

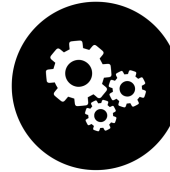
# An Egg-citing Challenge



Post a picture of yourself with your columns on Facebook and tag Worlds UNBound to be entered into a draw for a FREE week of camp. Let us know how your experiment turned out!

## Materials

- Egg
- Tape
- Plastic bags
- Plastic wrap
- Tin foil
- Cotton balls
- Newspaper
- Elastics



When you're riding a bike or going skating in the winter, it's important to wear a helmet. Helmets keep our heads protected in case we fall. Today, your challenge is to design a "helmet" for an egg—or at least something to wrap around it—to keep it from cracking when you drop it from a height. We've suggested some materials above, but you can get creative with your materials—if you want to add coffee filters, straws, or other household items to your design, go for it!

1. Choose your materials!
  - a. Choose only 5 materials (tape doesn't count) to protect your egg. Give yourself a certain amount of each material at the start and try not to use any more than that! We suggest you brainstorm which materials might be best before choosing.

Q1: What are some things a good helmet should do? Brainstorm a few qualities of good helmets to help you choose your materials.

2. Protect your egg!
  - a. Using your 5 materials, build a protective coating ("helmet") for your egg.
  - b. If you want to make it more challenging, only give yourself 20 minutes.

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### 3. Test your design!

a. Now it's time to test your design by dropping the egg from a height. We suggest trying a few different heights to see how much your egg "helmet" can withstand before the egg cracks. You can measure these heights if you want, but it's not necessary. Record your results in a table like the one below.

| Height    | Chair | Table | Refrigerator |
|-----------|-------|-------|--------------|
| Egg Safe? | ✓     | ✓     | ✗            |

### 4. Time to review your results!

a. From what height could you drop your egg without it cracking?

Q2: After they finish an experiment, good scientists and engineers think about what they could have done differently to make their experiment better. If you had to build an "egg helmet" again, what would you have done differently to get better results?

### Advanced Add-ons

Think back to your experiment. Did the height from which you dropped the egg affect how fast the egg fell? Do you think a lighter object would have moved faster or slower? What about a heavier object? Can you explain why the egg cracked when you dropped it from a greater height?

## An Egg-citing Challenge (Answers)



### Answers

- A1: A good helmet should absorb the impact of a fall, and should keep the object inside from shaking or rattling around. Did you come up with anything else?
- A2: This depends on what your design looked like. Maybe you needed more cotton balls to cushion the landing or a plastic bag parachute to slow the egg down.
- AA: This might be tricky to tell if you weren't timing with a stopwatch, but the height would not have affected how fast the egg was speeding up. In fact, when you drop any object from a small height—something as light as a feather or as heavy as a bowling ball—they will all speed up at exactly the same rate. When you drop the egg from a greater height, it spends more time falling and speeding up, and ends up hitting the floor faster and harder, which is why the egg cracks.

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Thank you for participating!  
We hope you enjoyed this activity.  
Check out our next activity of MONDAY!