

Bag It

Summary

In this activity students will: examine the force exerted on objects by gravity, investigate how Earth's gravitational force on an object depends upon the mass of the object, and design and build structures to support a load. (core objective and indicators)

Time Frame

1 class periods of 60 minutes each

Group Size

Small Groups

Materials

per class:

- 2 paper grocery bags
- 5-6 plastic grocery bags
- 2 black plastic trash bags
- scissors
- metric rulers
- masking tape
- 30-40 old textbooks
- [student sheet](#)
(attached)

Student Prior Knowledge

Student should be aware that gravity provides the downward force on all objects on Earth. They should know that many of the structures we build are designed to overcome gravity.

Instructional Procedures

- Gather materials and run off student sheets.
- Go over introduction with students and show where materials are located.
- Give students time to work. There is a certain amount of excitement when the books fall so be prepared for that.
- Have students write the number of books they got for each type of bag on the board or an overhead.
- Discuss results with the class. Paper bags usually hold more books. Plastic bags are not very strong in this test but do hold items with sharp corners better because they stretch before tearing.
- Allow time for students to answer analysis and write conclusion.

Assessment Plan

Scoring Guide

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1. Students participate and collect data.....4
2. Students display data on board and average results.....4
3. Students thoughtfully complete analysis and conclusion.....4

Answers:

paper is usually stronger

the greater the mass of an object, the stronger the affect of gravity.

the paper bags tear abruptly, the plastic stretch

plastic are better for sharp corners because they stretch.

Both kinds of bags have environmental drawbacks. Reusable cloth bags are really best. They also resist gravity best.

Bibliography

Lesson Design by Jordan School District Teachers and Staff.

Authors

[Utah LessonPlans](#)