

Brontosaurus Learning

Making science fun!



An Experiment about

Forces

Which Falls Faster?

What you will need:

- A chair
- A piece of paper
- Something heavy, such as a ball of playdough, a roll of tape, or even a shoe

What you will do:

1. Scrunch up the piece of paper into a ball.
2. Get a friend to help you to carefully stand up onto a chair.
3. Ask your friend to pass you the two objects to you - the paper ball and the heavy thing. Your friend can now step back to the side and get ready to watch which item hits the ground first.
Make sure you're out of the way so they don't fall on you!
4. Hold them up as high you can, then drop them at the exact same time. **Which one hit the ground first?**
5. Drop the 2 objects a few times to check your results.

What is going on?

It seems to make sense that a heavier object will fall more quickly, but does it? The shape of the object will have more effect on its speed than its weight. Test this theory by dropping the rolled up piece of paper and a flat piece of paper at the same time. Then experiment with other shapes, like a folded piece, or even a paper plane. Use your imagination!

Challenges:

- Do you think you can explain your results?
- What is it that makes the objects fall?
- Experiment with ways to slow down the fall of your heavy object.



TEACHING NOTES:

Brontosaurus Learning Experiment:
Forces F04

Topic: Forces

Key Concepts:

- The weight of an object does not affect the speed at which it falls.

Resources:

- Experiment Description Forces F04 – one copy per student
- Investigation Report IR01 - one copy per student
- paper, something heavy - a ball of playdough is ideal, a chair

Lesson Notes:

This easy experiment enables students to investigate and compare how quickly different objects fall. It asks them to experiment with different pieces of paper - depending on the age and ability of the students you may like to discuss a few ideas with them eg folding, tearing, scrunching etc in different ways.

Remind students to listen carefully to instructions, and to OBSERVE their experiment.

As a class discuss the experiment prior to undertaking it, and students should complete the sections of their Investigation Report IR01 from "Title to "Hypothesis".

What should happen in this experiment, and why?

The ball of paper and the heavy object should hit the ground at the same time. When you compare the different pieces of paper, the shape will affect the speed at which it falls - bigger and flatter pieces will have more wind resistance and should fall more slowly.

Follow up questions:

- What do you think would happen if we dropped a feather and piano off the top of a tall building?
- What shapes fell the slowest?
- Which ones fell the fastest?

Investigation Record



Experiment Title:

Scientist (that's you!):

Materials: What will I need?

Investigation—what am I going to do in this experiment?

Diagrams are a great idea!

Hypothesis: What I think will happen:

Observation: What I SAW happen:

Diagrams are a great idea!

From my investigation I learnt:

Great work scientist!