How big is the Moon?

Activity

Equipment	A selection of cylindrical objects or card that can be cut to size. Vary sizes from a few mm up to the size of a dinner plate (or even larger). Buttons, plates or coins could be used. (Try to have one object the size of your smallest fingernail held at arms length – a small button can do, a one cent coin is too big).
Suggested class level	5th – 6th
Preparation	Find a place where the Moon is visible in the day time. This can be indoors or out-doors. The position of the Moon changes daily, but it can be seen in the mornings at 3rd quarter phase and in the afternoons at 1st quarter phase. Only at New Moon and Full Moon will it be hard to carry this out during school hours.
Background information	The Moon is about ¼ the size of the Earth, but is very far away so it looks small in the sky. We guess the size of distant objects by looking at what is around them.
Trigger questions	Have you seen the Moon in the sky? Does it always look the same? (No, the Moon has phases) Can you guess which of these objects, held at arms length, will just cover up the Moon?
Content strand	Observing, measuring, predicting
Cross-curricular links	Geography Maths (measuring)
Activity	Guess how big the Moon appears in the sky. Draw circles on card and cut out disks. Hold them up against the sky to see if they are the same size as the Moon. Or Choose from the collected objects the one that is the same size as the Moon. Each person should try to hold the objects the same distance away from their eye. (for fair testing) (The Moon is MUCH smaller than you predict – even if you have tried this before! This is because there is very little else in the sky for us to use as a reference, so we think the Moon is a lot larger than it really is).
Safety	Only try this for the Moon – looking directly at the Sun can be dangerous.
Follow-up activity	Observe the phases of the Moon over a one month period. How does the shape of the Moon change? Watch the next Full Moon rising, is it really as big as it looks? (No, this is the same illusion at work, but because there are trees and buildings on the horizon, the effect is worse!)

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DID YOU KNOW

The Moon is ¼ the size of the Earth, but weighs less than 1/80 of the Earth. The Earth has a metal core which makes it very heavy for its size. The whole surface of the Moon is a bit bigger than Africa.

The Sun looks the same size as the Moon in the sky. This is because even though the Sun is much bigger than the Moon, it is also much further away from the Earth.

Web link:
For teachers:
http://www.exo.net/~pauld/summer_institute/summer_day1perception/moon_illusion.html
http://www.space.com/scienceastronomy/solarsystem/bigmoon_000105.html
http://science.nasa.gov/headlines/y2005/20jun_moonillusion.htm

for teachers of younger classes:
http://www.universalpreschool.com/how-to/summer-moon-illusion.asp