

APRIL 8, 2024

# THE GREAT AMERICAN ECLIPSE



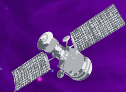
# SOLAR DAY TOTAL ECLIPSE GUIDE

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Come on! Let's  
go exploring  
together!



GUIDE PRODUCED BY:  
JACELIN CADET & AARON LONG

## VERSION 2.0

**Totality**



[WWW.BURTONACADEMY.ORG/ECLIPSE24](http://WWW.BURTONACADEMY.ORG/ECLIPSE24)

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## Why a Special Guide?

We can celebrate our belief in God as Creator and our belief in the beautiful world of Science too! In fact, God is a God of order!

So, through your study of the Bible and the incredible universe God has created for us to enjoy and marvel at, it is our sincere prayer that you will have a deeper appreciation for science while reinforcing your belief in God and His creative power as expressed throughout nature and the Bible, including the creation story!



*"In the beginning, God created the heavens and the earth. The earth was without form, and void; and darkness was on the face of the deep."  
Genesis 1:1,2*

This free solar eclipse guide is offered for educational purposes, and may be printed and redistributed free of charge without further permission. This guide may not be sold, and may not be modified without permission. A special thanks to [SWAU](#), Michael Zeiler and [www.GreatAmericanEclipse.com](#), Jay Anderson and [www.eclipsophile.com](#), as well as our livestream guests for sharing content for this guide.

# LIVESTREAM INFO


Don't miss our exclusive total solar eclipse "pre-game" show featuring entertaining hosts, a stellar list of scientific guests, weather highlights, interactive games & top-notch content, all geared towards enhancing your eclipse-viewing experience! You'll have the opportunity to share your eclipse knowledge and compete to win prizes in our interactive game taking place around 12:45 pm CT! To prepare, you'll want to study this guide and tune in to all the livestream action!


## Livestream Details

**Sunday** Livestream Preview: 6:00 pm CT

**Monday** Livestream Kickoff: 11:30 am CT

**Where to Stream:**

 [www.burtonacademy.org/eclipse24](http://www.burtonacademy.org/eclipse24)  
Facebook Livestream Event Page

 [Youtube](#)

**Livestream Wrap-up:** 2:00 pm CT

## Did you know?

The next total solar eclipse *visible* in the contiguous United States will take place in 2044 but will only be visible in North Dakota and Montana. ([NASA.com](http://NASA.com))

## Livestream Hosts



**Adrian Mizher**

A Burton parent and CTA Alumni (class of 97), Adrian returns after hosting our spelling bee livestream event to anchor the solar day livestream sharing his enthusiasm and wit as he fills the role of our play-by-play host.



**Reggie Herman**

As a Burton Alumni (class of 95), Reggie brings an enthusiastic love and knowledge of weather along with his livestream hosting experience which is sure to entertain as he fills out the role of color commentator.



**Bradley Colvin**

As a Burton Alumni (class of 09), and BAA HS English & History Teacher, Mr. Colvin returns after co-hosting our spelling bee livestream event to share his relatable and uplifting spirit as our remote interview host bringing all the fair action and guest on-site interviews to life!

I can't wait for all the fun on the livestream!



# LIVESTREAM INFO

## Livestream Guests



**Dr. Jake Hebert**

Dr. Hebert received his Ph.D. in Physics from UT Dallas in 2011 where he did cutting edge research on the connection between cosmic rays, solar activity, and weather and climate, joining the ICR team where he serves as a Research Scientist focusing on cosmology among other topics.



**Emily Steele**

Emily serves as the Children's Education Specialist for the Institute for Creation Research and brings her heart for education and support for Christian science education to the livestream as she emphasizes the God behind the eclipse, our Creator!



**Dr. Tim Standish**

Dr. Standish, a Seventh-day Adventist, received his Ph.D. in Environmental Biology and Public Policy from George Mason University and is the Senior Scientist at the Geoscience Research Institute. Dr. Standish is also a widely published author, speaker, and producer.



**Jim Burr**

Jim Burr, a Seventh-day Adventist, owned and operated JMI, a world-renowned telescope manufacturing company. Among other notable successes, Jim built telescopes for NASA and invented the binocular telescope, and now runs the creation science ministry organization Heavens Declare.

## Livestream Highlights

### Special Guests:

Physicist  
Telescope Inventor  
Senior Scientist

Interactive Game  
On-screen Livechat  
Share Your Photos  
Weather Updates

Eclipse Tracker  
Eclipse Fair Action Cam  
Eclipse Science  
And More!!

I'm dreaming about how cool the livestream will be!

Z



### Did you know?

The next total solar eclipse that will *span* the contiguous 48 states won't happen until 2045. ([NASA.com](https://www.nasa.gov))

### Connect and Interact!

We are excited to offer an interactive livestream experience where you can submit your group, family, or school photos from eclipse day and we'll share them on air! Submit photos to [solarday24@burtonacademy.org](mailto:solarday24@burtonacademy.org). So get ready to be a part of the livestream!

# LIVESTREAM INFO

## Interactive Livestream Game Info



**How can I prepare for the game?** The best way to prepare is to study this guide, and tune in to the livestream! All of the questions will come from this guide! In fact, we will have 10 questions that will determine the winner! And, the top 3 participants win a prize pack to commemorate the day! And of course, make sure you know how to join a Kahoot game before we kick off!

**What's needed to participate?** All you'll need is a device with access to the Kahoot website or app and internet access of course.

**When will the game take place?** At approximately 1 pm Central Time.

**How long will the game last?** About 10 minutes.

**How many people can play?** The first 400 people can join the game!



### Did you know?

A totally eclipsed Sun is about as bright as a full Moon, which is about 400,000 times less bright than a non-eclipsed Sun.

## Prizes!!

To the winner go the spoils! We'll send the top three participants a special pack of Solar Day swag! Just email a screenshot of your final game status to [solarday24@burtonacademy.org](mailto:solarday24@burtonacademy.org)!



# SOLAR DAY FAIR INFO

If you haven't yet made your solar day viewing plans, you won't want to miss the best party in town! As a celebration of the events of the day, Burton Academy is hosting a **FREE** Solar Day Fair featuring fair foods, education, games, fun (bounce houses and dunking booth) and interactive experiences! All guests will also receive a complimentary pair of limited edition Burton Academy solar viewing glasses. Space is limited so don't delay in securing your tickets today! Fair goers are encouraged to bring lawn chairs to set up on Perryman Field (our group viewing area), and then purchase tickets for food and activities to enjoy as we watch the solar eclipse head towards totality at 1:40 pm local time! Don't want to miss the livestream? Don't worry. You'll get to enjoy and interact from designated viewing areas on campus.

**GET FREE TICKETS NOW**



Woohoo!  
Party time!

## FAIR HIGHLIGHTS

- Tickets Required
- A Whole Family Event
- Food, Education, Games, Fun!
- Bounce Houses
- Solar Telescopes & Viewers
- Solar Viewing Glasses



**Event Time:** 10:30 am - 2:00 pm

**Event Info:** While tickets are free, we encourage guests to bring money to exchange for fair tickets to enjoy games, food, and activities!

**Check-in Process:** Guests will be required to show their EventBrite ticket QR code and will receive event wrist bands verifying their ticketing status.

## Did you know?

The Antikythera mechanism, built over 2,000 years ago and discovered in a Greek shipwreck, could predict eclipses.

4611 Kelly Elliott Rd.  
Arlington, TX 76017

[www.BurtonAcademy.org/eclipse24](http://www.BurtonAcademy.org/eclipse24)

# ECLIPSE OVERVIEW

Who will be able to see the eclipse and where will it be visible? In fact, the entire contiguous US will be able to see the eclipse on April 8, **but only people inside the narrow band outlined in yellow on the map below will be able to experience totality**, where day turns to night!



MAP SHOWING THE 25 MOST POPULOUS CITIES IN THE PATH OF TOTALITY FOR THE APRIL 8, 2024 ECLIPSE, WITH THEIR ESTIMATED POPULATIONS. CREDIT TO MICHAEL ZEILER, [GREATAMERICANECLIPSE.COM](http://GREATAMERICANECLIPSE.COM).

**How many total people live in the path of totality?** As you might have guessed, it's a whole lot of people! In fact, it's estimated that nearly 32,000,000 people live in the path of totality!

**Did you know?**

The last total solar eclipse in the DFW area happened on July 29, 1878! That will make it 146 years between total solar eclipses for DFW, way less than the average! ([NASA.com](http://NASA.com))



# ECLIPSE OVERVIEW

**When will we get to experience totality and for how long?** It's really incredible how quickly the eclipse moves across the landscape! In fact, from the time the eclipse enters Texas, it will span the entirety of the contiguous 48 states in just over 1 hour! In Arlington, TX we will experience totality for 3 minutes and 23 seconds.



MAP SHOWING THE APPROXIMATE TIMES WHEN TOTALITY WILL BE EXPERIENCED ACROSS THE UNITED STATES.  
CREDIT TO MICHAEL ZEILER, [GREATAMERICANECLIPSE.COM](http://GREATAMERICANECLIPSE.COM).

**Did you know?**  
The path of the 2024 eclipse will cross over four state capitals.

**Be ready or you'll be sorry!** While the map above indicates an approximate viewing time of 1:35 pm in the DFW metroplex, we will begin to experience totality at 1:40 pm. So, let's go with the 1:35 pm time so we are sure not to miss out!



# ECLIPSE SCIENCE

**What is a total solar eclipse?** A total solar eclipse occurs when the Moon passes between the Sun and Earth, fully blocking the Sun's light and creating temporary darkness on Earth. This happens when the Sun, Moon, and Earth are in a direct line. The sky becomes very dark, similar to nighttime, and the Sun's outer atmosphere, corona, becomes visible.

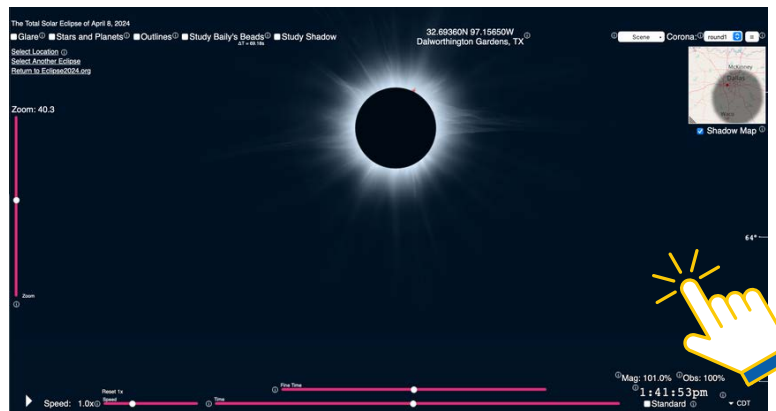
## Did you know?

Compared to the 2017 eclipse, the 2024 eclipse has a duration of totality that's about 68 percent longer and a path of totality that's about 76 percent wider at its widest point.

**What makes this eclipse so special and exciting?** Not only will this eclipse be visible for a whole lot of people, but it is also visible for longer than many! There are numerous factors that can impact the length of a total solar eclipse, but primarily it is the distance the moon is from the earth that impacts the length the most. In fact, the April 8 total solar eclipse will offer nearly twice as long of a viewing opportunity as the last one in 2017!



**Importance and rarity.** A total solar eclipse is an infrequent occurrence, making it an exciting and highly anticipated event for those who can see it. While there will be other total eclipses in other parts of the world and North America, the DFW area will not experience another total eclipse for more than 175 years. This is truly a once-in-a-lifetime event!



**What will the eclipse look like from Burton's campus?** To get an idea, try out the eclipse simulator built by [eclipse2024.org](http://eclipse2024.org)!

So much to learn about eclipses!  
Let's study together!



# ECLIPSE SCIENCE

What's the difference between a **partial, annular, and total solar eclipse**? That's a great question we'd love to dive into! A **partial solar eclipse** happens when the Moon, Sun, and Earth aren't in perfect *syzygy* (alignment). The Moon's disk covers only a portion of the Sun as seen from Earth. Observers within the path of the Moon's shadow fall into the penumbra - an area of partial sunlight blockage. Only a percentage of the Sun's light is obscured.

An **annular solar eclipse** takes place when the Earth, Moon and Sun are in perfect alignment, but at a point where the Moon is further away from the Earth causing the Moon's disk to not be able to block the entirety of the Sun's light resulting in the famous "ring of fire" experience!

A **total solar eclipse** takes place when the Moon, Sun, and Earth align precisely. The Moon is also close enough to Earth and appears large enough to cover the Sun's photosphere (bright surface) entirely. The Path of Totality is where the Moon's umbra (the darkest part of the shadow) intersects Earth's surface. Day temporarily turns into night within this path. This unique viewing opportunity allows observation of the Sun's outer atmosphere, the corona, creating a magnificent and awe-inspiring sight.

## Did you know?

It will take nearly 1,000 years for every location in the contiguous United States to be able to see a total solar eclipse. (NASA.com)

## Annular Eclipse



## Total Eclipse

## Partial Eclipses



**Importance and rarity.** A total solar eclipse is an infrequent occurrence, making it an exciting and highly anticipated event for those who can see it. While there will be other total eclipses in other parts of the world and North America, the DFW area will not experience another total eclipse for more than 175 years. This is truly a once-in-a-lifetime event! [Check out this simulation from NASA](#) to see just why total eclipses are so rare!

Still studying!



# ECLIPSE PREPARATION

## Eclipse Safety

**How can we make sure we don't damage our eyes looking at the Sun?** In short, having proper solar viewing glasses with appropriate ratings is the goal! If you're attending a local fair, chances are (including Burton) you'll be offered a complimentary pair of solar viewing glasses! Otherwise, you'll want to follow the guidance shared here by the American Astronomical Society on all things eclipse safety, including proper ISO ratings (ISO 12312-2) for viewing glasses and more! Here are some tips to remember:

- Never look directly at the Sun without proper eye protection
- Never look at the Sun through the optical viewfinder of a camera, instead use the digital screen of a DSLR or cell phone
- Even when using proper eye protection, following the guidance printed on your solar viewing glasses, such as not looking at the Sun for longer than 3 minutes even while wearing approved solar viewing glasses

Viewing an eclipse is not worth the risk of permanent eye damage if it isn't done properly! Don't risk it! Make sure you are prepared to view the total eclipse on April 8, 2024 by securing proper equipment ahead of time as vendors will sell out!

## Eye Protection



**The easiest way to get free solar viewing glasses is to attend the solar fair at Burton Academy!** Remember, tickets are required to attend! Secure your tickets now before the event is sold out. Best part is, it's totally free to attend!

**GET FREE TICKETS NOW**



**Can't make it to a local solar fair?** Buy your glasses early, as many vendors will run out as we approach April 8!

No foolin  
around when it  
comes to safety!



## Did you know?

Even during a 99 percent partial solar eclipse, the Sun is still 10,000 times brighter than during totality.

**TOTALY LARIFIC**  
APRIL 8, 2024

# ECLIPSE PREPARATION

## Viewing Locations

**Can't make it to Burton's Solar Day Fair?** Don't worry, there are other great options to consider. For starters, Southwestern Adventist University in Keene, TX is hosting a special event/viewing party at their Thomsen Observatory. In fact, if you plan to attend, you can get all of the details on their Facebook Event page here, but they plan to offer free solar viewing glasses (while supplies last), free parking and access to various food vendors onsite, along with solar telescopes for up-close eclipse viewing!

**Can't make it to Burton or SWAU for our solar viewing parties?** Check out this comprehensive list of Texas cities and towns with eclipse timing and eclipse length info as well. Or, simply step outside from nearly any location in the DFW area, as most of the motroplex will experience totality.

### Thomsen Observatory Introductory Video



**Thomsen Observatory**  
425 Linden St, Keene, TX 76059



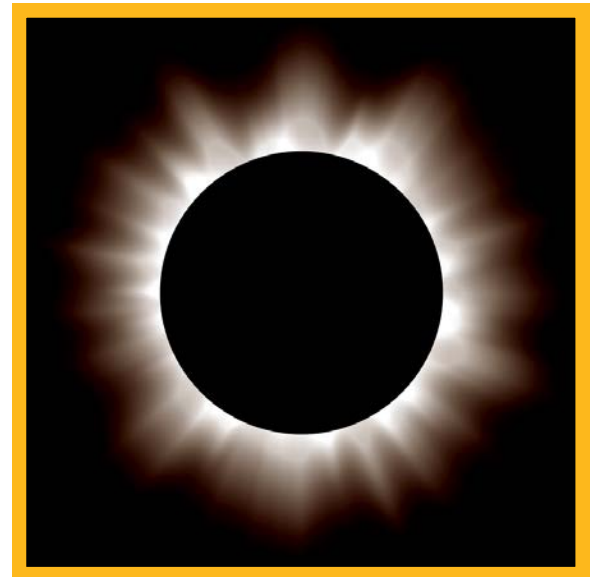
**Did you know?**  
The Thomsen Observatory hosts star parties every first and third Fridays of the month, which all are welcome to join!

# ECLIPSE PHOTOGRAPHY

**How can I safely and effectively photograph the eclipse?** That's a great question we'd love to help with! Not only do you have to care about safety, but of course, having a sufficient camera to capture quality images is the goal! But what exactly do you need? Let's dive in!

Just like when viewing the sun with your eyes (directly or during the partial eclipse phase), when viewing with a camera, your camera needs a protective lens/filter. If attending our on-site fair at Burton, we've got you covered as we'll have at least 6 fully equipped solar viewing telescopes available for use along with cell phone filters. However, if you can't make it out to our fair, you'll want to explore an adequate solar filter for your cell phone like one of these, or for those of you photography enthusiasts, a solar filter that can be fitted to your camera like one of these. **It's important to note, however, that when viewing/photographing during totality, you won't want or need a filter.**

And, don't forget a quality tripod for catching a stable/clear shot!



**Want to dig in deeper and learn more about solar photography?** Here are a few of our favorite resources that can help with that!

- [AstroBackyard's Youtube Guide](#)
- [American Astronomical Society's Comprehensive Photography Guide](#)

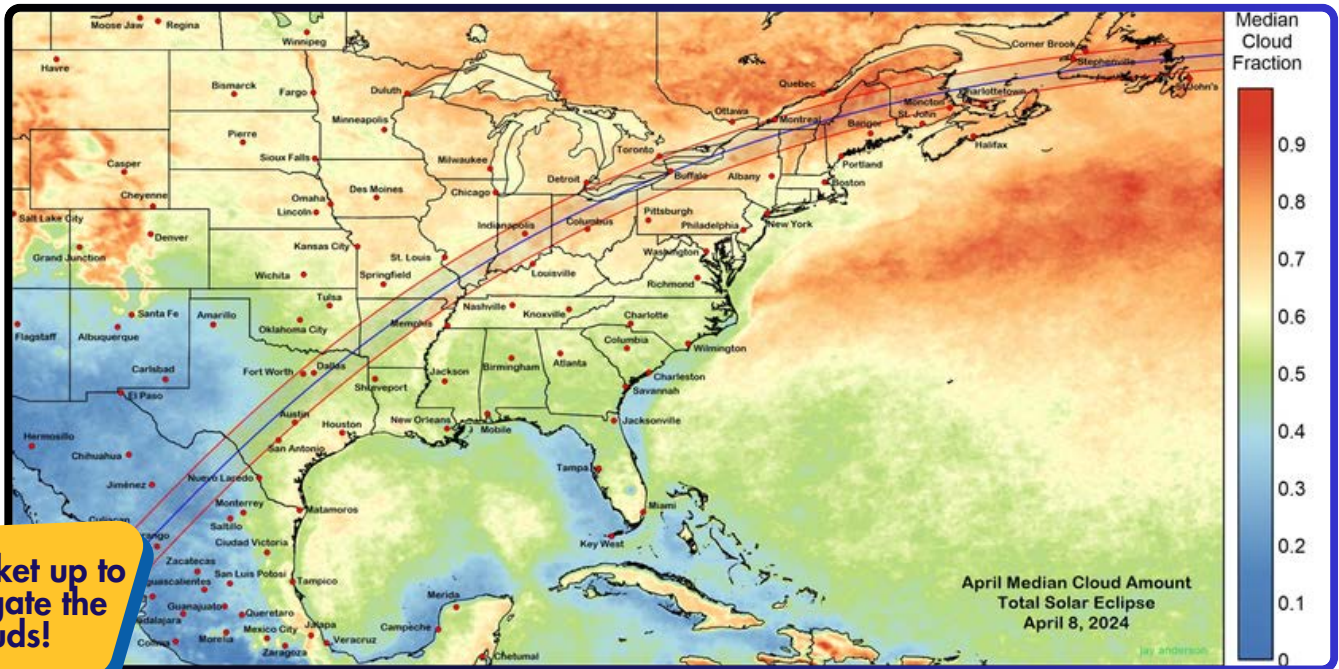
**How much zoom do I need?** While this is covered in the resources above, it is generally advised to have a 400-600 mm zoom lens to get that perfect shot!

## Did you know?

It's been estimated that only about one in every 10,000 people will see a total solar eclipse in their lifetime.

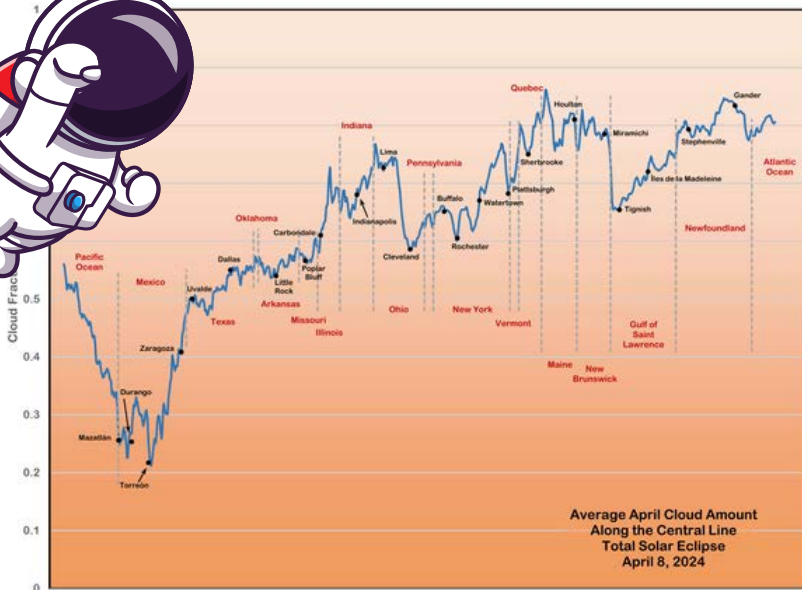
# ECLIPSE WEATHER

**Will eclipse day weather be good for viewing the eclipse?** While we can't predict the weather very far in advance of the event, we can look at history. When we do, we learn that Texas is a great place to plan to view the eclipse from! In fact, the DFW area has roughly a 50% chance of being cloud free on eclipse day! The further north and east you go, the higher the chance of clouds.



AVERAGE APRIL (2000-2020) CLOUD COVER MEASURED FROM THE AQUA SPACECRAFT AT APPROXIMATELY 1330 LOCAL TIME FROM 2000 TO 2020. DATA: NASA. ECLIPSE TRACK: FRED ESPENAK. CREDIT: JAY ANDERSON AND [WWW.ECLIPSOPHILE.COM](http://WWW.ECLIPSOPHILE.COM).

Let's rocket up to investigate the clouds!



CREDIT: JAY ANDERSON AND [WWW.ECLIPSOPHILE.COM](http://WWW.ECLIPSOPHILE.COM)

**Can I see that in graph form please?** Of course! You'll notice that other than Mexico, viewing areas in Texas have the highest likelihood of being cloud-free on April 8!

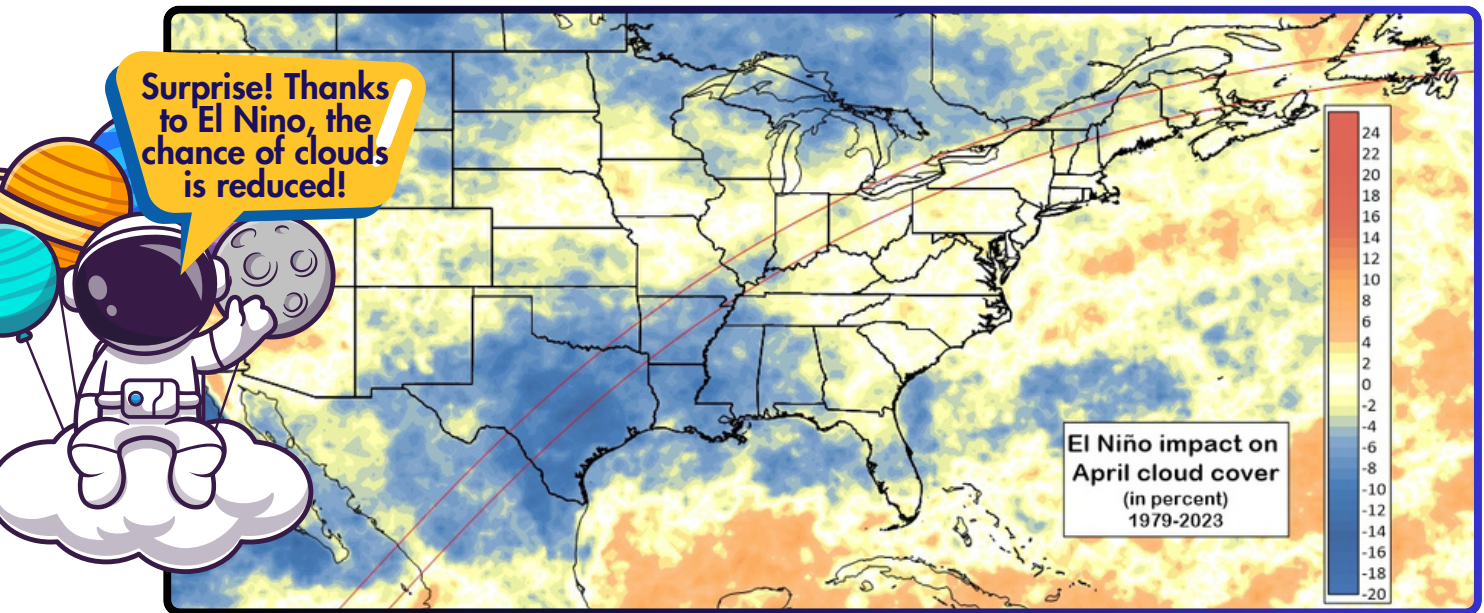
**Did you know?**

Texas boasts the longest duration of totality in the US on April 8 at 4 min. & 26 seconds.

([space.com](http://space.com))

# ECLIPSE WEATHER

**How does El Nino impact cloud cover?** When we think about El Nino, which brings warmer water towards the Americas resulting in generally wetter weather patterns, we'd be inclined to think that an increase in clouds is sure to accompany. While this is an El Nino year, it is interesting to note that the historical data (as shared below) indicates the opposite as it relates to April cloud cover over Texas.



MAP SHOWING THE IMPACT OF EL NIÑO ON APRIL CLOUD COVER ALONG THE ECLIPSE TRACK. BLUE TONES INDICATE A LOWER AMOUNT OF CLOUD; WHITE AND PALE YELLOW SHOW AREAS OF LITTLE CHANGE, AND ORANGE AREAS SHOW INCREASES IN CLOUD COVER. DATA: NASA. CREDIT: JAY ANDERSON AND WWW.ECLIPSOPHILE.COM

**Want to get a preliminary, reliable forecast?** Be sure to tune in for a full forecast Sunday evening, April 7 @ 6 pm for our resident weatherman, Reggie Herman's, authoritative solar day weather forecast!

## Did you know?

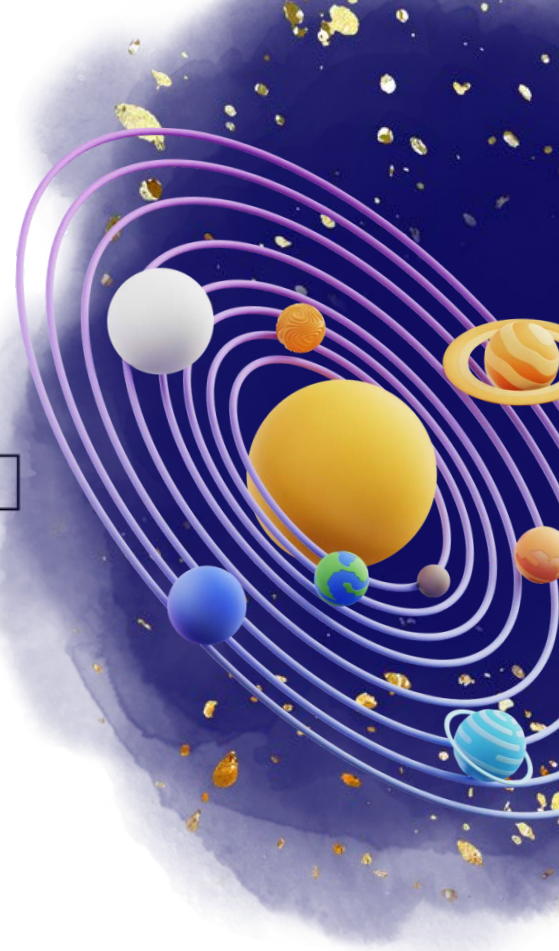
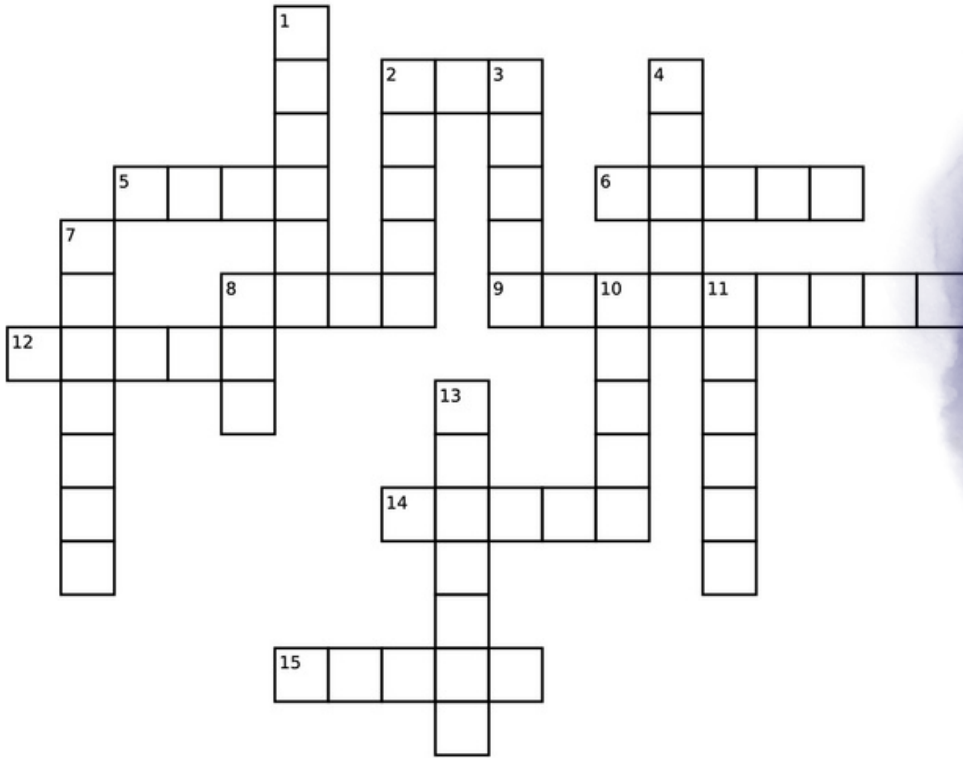
Any location on earth will experience a total solar eclipse about once every 375 years on average. ([space.com](http://space.com))

*"You are worthy, O Lord, to receive glory and honor and power; For You created all things, And by Your will they exist and were created."*

Revelation 4:11

# INTERSTELLAR CROSSWORDS

## SOLAR SYSTEM LEVEL- BEGINNER



### Down:

1. A large, round object in space, like Mars or Jupiter (6 letters)
2. Related to the Sun (5 letters)
3. The time when the Sun isn't shining (5 letters)
4. The vast place where stars and planets exist (5 letters)
7. When the Sun or Moon is covered by a shadow (7 letters)
8. What we see when we look up during the day (3 letters)
10. The opposite of dark (5 letters)
11. A dark shape made by something getting in the way of light (6 letters)
13. The type of eclipse when only part of the sun is blocked by the moon (7 letters)

### Across:

2. A giant ball of hot gas that gives us light (3 letters)
5. Earth's natural satellite (4 letters)
6. The planet we live on (5 letters)
8. A twinkling ball of light in the night sky (4 letters)
9. A tool to see faraway objects in space (9 letters)
12. To get in the way of something (5 letters)
14. The path one object takes around another (5 letters)
15. The type of eclipse where the Earth blocks the sunlight from the moon (5 letters)

Let's see who our crossword heroes are!

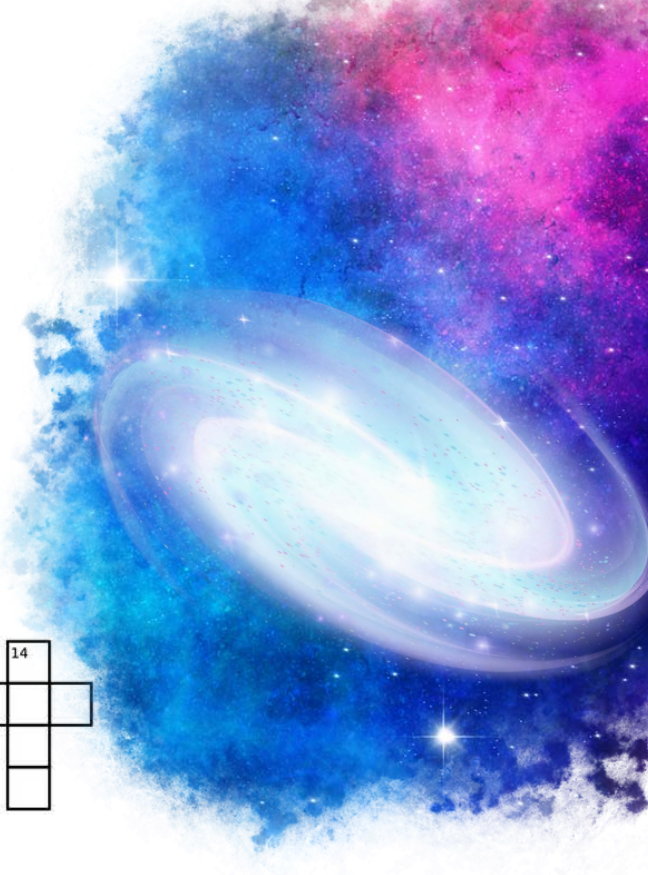
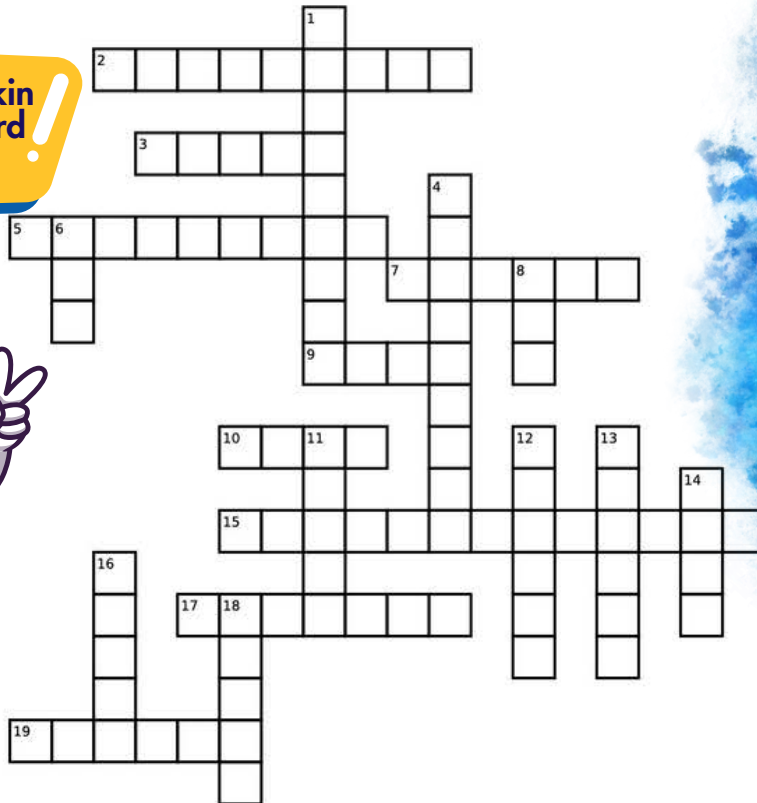
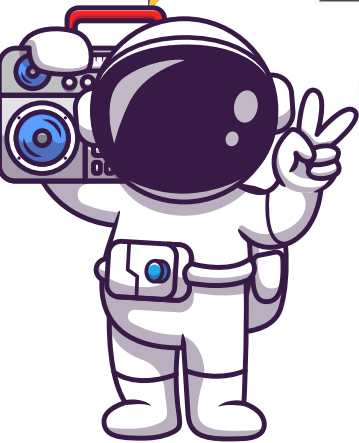




# INTERSTELLAR CROSSWORDS

## GALAXY LEVEL- INTERMEDIATE

Keep on rockin'  
the crossword  
puzzles!



### Down:

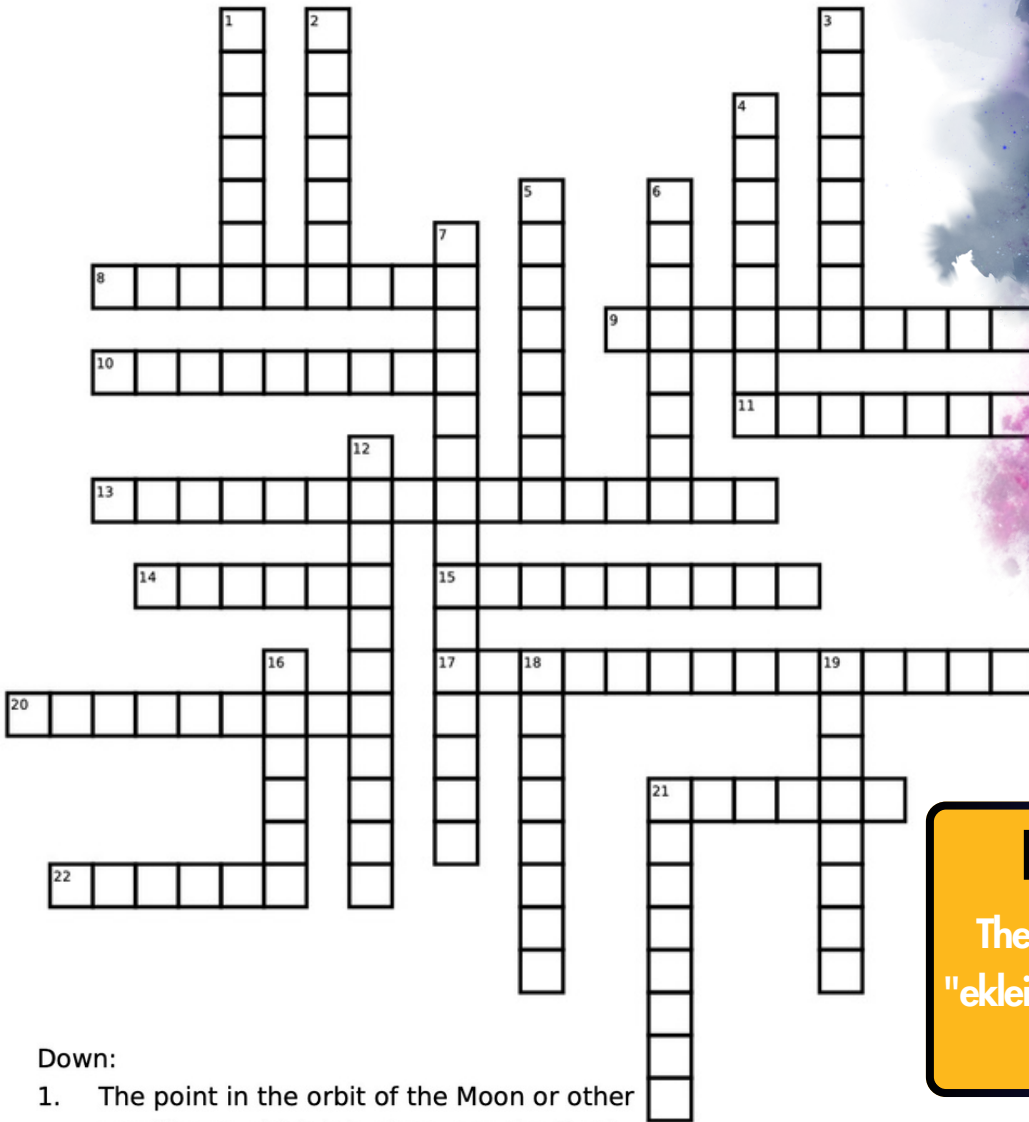
1. The closest galaxy to our own
4. A device used to observe distant objects in space.
6. The closest star to Earth.
8. The phase of the moon when it is completely dark.
11. the type of eclipse when the Earth passes between the Sun and the Moon
12. A group of billions of stars, gas, and dust held together by gravity.
13. A planet known for its beautiful rings.
14. The natural satellite of Earth.
16. A small body made of ice, dust, and rock that orbits the sun, often having a "tail"
18. The darkest part of a shadow during an eclipse.

### Across:

2. A powerful explosion of a star that can briefly outshine its entire galaxy
3. A type of eclipse where the moon covers the sun.
5. The study of celestial bodies.
7. A large and spherical body that orbits a star.
9. The imaginary line around which Earth rotates.
10. The phase of the moon when it is fully illuminated.
15. A group of stars forming a recognizable pattern.
17. The phase of the moon when only half is visible from Earth.
19. A streak of light in the sky caused by a meteoroid burning up in the atmosphere

# INTERSTELLAR CROSSWORDS

## UNIVERSE LEVEL- DIFFICULT



Down:

1. The point in the orbit of the Moon or other satellite at which it is closest to the Earth.
2. A type of solar eclipse where the Moon is too far from Earth to completely cover the Sun's disk, leaving a bright ring of the Sun visible.
3. Lens at the end of a telescope for image enlargement.

Across:

8. A piece of a meteoroid that reaches the Earth's surface.
9. The point in the orbit of a planet or other body where it is closest to the Sun.
10. An object with a gravitational pull so strong that not even light can escape.
11. The time when the Sun crosses the celestial equator, resulting in equal hours of day and night.

Keep it up! If you finish this one, you're a real star!



### Did you know?

The word "eclipse" comes from "ekleipsis," the Ancient Greek word for abandonment.

# INTERSTELLAR CROSSWORDS

## Universe Level- Difficult

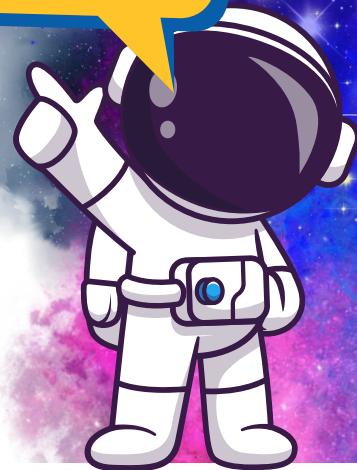
Down:

4. The time when the Sun reaches its highest or lowest point in the sky at noon.
5. The outer part of a shadow during an eclipse, where the shadow is not fully dark.
6. The point in a planet's orbit farthest from the Sun
7. An imaginary sphere around Earth onto which all celestial objects seem to be projected
12. The Sun and all the objects that orbit it, including planets, moons, asteroids, comets, and dust.
16. The Sun's outer atmosphere, a faint wispy halo visible during totality.
18. The brief period during a total solar eclipse when the Moon completely covers the Sun's disk.
19. Small, rocky bodies that orbit the Sun, mostly found in the Asteroid Belt
21. Apparent change in position of objects viewed from different locations.

*"By faith we understand that the worlds were framed by the word of God, so that the things which are seen were not made of things which are invisible."*

Hebrews 11:3

Shoutout to all our crossword gurus who finished all three puzzles!



Across:

13. Average distance between the Earth and the Sun (about 93 million miles or 150 million km).
14. A cloud of gas and dust in space.
15. The distance light travels in one year (about 5.9 trillion miles or 9.5 trillion km).
17. The narrow strip on Earth's surface where a total solar eclipse is visible.
20. The scientific study of the origin, evolution, and eventual fate of the universe.
21. A unit of distance in astronomy, equal to about 3.26 light-years.
22. Colored lights in the sky caused by charged particles from the Sun interacting with Earth's atmosphere.

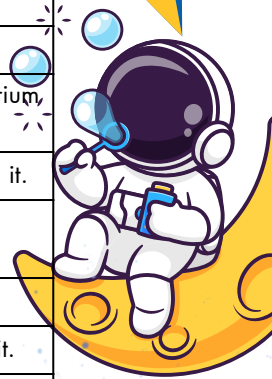
## Did you know?

The temperature can drop 20 degrees or more during a total solar eclipse.

# GLOSSARY OF TERMS

| Term                          | Definition  |
|-------------------------------|---|
| <b>Absolute Magnitude</b>     | The brightness that a star would have if it were viewed from a standard distance of 10 parsecs (about 32.6 light-years).  |
| <b>Aphelion</b>               | The point in the orbit of a planet, asteroid, or comet that is farthest from the Sun.                                     |
| <b>Apparent Magnitude</b>     | The brightness of a celestial object as it appears from Earth.  |
| <b>Asteroid</b>               | A small rocky body orbiting the Sun, found mostly between the orbits of Mars and Jupiter.                                 |
| <b>Astrobiology</b>           | The study of the origin, evolution, and distribution of life in the universe.   |
| <b>Astrophysics</b>           | The branch of astronomy that deals with the physics of celestial bodies and the universe as a whole.                      |
| <b>Blackbody Radiation</b>    | The type of electromagnetic radiation within or surrounding a body in thermodynamic equilibrium, with its environment.    |
| <b>Black Hole</b>             | A region of spacetime where gravity is so strong that nothing, not even light, can escape from it.                        |
| <b>Celestial Sphere</b>       | An imaginary sphere of infinite radius surrounding the Earth, to which the stars and celestial bodies appear to be fixed. |
| <b>Cepheid Variable</b>       | A type of star that pulsates radially, varying in both diameter and temperature.  |
| <b>Comet</b>                  | A small celestial body composed of ice, dust, and gas that orbits the Sun in an elongated orbit.                          |
| <b>Constellation</b>          | A group of stars forming a recognizable pattern, traditionally named after mythological figures or animals.               |
| <b>Cosmos</b>                 | The universe seen as a well-ordered whole.  |
| <b>Dark Energy</b>            | A hypothetical form of energy that is thought to permeate all of space and accelerate the expansion of the universe.      |
| <b>Dark Matter</b>            | A hypothetical form of matter that is thought to account for approximately 85% of the matter in the universe.             |
| <b>Eclipse</b>                | The partial or total obscuring of one celestial body by another.  |
| <b>Ecliptic</b>               | The apparent path of the Sun across the celestial sphere, along which the ecliptic plane lies.                            |
| <b>Exoplanet</b>              | A planet that orbits a star outside the solar system.   |
| <b>Galactic Center</b>        | The rotational center of the Milky Way galaxy, believed to contain a supermassive black hole.                             |
| <b>Galactic Collision</b>     | An astronomical event where two galaxies collide due to gravitational forces.   |
| <b>Galaxy</b>                 | A vast system of stars, gas, dust, and dark matter held together by gravitational forces.                                 |
| <b>Gravitational Lensing</b>  | The bending of light rays by the gravitational field of massive objects, which can act as lenses in space.                |
| <b>Hubble Space Telescope</b> | A space telescope that has provided some of the most detailed images of distant galaxies and deep space objects.          |

No lolly-gagging!  
Time to study up for  
the livestream game!



# GLOSSARY OF TERMS

| Term                     | Definition  |
|--------------------------|---|
| <b>Lunar Eclipse</b>     | An astronomical event that occurs when the Earth is between the Sun and the Moon, casting its shadow on the Moon.                                       |
| <b>Milky Way</b>         | The galaxy that contains our solar system.  |
| <b>Meteor</b>            | A small particle from outer space that enters Earth's atmosphere, commonly known as a shooting star when visible.                                       |
| <b>Meteorite</b>         | A meteoroid that survives its passage through the Earth's atmosphere and lands on the Earth's surface.  |
| <b>Moon</b>              | A natural satellite that orbits a planet.   |
| <b>Nebula</b>            | A cloud of dust and gas in space, where new stars are born.   |
| <b>Neutron Star</b>      | A collapsed core of a massive star that has undergone a supernova explosion.  |
| <b>Nucleosynthesis</b>   | The process that creates new atomic nuclei from pre-existing nucleons, primarily occurring in stars.  |
| <b>Orbit</b>             | The path followed by an object as it travels around another object in space, under the influence of gravity.  |
| <b>Parallax</b>          | The apparent shift in the position of an object when viewed from different angles.  |
| <b>Planet</b>            | A large celestial body that orbits a star, shines by reflected light, and has a spherical shape.  |
| <b>Pulsar</b>            | A highly magnetized rotating neutron star that emits beams of electromagnetic radiation.  |
| <b>Quasar</b>            | A celestial object that emits an exceptionally large amount of energy, believed to be powered by a supermassive black hole.                             |
| <b>Red Giant</b>         | A large, relatively cool star of luminosity class III or II.  |
| <b>Redshift</b>          | The displacement of spectral lines toward longer wavelengths in radiation from distant galaxies and celestial objects, indicating they are moving away. |
| <b>Satellite</b>         | An object that orbits a planet, moon, or other celestial body.  |
| <b>Solar System</b>      | The collection of planets and other celestial bodies that orbit the Sun.  |
| <b>Star</b>              | A luminous celestial body consisting of gas, emitting light and heat.   |
| <b>Stellar Evolution</b> | The process by which a star changes over the course of time.  |
| <b>Sun</b>               | The star at the center of the solar system, around which the Earth and other planets revolve.   |
| <b>Supernova</b>         | A stellar explosion that briefly outshines an entire galaxy, radiating as much energy as the Sun is expected to emit over its entire life span.         |
| <b>Universe</b>          | The entirety of space, time, matter, and energy, including galaxies and cosmic phenomena.   |
| <b>White Dwarf</b>       | A small, very dense, hot star that is the final stage of evolution for low to medium mass stars.  |
| <b>Zenith</b>            | The point in the sky or celestial sphere directly above an observer.  |

Great job preparing! Now it's time to join the livestream!



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# THE GREAT AMERICAN ECLIPSE

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with me space  
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GUIDE PRODUCED BY:  
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