



# CONSTRUCTION SITE CUBE

## Overview

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Book: *Goodnight, Goodnight, Construction Site* by Sherri Duskey Rinker and Tom Lichtenheld

Grades K-3

In this science PBL activity, students will test out various materials to determine the best ones to use for construction of a cube that will be strong enough to hold the book.

## Standards

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2-PS1-2	Analyze data obtained from testing different materials to determine which materials have the properties that are best suited for an intended purpose.
K-2-ETS1-3	Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

## Objectives

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Students will analyze a variety of materials for the best ones to use for construction.

Students will construct two cubes of different materials.

Students will test the strength of the cubes.

Students will explain why they think the cube did or did not support the weight.

## Materials Required

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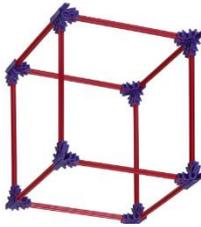
Book *Goodnight, Goodnight, Construction Site*

A variety of materials that would both work and not work for building cubes. For example: wooden craft sticks, coffee stir sticks, yarn, string, duct tape, paper clips, modeling clay, Styrofoam packing peanuts, straws, newspaper, tissue paper, pipe cleaners, toothpicks, and cotton balls.

## Procedure

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1. Show students how a cube is constructed.



2. Divide students into pairs or groups.
3. Tell students they will need to construct TWO cubes with the materials given. The cube must be strong enough to hold the book when it is placed on the top of the cube.
4. Allow time for construction.
5. Test the strength of the cubes by placing a cube on the table and laying the book on top. As testing progresses, ask students to predict whether they think a cube will be strong enough to support the book.
6. Place all the successful cubes in one area. Place all the failed cubes in another. Ask students to identify characteristics of the successful cubes. Discuss why these worked well. Do the same with the failed cubes.
7. Ask students what they would do the same or differently if they were to build another cube.

## Extensions

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1. Have students create a list of materials that they think would make good construction materials to create a cube strong enough for them to sit on.
2. Writing: The illustrations show only a small portion of the building's construction. Ask students to write about what they think is being built. What will it look like? What will it be used for?

3. Writing: Ask students to write a description of something they would build using only cubes. What are the cubes made of? What is the purpose of the construction? Where would it be built?
4. Let students tests their cubes with heavier weights or by adding additional books on top.
5. Allow students time to create other shapes (spheres, prisms, pyramids, odd shapes) out of the materials. Have students test these for strength.

## Rubric

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<b>RUBRIC</b>				
	<b>Exceeds (3)</b>	<b>Meets (2)</b>	<b>Partially Meets (1)</b>	<b>Does Not Meet (0)</b>
CUBE CONSTRUCTION	Both cubes were correctly constructed with symmetrical sides and angles.	One cube was correctly constructed with symmetrical sides and angles.	Only a few sides of each cube were correctly constructed.	No sides were correctly constructed
CUBE STRENGTH	Both cubes were able to hold the weight of the book.	One cube held the weight of the book.	One cube initially held the weight, but then collapsed.	Neither cube held any weight
DISCUSSION CONTENT	Student completely understood the concept related to the properties of the construction materials.	Student mostly understood the concept related to the properties of the construction materials	Student only somewhat understood the concept related to the properties of the construction materials	Student did not understand the concept related to the properties of the construction materials.
Total N/9				

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