Prep Notes	For the end-of-year "contest", consider painting marks every 2' on a 12' 2x4. Bring a ladder. Drop each protector from 2', then increment up 2' at a time in order to "discover" the height at which each protector is finally unable to save the egg. Consider topping out – if several protectors make it the entire 12', great; don't worry about figuring out how to take them to their limit unless you still have lots of time remaining, and a safe plan to get higher; you want the contest to run quickly and smoothly, so beware of intricate measurement schemes.
Materials	Craft sticks (about 50 per class or per "team" if a class is to divide into multiple teams) Rubber bands (about 200 per class or team) Napkins (plenty, but each class or team should only use 12 in their final submission) Plastic eggs (1 per class or team, for practice) Eggs (for the real Week 24 contest)
Opener Ideas	For gory effect, consider dropping an egg on a prepared surface (board / cardboard, for easy clean-up), for effect, after asking for students' predictions about what might happen. Use that action to describe the grammar.
Grammar	(Don't spend too much time on this – get to building quickly!) • **Newton's 2nd Law of Motion**: force = mass x acceleration; in this case, acceleration is the acceleration due to gravity: 9.8 meters per second every second; mass is the mass of the egg (about 50-55 grams for a medium to large egg); and force is the resulting force on the egg, pulling it toward earth (0.05kg * 9.8m/s/s = 0.5 kg-m/s/s = 0.5 Newtons). Force is measured in "Newtons", after Isaac Newton, the father of "Newton's Laws of Motion". • **Potential Energy**: The "possible" eventual kinetic energy of the egg splatting on the ground, **before** it's dropped, while it's being held dangerously up in the air. • **Kinetic Energy**: The "moving" energy of the egg. "Kinetic" is the Greek word for "motion", and it's the root of our term "Cinema" (the "movies"). The kinetic energy of the egg as it hits the ground = force x distance. Our force was about 0.5 Newtons (above), and the distance is the distance above the ground at which you held the egg (more distance meant more potential energy, which would then translate to more kinetic energy of the dropped egg, at the point of impact). *Optional:* • Momentum: momentum = mass x velocity. Since the egg kept accelerating (9.8 m/s/s) it had a certain velocity, and certain momentum at the point of impact. This momentum is directly related (proportional) to the energy at impact.

Scientific Method

The object of this project is to build a device that will "gently" spend the kinetic energy of the egg (device), upon impact, and save the egg from destruction. The purpose of the device will be to "absorb" the energy, over a period of less than a second, to keep the eggshell itself from absorbing the energy like Humpty Dumpty. Quickly reducing the momentum of the egg, and absorbing its energy, requires that parts of the device compress, or that the egg be suspended in a "stretcher", or that some other motion occurs, rather than the motion of the eggshell shattering. Be creative, and have fun. Consider the many online resources available.

***The scientific method is not uniquely applicable for this project, again**, and the first order of business is to build a protective device for the egg and have fun doing it. But the scientific method **could** be employed to answer questions about certain design approaches and their superiority over other approaches. Remember to isolate the independent and dependent variables, and hold constants constant, if you travel a road like this, and that the best way to draw reliable conclusions from such an experiment is to run multiple trials and take the average of the measurements you make.*