

Brontosaurus Learning

Making science fun!



An Experiment about

Light

Turn It Around

What you will need:

- A book
- 2 magnifying glasses

What you will do:

- 1 Open your book to a page full of writing.
- 2 Use one magnifying glass to look at the words. **What effect does moving it up and down have?**
- 3 Now use 2 magnifying glasses, one on top of the other. **Move them up and down slowly together.**
- 4 Now try moving them apart. **What happens when the top one is closer to your eye and the bottom one is closer together? What happened when you move them closer together?**

What is going on?

The magnifying lenses have a specific focal point, which is the distance from the page that the magnifying glass makes the words the largest. Once you cross this focal distance something amazing happens because the light coming from the right side of the book crosses over to the left, and the left crosses to the right, so everything suddenly seems back to front!

Challenges:

- Try this experiment with different sized magnifying glasses. Are the focal lengths different?



TEACHING NOTES:

Brontosaurus Learning Science
Experiment: Light L09

Topic: Light and lenses

Key Concepts:

- ◆ Lenses have focal lengths

Resources:

- Investigation Record IR01– one copy per student
- Experiment Description Light L09– one copy per student
- A variety of magnifying glasses and binoculars if you have them, books

Lesson Notes:

Remind students to listen carefully to instructions, and that they will need to **OBSERVE** their experiment carefully. Encourage them to take careful notes of what they see and to try different things and report back on their findings.

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?

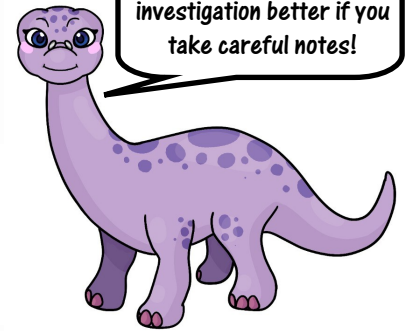
In this experiment your students should be able to observe the words on the page of the book swapping to back to front when they pass the focal length of the magnifying glass. Magnifying glasses converge light to a single point and their maximum magnification happens right at their focal point. Once you pass that point the light begins to cross over and the result is that the words begin to appear back to front.

More information about how light can be bent can be found in another of our light experiments, L01 Reflections.

Follow up discussion question:

- Have you ever seen the fun house mirrors that make you look different? Can you explain how they might work?

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!