

**The Egg Drop Experiment**

# **Objective:**

**6-8**

Brainstorm, design, and construct an apparatus to protect a raw egg from a ten-foot drop.

# **Engineering Constraints:**

* 5 minutes to explain activity, 25 minutes to design and build, 15 minutes for the drop.
* Must be able to insert egg into design in under 30 seconds before the drop—you won’t be able to build your apparatus around the egg.
* You have a budget of $50 to spend on building materials.
* You cannot use any foreign materials, just the materials given to you.
* Think outside the box. Literally.
* Everyone on the team must contribute in the brainstorming and construction phases.
* Must follow the Engineering Design Process in order.

# **Engineering Design Process:**

1. **Define the Problem** – What is the problem or challenge you are trying to solve or fix?
2. **Background Research/Benchmarking** – What do I have to work with? What solutions have been done before? What hasn’t been done?
3. **Specify Customer Requirements** – What does my final design need to be seen as successful?
4. **Brainstorm Solutions** – What are possible solutions to the problem or challenge?
5. **Chose the Best Solution** – Which solution is the best (think time to build, cost, effectiveness, etc.)?
6. **Build a Prototype** – You must build your concept, so you can test your solution.
7. **Test** – Did it work?
8. **Redesign** – What could make my design better?

# **Construction Materials:**

You will be given a starter kit of materials and $50 credit to spend on additional materials. You must present your brainstormed concept to your manager before you can begin purchasing materials.

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| **Material** | **Cost ($)** |
| Dixie Cups (2) | $5 |
| Straws (5) | $5 |
| Cotton Balls (5) | $5 |
| Sandwich Bags (1) | $1 |
| String/Ribbon (1 ft) | $2 |
| Scotch Tape (1 ft) | $10 |
| Masking Tape (1 ft) | $10 |

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| **Material** | **Cost ($)** |
| Rubber Bands (10) | $5 |
| Plate (1) | $2 |
| Balloon (1) | $2 |
| Bowl (1) | $2 |
| Marshmallow (5) | $5 |
| Shopping Bag (1) | $5 |
| Paper (1 Sheets) | $1 |



# **Future Improvement:**

1. What methodology did you use to protect your egg?
2. What was your most important material in your design? What material was least effective? Could you have substituted one of your materials for a cheaper material?
3. What material could you use to improve your design? (Could be a material that was not offered.)
4. What would you do differently next time?
5. ****What things do you see in nature and in the man-made world that are similar to this egg drop experiment? (i.e. slow down impact to protect fragile items)