

Total Solar Eclipse on April 8, 2024

For Spanish, click [here](#)

What is a Solar Eclipse?

Solar Eclipse occurs when the moon blocks any part of the sun. **On April 8, 2024, a total solar eclipse will be visible (weather permitting) in Indiana.** All continental U.S. states will experience at least a partial eclipse. Two shadows will pass over - a lighter shadow called the **penumbra** and a dark shadow called the **umbra**. Indiana is located in the umbra, so we will experience a total solar eclipse.

In Indianapolis, **the eclipse will begin around 1:51 PM and last until 4:24 PM**, and will move through 5 phases, 4 of which are called 'contacts.' To view the eclipse, **you MUST wear proper eye protection (solar filter glasses) during all but totality.**

Check out [this video](#) from Mr. Rick Crosslin, MSD Wayne Township Scientist in Residence, to learn more!

How can I stay safe while viewing the eclipse?

- The **only** safe way to look directly at the uneclipsed, partially eclipsed, or eclipsed sun is through special-purpose solar filters, such as the purple eclipse glasses we have provided. Ordinary sunglasses, even very dark ones, are not safe for looking at the sun. They transmit far more sunlight than is safe for our eyes.
- **Inspect the glasses** before use: be sure there are no scratches, damage, or punctures. Follow the directions printed on the glasses.
- **Use with adult supervision.**
- If you wear glasses, keep them on. Put the solar filter glasses over them, or hold them in place.
- **Look down**, put the solar glasses on, then look at the sun. After looking at the sun, turn away and remove the filter. **Do not remove the solar glasses while looking at the sun.**
- **Do not** look at the sun with an unfiltered camera, telescope, or binoculars. **Do not** put the solar filter glasses over a device to look at the sun.
- The only time to view the sun without solar filter glasses is during the **totality of the total solar eclipse**, which lasts about three minutes.
- Individuals should consult with a health care provider about specific health needs.

Here's [more information](#) about staying safe from Ben Davis High School teacher, Joseph Cardoza.



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What can I do to help students understand the eclipse, and prepare to view the eclipse?

<p>How to Make a Pinhole Camera - NASA https://www.jpl.nasa.gov/edu/learn/project/how-to-make-a-pinhole-camera/</p>	<p>Total Solar Eclipse DIY: Pinhole Viewer (4 min.)</p> 	<p>Materials Needed:</p> <ul style="list-style-type: none">● FedEx box● White index card● Aluminum foil square 3" x 5"● Tape● Scissors and/or knife
<p>Eclipse in a Cup - Exploratorium Museum https://www.exploratorium.edu/eclipse/snacks/eclipse-in-a-cup</p>	<p>Total Solar Eclipse DIY: Eclipse Cup 3-D (7 min.)</p> 	<p>Materials Needed:</p> <ul style="list-style-type: none">● 3 clear cups● Clay● Push pin● Markers● Scissors● Flashlight
<p>Eclipse to Scale - Exploratorium Museum https://www.exploratorium.edu/eclipse/snacks/eclipse-to-scale</p>	<p>Total Solar Eclipse DIY: Earth, Moon, Sun Scale (5 min.)</p> 	<p>Materials Needed:</p> <ul style="list-style-type: none">● Ping pong ball 1½" dia● String● Bead ¾" dia● Toothpick● Ruler● Tape● pencil

<p><u>Total Solar Eclipse DIY: Revolution and Gravity</u> (4 min.)</p>		<p>Materials Needed:</p> <ul style="list-style-type: none"> ● Coat hanger ● Foam ball ● Pvc pipe 6" x ½" dia ● Wire cutter and/or pliers
<p><u>Total Solar Eclipse DIY: Corona Viewing Safety Mask</u> (6 min)</p>		<p>Materials Needed:</p> <ul style="list-style-type: none"> ● Solar glasses ● Black paper plate ● Silver tinsel fringe ● Red pipe cleaner ● Hot glue and/or tape ● Elastic thread ● Silver magic marker ● Scissors and/or knife

Students might also enjoy recording their observations of the eclipse, or writing about their experiences in observing the eclipse. The internet is full of downloadable resources for observing and recording memories of the eclipse!

What can we expect to see in Indianapolis?

<p>First Contact 1:51:02 PM</p>	<p>Solar Filter Glasses are Needed The eclipse begins at First Contact, the moment the moon first “touches” the edge of the solar disk, approaching it from the right. The moon, invisible until now in the daytime sky, becomes visible as a black disk blocking the Sun.</p>
<p>Partial Eclipse <i>approximately</i> 1:52-3:05 PM</p>	<p>Solar Filter Glasses are Needed For the next hour and fifteen minutes, the moon slowly covers a larger and larger part of the Sun.</p>
<p>Second Contact <i>approximately</i> 3:05-3:06 PM</p>	<p>Solar Filter Glasses are Needed The moon completely covers the Sun. On the moon’s leading edge, the last slice of light shines through lunar valleys, breaking up into a chain of bright “pearls” called Baily’s beads. Then in the final seconds before the moon completely covers the Sun, there is a last bright flash, joined with a view of the corona - the Sun’s upper atmosphere - encircling the moon. This produces a spectacular effect called the diamond ring. After the diamond ring disappears, you have a couple of seconds to notice another layer of the Sun, the red-colored chromosphere, before it is also eclipsed.</p>
<p>Totality 3:06:10- 3:09:45 PM</p>	<p>Safe to Observe Without Solar Filter Glasses The Sun is now completely hidden, revealing the full solar corona. This stage of a total solar eclipse, Totality, is the only time we on Earth can see the corona, which streams out into space above the Sun’s surface. Normally, the corona’s light is outshone by the bright photosphere. You may see bright pink spots at the Sun’s edge. These are gigantic loops of plasma that rise from the Sun’s surface, called prominences. Their beautiful color is glowing hydrogen gas. During totality is the only time you can safely look at the Sun with your naked eye. If you look away for a few moments you will notice that the sky has become dark, as if it’s twilight and other stars and planets are visible. If you look out toward the horizon, it is also possible to see light from outside of the shadow you are standing in, like a 360-degree sunset.</p>
<p>Third Contact <i>approximately</i> 3:10-3:11 PM</p>	<p>Solar Filter Glasses are Needed Totality ends at Third Contact, as the leading edge of the moon begins to move off the Sun. Once again, on the opposite side of the moon, the last light of the photosphere shines through mountains and valleys, creating Baily’s beads. At Totality’s end, resume using safe viewing techniques. If you look at the ground just before the Second contact and right after the Third contact you may see shadow bands marching across the landscape. Sunlight is restored moments after Third Contact. The Sun reemerges in a burst of light, creating a second diamond ring on the opposite side of the Sun. As the moon reveals more of the Sun, the corona quickly fades from view in the brightness of the newly restored photosphere</p>
<p>Partial Eclipse <i>approximately</i> 3:10-4:23 PM</p>	<p>Solar Filter Glasses are Needed For the next hour and fifteen minutes, the moon slowly moves away from covering the Sun.</p>

Fourth Contact 4:24 PM	Solar Filter Glasses are Needed The eclipse is now nearly over. Fourth Contact, when the outer edge of the moon last touches the Sun, marks its end. From First Contact to this moment takes about two and a half hours.
Adapted from <i>The Exploratorium</i> : https://www.exploratorium.edu/eclipse/2024-total-solar-eclipse-guide	

Where can I learn more?

Total Solar Eclipse 2024 and Simulator - Dan McClain

<https://eclipse2024.org/>

NASA Space Place for Kids:

What is a Solar Eclipse?

https://www.youtube.com/watch?v=hyf5JF_VxwM

American Astronomical Society, AAS

Solar Eclipse Across America

<https://eclipse.aas.org/eclipse-america-2024>

National Aeronautics and Space Administration

2024 Total Solar Eclipse

<https://science.nasa.gov/eclipses/future-eclipses/eclipse-2024/>

Exploratorium

Solar Eclipse

<https://www.exploratorium.edu/eclipse>

National Science Teachers Association, NSTA

The Eclipse Connection

https://my.nsta.org/collection/Qr_slClpjoYE_E

Hoosier Association of Science Teachers, Inc., HASTI

Eclipse Resources

<https://hasti.org/2024-Total-Solar-Eclipse>