



# Bug City

Inspired by *Roberto: The Insect Architect*  
by Nina Laden

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## LET'S LOOK AT THE PROBLEM

Roberto is not like other termites. Instead of eating wood, he wants to build with it, so he heads to the big city to fulfill his dream of becoming an architect. There he meets several new insect friends who desperately need homes.

Roberto finds it hard to become an architect because he hasn't built anything yet to show people that he can do it. How does he solve this? If you built a home for someone, what would it look like?

## MATERIALS

- Reusable resources such as paper towel rolls, boxes of all types (including cardboard food containers), milk and egg cartons, newspapers, yogurt cups, foam trays, toothpicks, and aluminum foil
- Connectors such as tape, glue, a low-temperature glue gun, brads, wire, cardboard connectors, binder clips, clothespins, twine, staples and staplers
- Tools such as scissors, hole punchers, pliers, and measuring tapes
- Building toys such as LEGO bricks, blocks, small building planks (KEVA, KAPLA, or Dr. Drew's Discovery Blocks), and K'NEX
- Reference and planning resources such as nonfiction insect books and videos, blueprints, and graph paper
- Small toy insects
- An 8 oz. weight
- Paper and markers, crayons, or pencils

## TINKER WITH THE MATERIALS

Choose two or three items. What can you make with them? Add another item. How can you use it to change your structure? How can you connect your items so they stay together?

Examine blueprints. Look at the different symbols and how rooms, doors, and windows are represented. Draw your own blueprint of a building. Construct your building with blocks while using your blueprint as a plan.

## STEM CONCEPTS

architecture / design engineering / life sciences (biology, entomology, habitats) / measurement / observation / properties of materials / scientific inquiry / stability / structures

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## THE DESIGN CHALLENGE

**Making** Build a home for an insect.

**Engineering**

Build a home to meet the needs of a specific insect. The building should be at least two feet tall and sturdy enough to hold an object weighing at least eight ounces. There should be an entrance for a small toy insect (or one you create) that is less than two inches high.

## WORKING ON THE DESIGN CHALLENGE

- **Think about it.** What does an insect need in a home? Draw or sketch your ideas for what you will build.

**Engineering.** Choose an insect. Look at it in books and videos. If possible, observe a real insect closely. How does it move? What does it eat? How much room does it need? What kind of home will you design to meet this insect's needs? Just as Roberto created a blueprint, draw or sketch your plans, including as much detail as possible.

- **Build or create it.** Gather your materials and build a home for your insect.

**Engineering.** Remember that your home must be at least two feet tall and able to hold an eight-ounce weight. Don't forget to create an entrance that is less than two inches high.

- **Try it.** Test your home out. Does it stay together? Do you think it is stable enough for an insect to use?

**Engineering.** Is your insect able to fit through the entrance? Is the house at least two feet tall? Does it hold an object weighing at least eight ounces?

- **Revise or make it better.** What about your insect home works, and what doesn't? How can you improve it?

**Engineering.** Compare your plan and the home you built. How did making a plan help you? Do you need to go back and revise your plan and your home? How?

- **Share.** Show your plans and your insect home to someone else. Ask for their ideas. How would they have created it?

**Engineering.** Make a movie of the toy insect using its new home. Describe the type of insect you built the house for and how your home meets its needs.

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## QUESTIONS AND COMMENTS

Why did you choose your insect?

Tell me about the features of your insect home. How did you make them?

What else could you add to the home?

How is this insect's home the same as or different from your home?

## BACK TO THE PROBLEM IN THE BOOK

How does Roberto make sure his buildings meet the needs of their occupants?

What might happen if Roberto's family came to visit him in the big city?

## GOING DEEPER

- Brainstorm ways to create a home for actual insects in your area. Think about materials that can stay outside. How will your building attract the insects? Plan and then make the home.
- Research homes made by other types of animals, and choose one to create.
- Research how to make a robotic bug ("brush bot") for your insect home using a toothbrush, battery, LED, small vibrating motor, and decorations.
- Make a stop-motion animation of your toy insect using its new home.

## OTHER BOOKS TO USE

***The Best Book of Bugs*** / Claire Llewellyn, illustrated by Chris Forsey, Andrea Ricciardi di Gaudesi, and David Wright

***A House Is a House for Me*** / Mary Ann Hoberman, illustrated by Betty Fraser

***Insects and Spiders*** / Bo Rin, illustrated by Do Gam, edited by Joy Cowley