**Egg drop simulator experiments**

Perform the following [virtual experiments](http://www.physicsclassroom.com/Physics-Interactives/Momentum-and-Collisions/Egg-Drop/Egg-Drop-Interactive)
Record how much force results and what happens to the egg

|  |  |  |  |
| --- | --- | --- | --- |
| Size of egg | Height  | Drop onto | result |
| Small | 1 m | Box of foam |  |
| Jumbo | 10 m | Hard surface |  |
| Jumbo | 10 m | 1-inch foam |  |
| Small | 1 m | Box of foam |  |
| small | 10 m | Box of foam |  |

Design a different experiment. Describe it. Do it. What did you learn?

 Answer these questions. Do more experiments if needed.

1. What happens to the force if you double the mass of the egg?
2. What is the biggest egg that can survive a drop onto 1-inch foam?
3. Can you crack an egg without breaking it?
4. What is the connection between the size of the egg and the force of its impact?
5. What is the connection between the height of the drop and the force of impact?

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**Force of collision simulator experiments**

Objects can bump into each other as well as into the ground. What happens? Try the [collision carts](http://www.physicsclassroom.com/Physics-Interactives/Momentum-and-Collisions/Collision-Carts/Collision-Carts-Interactive) and find out

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Cart 1** | **Cart 2** | **type of collision** | **-------------What happens?-------** | **Final velocities** |
| 1 kg / 5 ms initial velocity | 1 kg / -5 ms initial velocity | Elastic |   |   |
| 1 kg / 5 ms initial velocity | 2 kg / -5 ms initial velocity |   |   |   |
| 1 kg / 5 ms initial velocity | 1 kg / -5 ms initial velocity | Inelastic |   |   |
| 1 kg / 5 ms initial velocity | 2 kg / -5 ms initial velocity |   |   |   |
| 1 kg | 2 kg | Explosion |   |   |

What conclusions can you draw?

Design an additional experiment. Describe it below. Predict what will happen. Try it and see.

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