have today? What structures and systems might change in the next 10, 50, or 100 years?
- How will you protect the native plants and animals that live in your city? Can you design something that serves a purpose for both the city's residents and the native species?
- Ask a member of your household to add something to your city – a new building, a new freeway, or anything else they can think of. How does this change affect your city's residents? What else needs to change to accommodate this new feature?
- What will you call your city?

ADDITIONAL CHALLENGES

- How will your city fare in the case of a natural disaster, such as an earthquake or hurricane? Design a way to simulate this and explore how your city responds.
- Imagine there is suddenly a building materials shortage (perhaps you've run out of tape!). How will you design new structures without this? How does this relate to real-world situations?



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