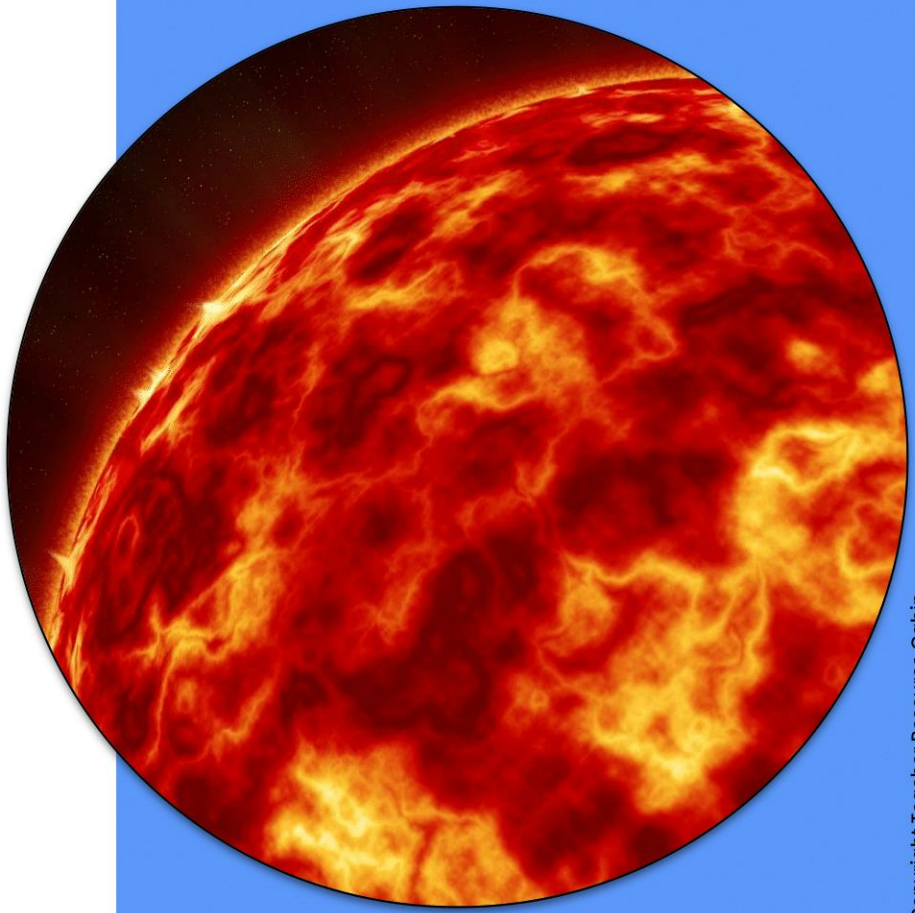
THE SUN

- The Sun is a massive ball of hot gas that gives off light and heat.
- It contains 99.86% of the mass in our Solar System.
- The Sun is so large that 1.3 million Earths could fit inside of it.



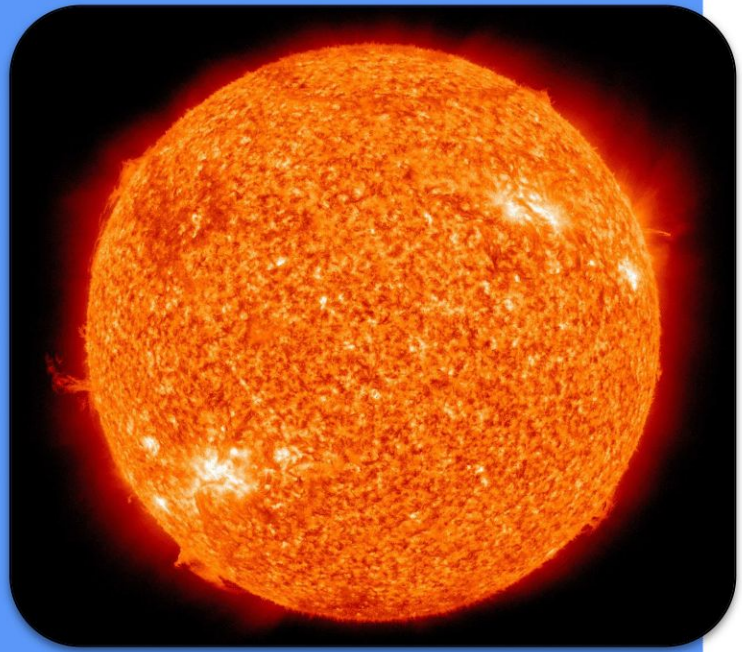
THE SUN

- The Sun is located at the centre of the solar system.
- It is 93 million miles from Earth.
- The eight planets orbit/ rotate around the Sun.

THE SUN

- There are billions of stars in our galaxy.
  - The Sun is one of many stars in our galaxy.
- It is estimated that the entire universe has over 100 billion galaxies.

THE SUN

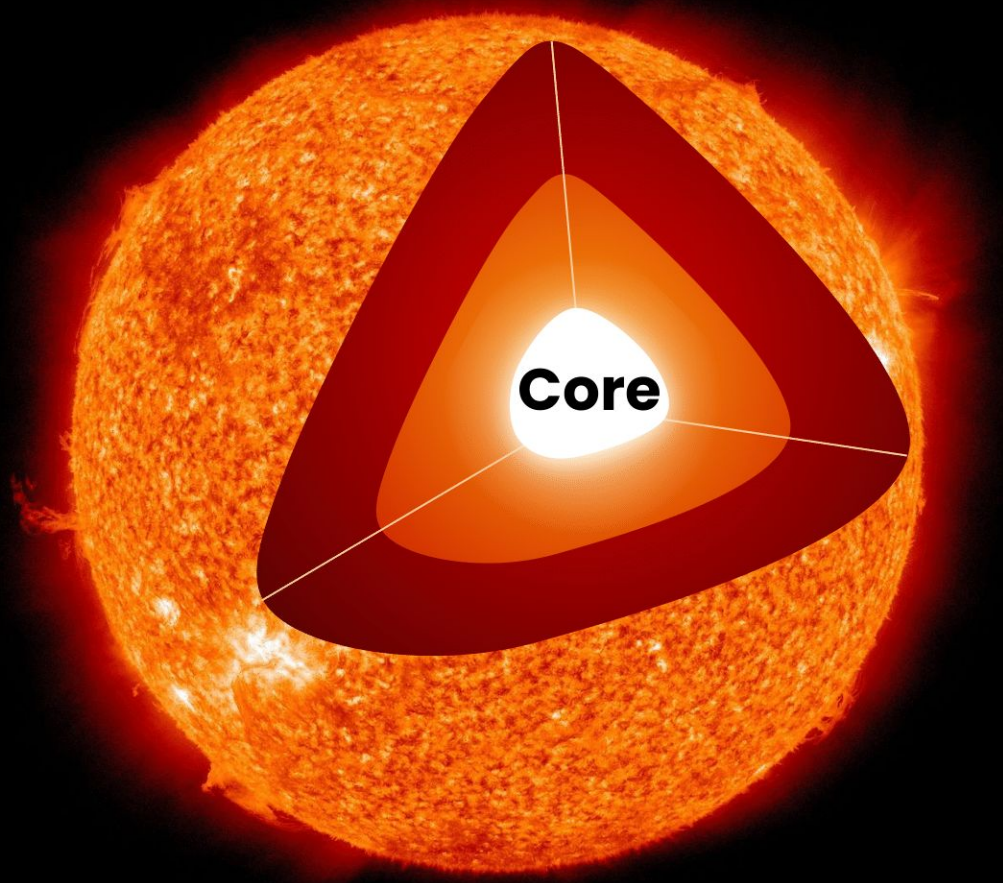


- The Sun is made up of about 70% hydrogen and 27% helium.
- The rest of the Sun is made of smaller quantities of other elements.
- The three main areas of the Sun are the convective zone, the radiative zone, and the core.

THE SUN

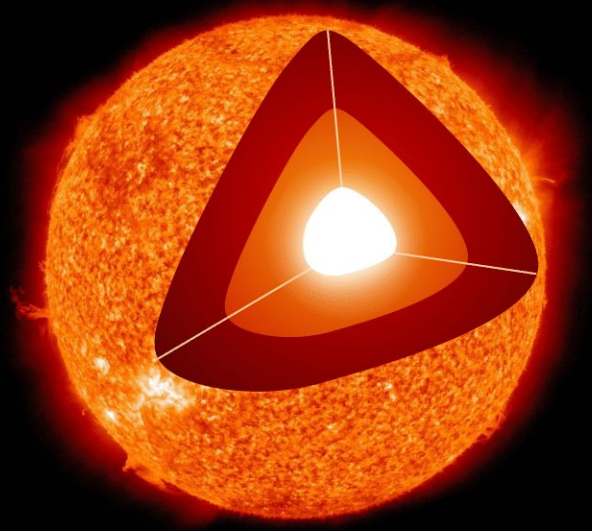
- The core is the **central area** of the Sun.

- All of the Sun's energy is generated in the core through **nuclear fusion**.



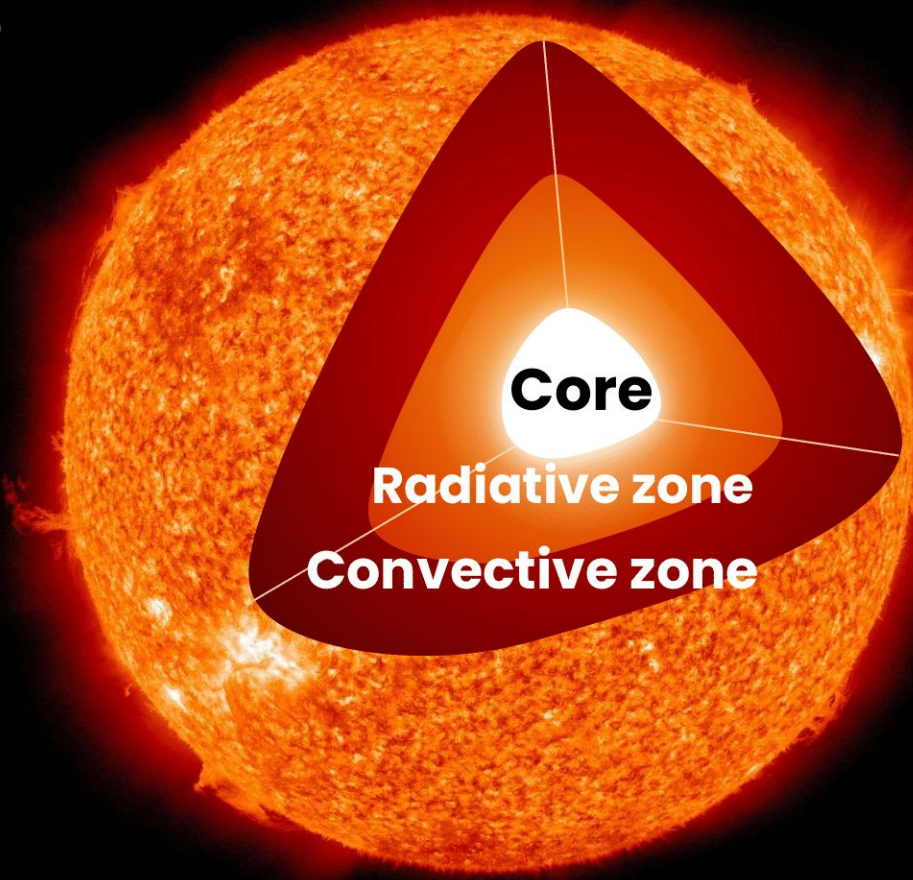
THE SUN

- During nuclear fusion, hydrogen atoms collide violently to form helium.
  - Releases an incredible amount of energy.
  - Released through the photosphere, eventually reaches Earth.
- The ozone layer of the atmosphere absorbs some **ultraviolet radiation**.



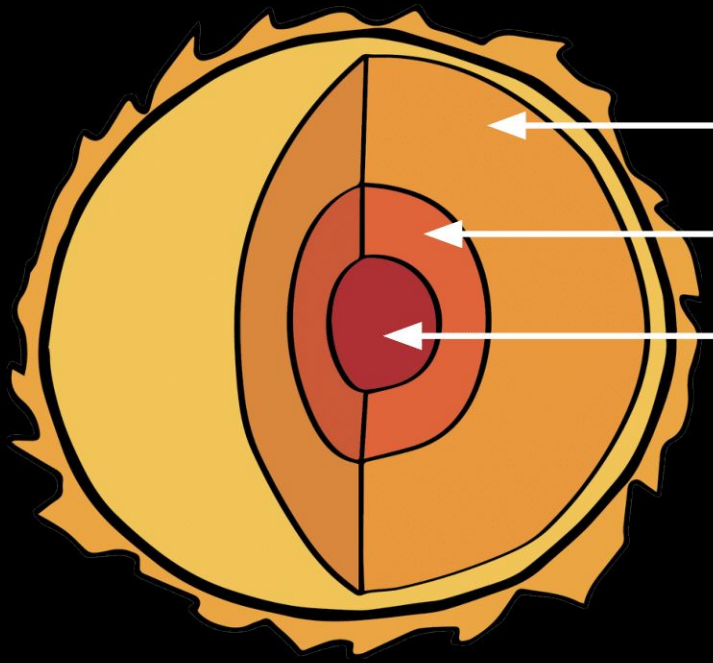
THE SUN

- Surrounding the core is the radiative zone, which transports the Sun's energy through radiation.
- The convective zone is where light energy (photons) is created.



Think about it!

Label each region of the sun.



1.

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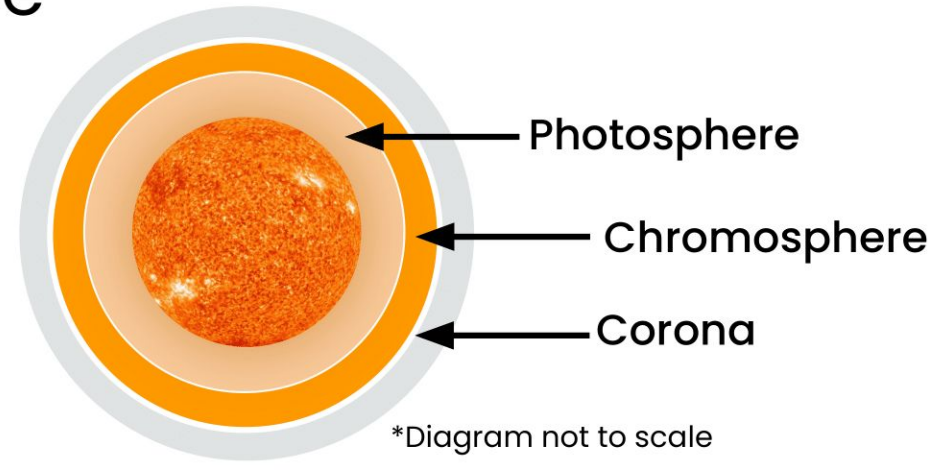
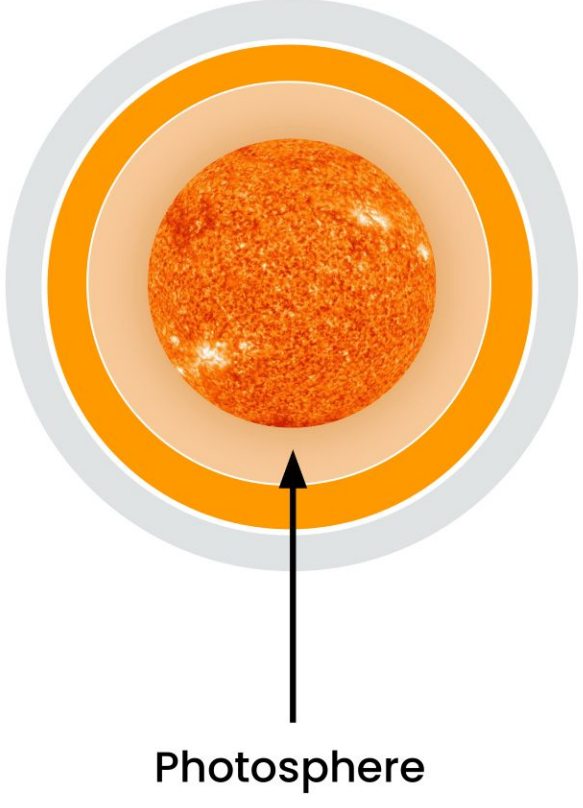
THE SUN'S ATMOSPHERE

- The Sun’s atmosphere contains four parts:
  - Photosphere
  - Chromosphere
  - Transitional zone
  - Corona



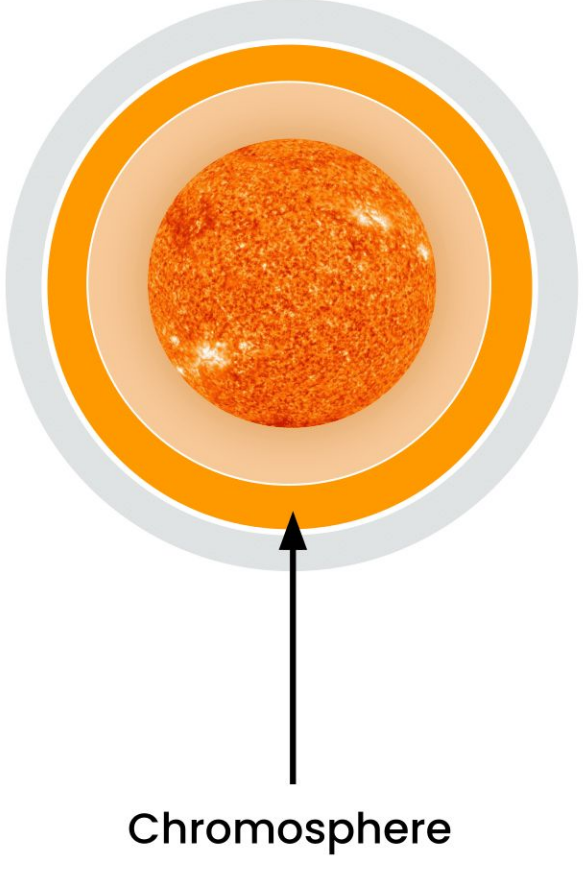
THE SUN'S ATMOSPHERE

- The photosphere is about is where the Sun's atmosphere begins
  - Approximately 6700 Celsius or 11,000 degrees Fahrenheit
  - First layer of the Sun that is visible from Earth
  - Appears white, but dark blotches called sunspots occasionally appear



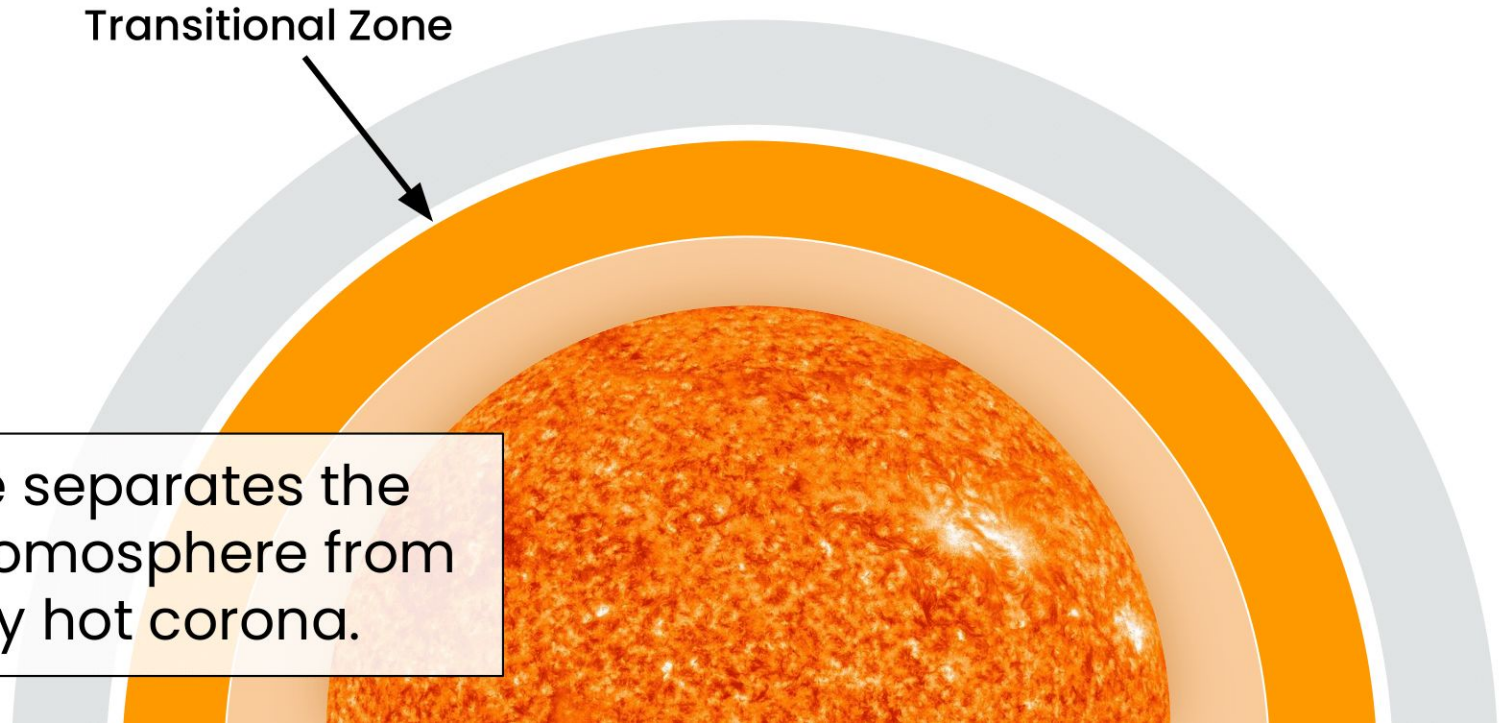
THE SUN'S ATMOSPHERE

- The chromosphere is located above the photosphere.
  - Appears to be red and is
  - approximately four times hotter than the photosphere
  - Has violent eruptions of solar flares.



THE SUN'S ATMOSPHERE

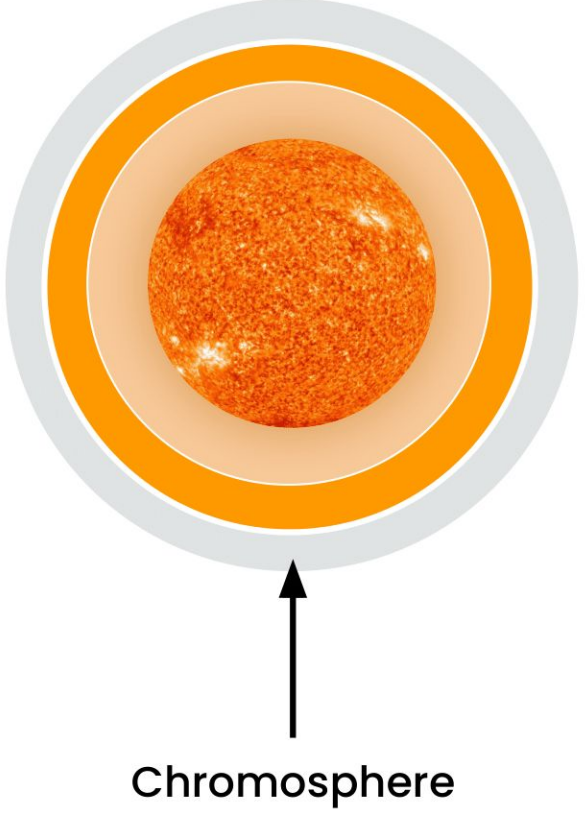
- The transitional zone is between the chromosphere and the highest layer of the Sun called the corona.



This zone separates the cooler chromosphere from the very hot corona.

THE SUN'S ATMOSPHERE

- The corona is an illuminated region following the transitional zone.
  - Silvery in colour
  - Only visible with a special type of telescope called a coronagraph
  - **Significantly hotter** than the surface of the Sun
  - Average temperature of 1 to 2 million degrees Celsius or about 1 800 032 to 3 600 000 degrees Fahrenheit



THE SUN

- Technological innovations allow humans to harness the **Sun's energy as a renewable source** for various applications.
- Photovoltaic (PV) panels concentrate solar radiation.
- Once this energy is harnessed, it can be converted to electrical energy, or stored in a battery.

THE SUN

- The Sun drives **global wind systems.**
  - Source of renewable energy, collected by wind turbines to generate electricity.
- Wind currents, combined with water movement caused by the Sun's heat, create **water currents**.
  - Another source of renewable energy, collected by hydropower stations

THE SUN

- The Sun is also responsible for creating **biomass** (plant-based material).
  - Can be used as fuel to produce heat or electricity
- Examples of biomass materials:
  - Agricultural crop waste
  - Wood scraps

Think about it!

Is it true or false? Click and drag the T/F boxes.

Photovoltaic (PV) panels capture energy from wind.	
The Sun is a star.	
The Sun is the closest star to Earth.	
It takes one day for the Sun's light to reach Earth.	
The Sun is the biggest star in our galaxy.	
The Sun produces energy through nuclear fusion.	
The corona is only visible through a coronagraph.	
The central (middle) area of the Sun is the radiative zone.	
The Sun contains 99.86% of the mass in our Solar System.	

T

F

SUNDIALS

- A sundial is an instrument used to show the time by using the shadow of a pointer cast by the Sun.
- A sundial is the earliest timekeeping device.

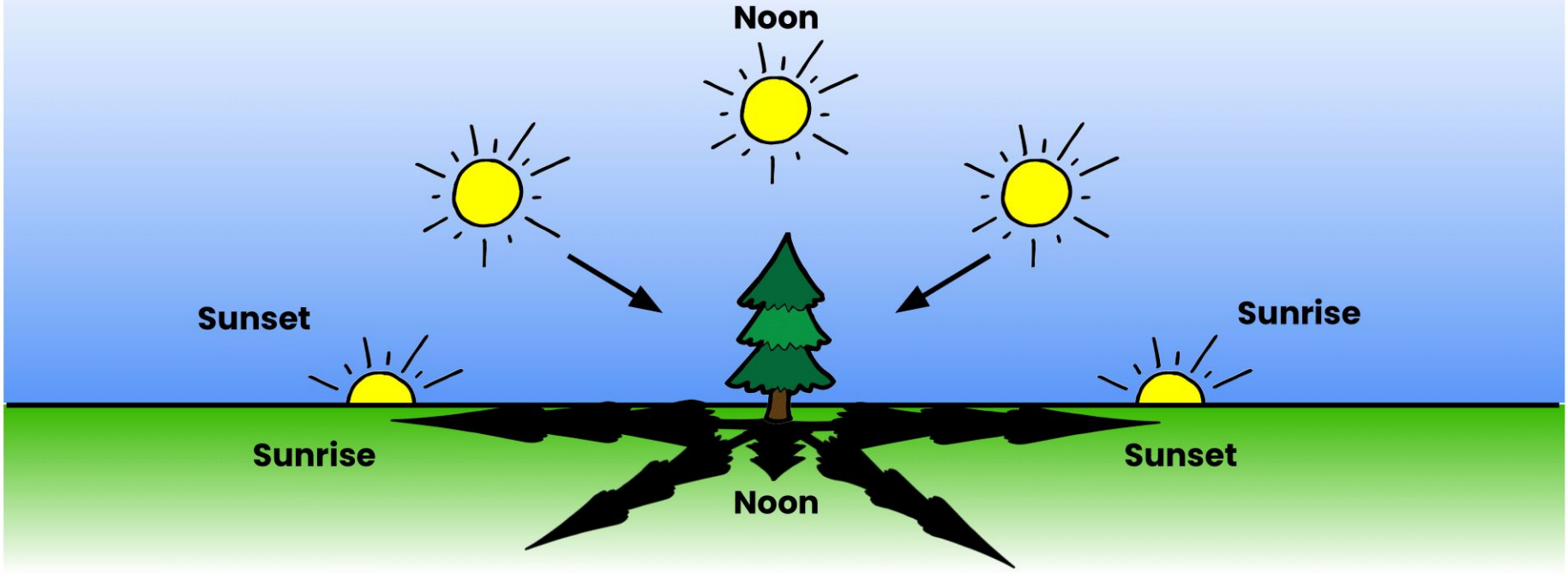
What device(s) have sundials been replaced by?

SUNDIALS

- The Sun rises on the east side of Earth, and it sets on the west.
- As the Sun moves across the sky, the position of the shadow will change.
- The sundial uses the position of a shadow to show the time of day.

SUNDIALS

What does this diagram demonstrate about the movement of the Sun across the sky?



? ? ?

Why do you think a sundial usually starts at 6 AM and ends at 6 PM?

Think about it!

What is a lunar eclipse? Research the topic and record your findings below.

A lunar eclipse is...