

Fabulous Friday

12th Annual

Egg Drop

Friday May 1st
5 to 7 pm.



The egg drop will happen at Fabulous Friday on May 1st. Check in and loading will happen from 5 to 6 pm. We will climb the tower at 6 pm and start dropping eggs from 100 feet. The event is free and will be held at the Wilson Water Tower if weather conditions are favorable. Check our Facebook page or website on April 30th & May 1st for updates on the location.

Design it. Think about the concepts involved in protecting your egg. Think about the materials you have to use; touch them, pick them up, and drop them. What happens? Draw out a plan. Put a few materials together to try out different combinations. When you are happy with your design, build it. Here are a few things to keep in mind while designing and building your egg drop vehicle:

- The egg drop vehicle must protect the egg. The raw egg cannot have any cracks after impact.
- The egg drop vehicle should remain in one piece as it falls and after impact.
- The bottom of the egg drop vehicle should fit on a regular sized sheet of A4 paper (8 ½" x 11"). The height does not matter (within reason).
- The egg drop vehicle should be designed to easily open and close so an egg can be inserted at the drop site and checked for damage after impact. (Must use the raw eggs we provide.)

Hints: Use light and strong materials (Did you remember to factor in air resistance?)

Test it. Building a successful egg drop vehicle takes practice. Plan your design, build it, and test it out a few times to see how it falls before putting an egg inside. You may need to change or re-think your design if the egg drop vehicle doesn't hit the ground just right. (Get the help of an adult for help testing it at home.)

Drop it!

Raw eggs are provided at check-in, which is at Imagination Station. You will need to check-in when you arrive to give your name and get a number for your egg drop vehicle. Check in is from 5 to 6 pm. We then head to the Wilson Water Tower at 6 pm to drop the egg drop vehicles.

*Preregister online: scienceandhistory.org

If weather conditions are not favorable, another drop site will be announced on May 1st. Please check scienceandhistory.org, call 252-291-5113 or check Facebook/[ImaginationStationNC](https://www.facebook.com/ImaginationStationNC) for updated location.

Why do the egg drop? Scientists use the same basic physics concepts of momentum, force, and energy students use during the egg drop when they design containers and equipment to bring astronauts home from space, drop disaster relief supplies in remote areas, and keep passengers safe during a crash.

What do you need to know?

Force is an action of push or pull. Objects move because forces push or pull them. For example, when a car hits a wall during a crash test, the wall acts as an opposing force that *pushes* against the car.

Gravity is a powerful force that pulls any object with mass towards the center of the Earth. Gravity is the force that keeps us on the ground! Anything that goes up must come down!

Momentum is a measure of an object's tendency to move at a constant speed along a straight path. Momentum depends on speed and mass. Different forces applied to a moving object can increase or decrease the momentum of that moving object.

Air resistance occurs when an object moves through air because the molecules that make up air create a frictional force that pushes against the moving object. Two objects that have the same weight, but are shaped differently will cause different rates of air resistance.

Pressure is the force applied to an object in a direction perpendicular to its surface. Force and pressure are related, but different. A very small pressure applied to a large area can produce the same force as a great pressure applied to a small area.

Kinetic energy is the energy an object has because of its motion while **potential energy** is the energy that exists in an object because of its position or condition instead of its motion. In building the container, you should think about how energy changes from potential energy to kinetic energy.

Did you know the shape of an egg is a natural engineering marvel? The curve of the egg is designed to spread pressure out over a large area, which protects the egg from cracking. We crack eggs by applying a lot of force to one small spot, like hitting the side of the egg on a bowl. (Don't try this one without asking an adult first!)

For Parents: Allow kids to experiment on their own under supervision with available materials. Encourage them to be critical thinkers when constructing their device. Ask them questions and let them explain how they apply the concepts above to their design. Here are examples of questions you may ask:

- What are the forces acting on the egg as it falls?
- How can you control the forces that cause the egg to break?
- Was the material used, the amount used, or its compression factor that was the key?
- What are the common characteristics of the material that protected some eggs?
- Did the layering of materials help protect the egg?
- What part of your design let the egg break or kept the egg from breaking?
- How would you change your design the next time?