

Egg Drop: Newton's 3rd Law

Group Members:

- Team leader:
- Recorder (fills in Google Docs):
- Blueprint manager:
- Time & Materials Manager (keeps everyone on schedule and collects materials at the end of each class):

Goal: You need to build a device that will keep your egg safe when dropped from about 3 meters. To survive the test, your egg cannot have ANY cracks on it after it is dropped.

Step 1: Review Questions

1. What is Newton's third law of motion (in your own words)?
 - a.
2. How does the egg drop prove Newton's third law?
 - a.
3. What is the action in the egg drop?
 - a.
4. What is the reaction in the egg drop?
 - a.
5. How will you design your Kleenex box so that it protects the egg?
 - a.

Step 2: The Blueprint

Your team must put together a blueprint of your building **BEFORE you discuss materials with the contractor.** This must be checked off by the contractor **BEFORE** you do anything.

The drawing should be labeled with the materials you are using.

How to complete your BluePrint:

1. Get out a blank white sheet of paper.
2. Write group members names down.
3. Draw your blueprint: include what your group of architects will create.
4. On the back, write a rough draft of the steps your group will take to complete this project.
5. Get it checked by your contractor.
6. Once it's approved, you will decide on your materials.

Step 3: Choosing materials

You will need to decide how many of each of the following items you will need to complete your project. The cost of each material is listed below. In construction, companies look at blueprints and decide how much the project will cost to build. They then bid their total cost to the contractor, and he/she decides which company gets to build the building. If they go over their budget, it comes out of their paycheck. While you want to have a low bid, you also need to consider how strong you would like your building to be. After the earthquake test, the team with the strongest building that cost the least will win a prize.

Your maximum budget for the project is \$50.

Item	Cost
Big Kleenex box	\$30
Square Kleenex box	\$25
Small Kleenex box	\$15
Rubber bands (5)	\$10
String (2 meters)	\$10
Tissue (10 tissues)	\$5
Paper clips (1)	\$5
Other classroom items	Prices may vary

Total cost:

Once you have made your bid, you may start building your box that matches your blueprint.

"May the odds be ever in your favor."

Post-building Analysis

1. What are some strengths of your box?
 - a.
2. What are some weaknesses of your box?
 - a.
3. If you could build the box again, what would you change?
 - a.
4. What was the easiest part about building your box?
 - a.
5. What was the most difficult part about building your box?
 - a.

Post-testing Analysis

1. Describe how the testing went.
 - a.
2. Was your box successful in protecting the eggs? Why or why not?
 - a.
3. Which materials (if any) did you not use when building your box? Why didn't you use them?
 - a.
4. Which materials do you wish you had more of? Why?
 - a.