



Big and Little

Children are born scientists – they love to explore and discover. There are many activities that you can enjoy doing at home with your little scientist.

QUESTIONS

- What is the biggest thing you can think of?
- What is the smallest thing you can think of?
- Did you know that some things are so small that we can't see them unless we use something to magnify them and make them look bigger?

TRY THIS AT HOME

Make a magnifying glass with water

You Will Need

- Sandwich size plastic bag with zipper type closure
- Water
- A newspaper or book to magnify words or pictures

WHAT TO DO

1. Find a book or newspaper with words or pictures that you would like to magnify.
2. Fill your bag about half way with water. Seal up the bag and dry it off if water has dripped on the outside.
3. Hold the water-filled part of the bag over your book/newspaper. Look through the water. What do you see?
4. Experiment by moving the bag closer and further from the text or picture and by adding or removing water from the bag. Allow your child to comment and explain their observations.



WHAT'S HAPPENING?

This experiment works because the water will bend light (refraction) through water in a bag, simulating how a magnifying glass bends light to make objects appear larger. A magnifying glass uses a curved piece of glass called a lens to bend light when the light moves from the air through the glass lens.

DISCOVER MORE

Use tools that magnify things such as a magnifying glass, binoculars or telescopes, and look at things from far away and see how they look when magnified (bigger than they do without the tools).

Science Time



DID YOU KNOW?

Things that are further away look smaller than things that are closer. For example, from our perspective, the Sun and the Moon look almost exactly the same size. But of course the Sun is a lot bigger than the Moon. The Sun measures 1.4 million km's across, while the Moon is only 3474 km's across. In other words, the Sun is roughly 400 times larger than the Moon. The Sun also happens to be 400 times further away than the Moon. This is why we can have solar eclipses where the Moon passes in front of the Sun, just barely obscuring it from our view.

TRY THESE OTHER ACTIVITIES

- Discuss that things that are far away look smaller than they really are. For example, look at the stars at night. Discuss that the stars are really, really big (as big as the Sun or even bigger) but that they look small because they are so very far away.
- Sort different things into different sizes from little to big. You can sort anything! Things around the house (boxes, toys or cutlery) or in the garden (leaves or rocks).

READ BOOKS

Have fun finding more at your local library, book store or online.

- *Exploring With a Magnifying Glass* by Kenneth G Rainis
- *You Can Use a Magnifying Glass* by Wiley Blevins

- *Can You Guess What It Is?* by Cathy Elliott
- *How Big Is The World?* by Britta Teckentrup

GO ON AN EXCURSION

Go on an excursion and look for big and little things.

- Collect things on a walk (leaves, rocks, acorns) and sort them into different sizes from little to big.
- Go for a walk and look at landmarks a long way away. For example, the tree at the end of the street. From your perspective it will look smaller than it really is and as you walk closer to the object the bigger it will appear.
- Look in the garden. What is the biggest thing you can see? What is the littlest thing you can see? Encourage your child to look at big things (like trees) and small things (like insects).

INVESTIGATE WEBSITES

There are also many websites for children about big and little things. We suggest you start with:

- Look at Australia from a distance and it looks small. Then look closer and it looks bigger and bigger until you can see your own house at <http://maps.google.com.au/>
- A macro lens brings tiny details on moths, ants and flies into sharp relief at <http://www.earth-touch.com/result.php?i=A-close-look-at-insects>
- See galaxies magnified by the Hubble telescope at <http://hubblesite.org/gallery/album/pr2003001c>