Egg Drop Experiment

Part 1 : Explore

Use the Egg Drop simulation and change the egg size, drop height, and landing surface. Write ◯ if it is safe, fractured, or broken.

Egg Size 卵の大きさ	Drop Height 落とす高さ	Landing Surface 表面	Safe セーフ	Fractured ヒビが入った	Broken 割れた
Small (40g)	5m	1-inch foam (~0.02m)			
		Foam box (~0.18m)			
	10m	1-inch foam (~0.02m)			
		Foam box (~0.18m)			
Large (60g)	5m	1-inch foam (~0.02m)			
		Foam box (~0.18m)			
	10m	1-inch foam (~0.02m)			
		Foam box (~0.18m)			

Part 2 : Calculations

1. Calculate the momentum (p) of a 50g egg dropped from a height of 5m when it hits the ground (hint: you can use conservation of energy to find the final velocity)

2. Calculate the impulse (I)

3. Calculate the force the egg experiences if the impulse time is 0.01s

$p = mv$ $I = m\Delta v = F\Delta t$ $F = \frac{m\Delta v}{\Delta t}$ $PE = mgh$ $KE = \frac{1}{2}mv^2$

Part 3 : Design

Design a package that will protect an egg from a drop of 5m and draw it below. Label your drawing with the materials you will use.

How will this design protect the egg?

Part 4 : Testing

	Broken	Fractured	Safe
Trial 1			
Trial 2			

If you failed in trial 1 and succeeded in trial 2, what did you change and why?

If you failed in both trials, why did your design fail and how can you fix it?