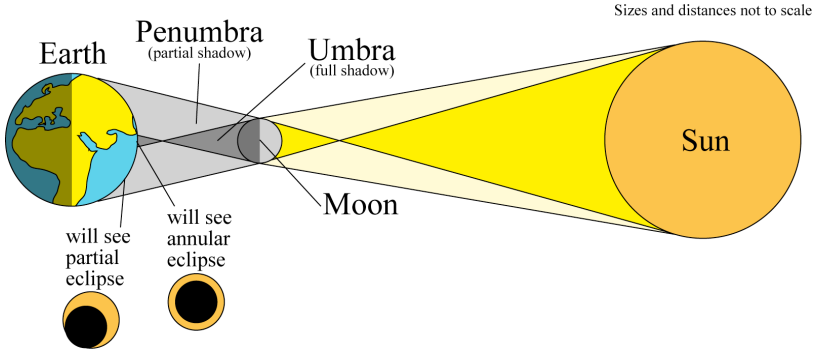
Sunset Solar Eclipse 2014

On Thursday, October 23, the Moon will pass in front of the Sun, and we will experience an eclipse at sunset. The next solar eclipse visible from Ohio won't be until 2017.

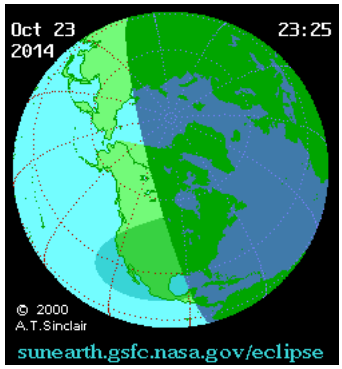


Alignment of the Earth, Moon, and Sun during a solar eclipse
Image courtesy Yukatan via Wikimedia Commons

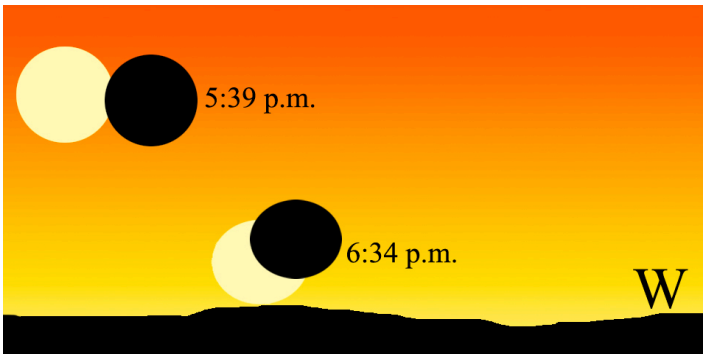
This eclipse is 'partial' and not 'total' since the Moon will cover less than half (about 41%) of the Sun. Also, the Moon's orbit is slightly oval-shaped. The distance between the Moon and the Earth varies, so the size of the Moon on the sky also changes. In October the Moon will be farther from the Earth and will appear slightly smaller than the Sun.

The Moon's shadow will dart across the Earth, allowing certain locations to see a solar eclipse. The path of the Moon's shadow across the Earth will start in Siberia, move across Canada, and then race South from Michigan to Alabama.

The center of the Moon's shadow will pass between South Bend and Fort Wayne, Indiana. Since Toledo is to the East of this, we will only catch the outer part of the Moon's shadow. In the center of the shadow people will see an annular eclipse, where the Moon appears centered on the Sun but smaller, so a ring (or annulus) of the Sun is seen around the Moon. On the side of the shadow like in Toledo, we will see a partial eclipse, where the Moon is a little offset from the Sun.



Position of the Moon's shadow
Image courtesy Fred Espenak, NASA/Goddard Space Flight Center.



Appearance of the eclipse. *Image courtesy Stellarium.*

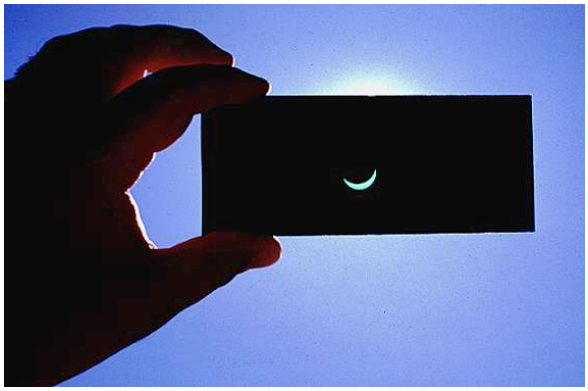
The eclipse starts at 5:39 p.m. as the Moon will begin to cover the Sun. At 6:34 p.m. the eclipse will be deepest with 41% of the Sun covered. This lasts about four minutes, and then the Moon slides away from the Sun. The show is over at 6:41 p.m. when the Sun sets.

The entire eclipse lasts about two hours. In Toledo the eclipse will only last one hour, since it will be interrupted by sunset.

How to watch the eclipse

While the Moon will block 41% of the Sun's light, **it still will not be safe to stare at the Sun**. We urge the use of safe Sun-viewing techniques. Staring at the Sun can cause life-long damage to your eyes. **Regular sunglasses do not provide adequate protection**. Only solar viewing glasses or welder's glass #14 is thick enough to look at the Sun safely.

Eclipse glasses block enough light to provide safe viewing of the Sun. *Image courtesy of Rainbow Symphony (www.rainbowsymphonystore.com/).*



Welder's glass #14 blocks enough light to provide safe viewing of the Sun. *Image courtesy of Allen Seltzer (astronomy.org).*

A "pinhole camera" is a safe way to watch the eclipse indirectly. You can make one with two pieces of paper or cardboard. Poke a small hole in one piece of paper, hold it up to the Sun, and let the light from the pinhole shine on the other piece of paper. This projects the image of the Sun like a little TV. **Do not look at the Sun through the pinhole.**

The pinhole can be any shape. The photo demonstrates a triangular hole. Simply hold the two sheets far enough away from each other that the image of the hole appears circular.

Astronomy graduate student Cat Wu demonstrates using a pinhole to project the Sun's image