

Egg Drop

Background Statement:

We've just finished our unit on forces, motion, and energy in science. We've discussed the effect that different forces can have on objects, as well as types of energy. This project will focus on some of those types of energy and forces.

Design Challenge:

Your challenge is to design a container that will keep an egg safe when dropped from the school roof.

Criteria:

- The container should be able to keep an egg from cracking or breaking when dropped from the roof of the school.*
- The container must be no larger than 6 inches high, 6 inches long, and 6 inches wide (6 in. x 6 in. x 6 in.) when held, but may expand after being released.*
- The entire structure with the egg included must not have a mass greater than 500 grams.*
- The egg must be able to be removed from the container in less than 2 minutes.*

Materials: You may select from the items below.

- *Small boxes*
- *Rubber bands*
- *Tape*
- *Fabric*
- *Styrofoam peanuts*
- *Cups*
- *Eggs (hard-boiled for building, raw eggs for the actual drop)*
- *Yarn & string*
- *Bungee cords*
- *Sandwich containers*
- *Baggies*
- *Egg cartons*
- *Cotton balls*
- *Brads*
- *Paper clips*

Tools:

- *scissors*
- *rulers*
- *hole punch*
- *stapler*
- *crayons, markers, pencils, pens*

Targeted Standard of Learning:

Science SOL 4.2: Force, Motion, and Energy

Supporting Standards of Learning:

Math SOL 5.11: Measurement

Planning Page

Sketch your plan below. Remember to include measurements for the length, width, and height of your project. Also include lengths of strings, rubber bands, etc.



Things to check:

1. What is the mass of your egg? _____
2. What is the mass of your project without the egg? _____
3. What is the total mass of your project? _____
4. What is the length of your project? _____
5. What is the width of your project? _____
6. What is the height of your project? _____
7. Can you remove your egg from the project in less than two minutes? _____

Reflection

1. Describe the state of your egg after the drop from the roof.

2. Did your project work as well as you wanted it to? Why or why not?

3. Give at least three ways you would improve your project:

1. _____

2. _____

3. _____

4. What was the main force working on your egg? How do you know this force was present?

5. Draw a picture of your egg being dropped. Label where you would find potential energy and kinetic energy. Draw and label an arrow showing how gravitational forces were at work on your egg.

6. Imagine you were to “drop” your egg in outer space by giving it a little push. Would your egg fall like it does on Earth? What would it do instead? (Hint: there is no friction in space) What is this law or property called?
