

# Sun and Stars Unit

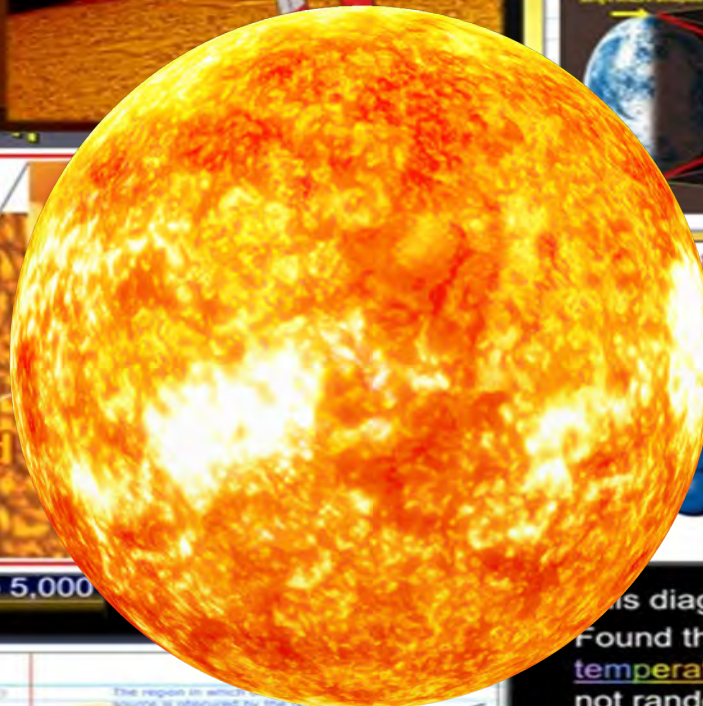
## • Nucleosynthesis

- Process where heavier elements are created inside stars from hydrogen nuclei.

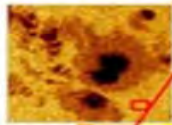


- Solar prominence: The stretching out of gas components to a length that can reach thousands of kilometers on the surface of the sun.

Their causes are uncertain but probably involve magnetic forces.



## Photosphere



Sun Spots

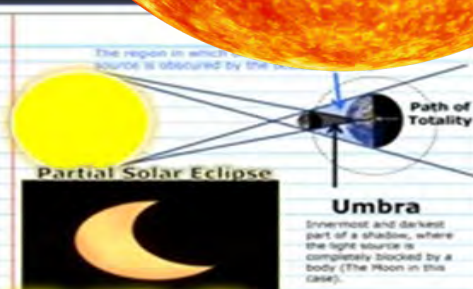
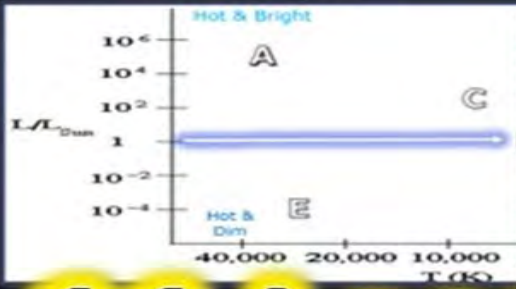
Cool Video (26 seconds) Benard Cells, Convection

Benard

## Chromosphere

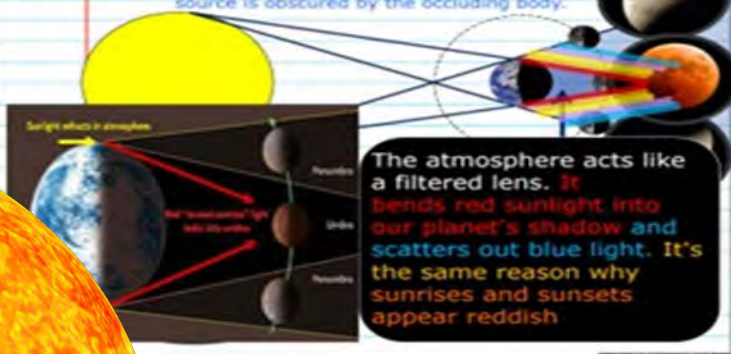
3000 km thick and the temperature (light emitted)

- Plot the Star. Luminosity 1, Temp 5,000
- What color will it be?

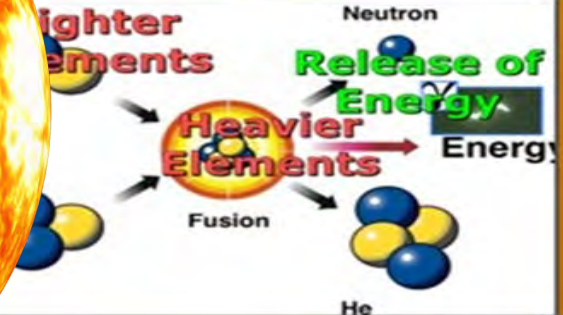


## Penumbra

The region in which only a portion of the light source is obscured by the occluding body.

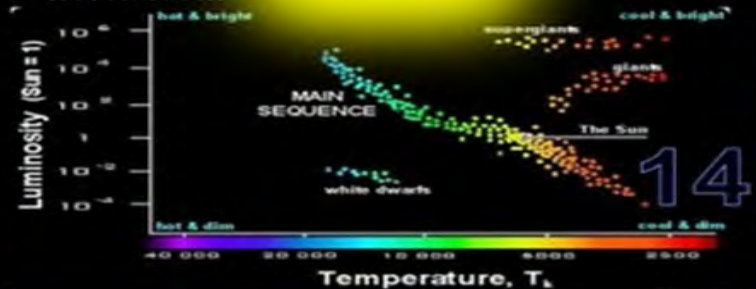


## Lighter Elements



This diagram... **Hertzsprung-Russell (HR)**

Found that the relationship between **temperature** and **luminosity** of a star was not random



# 11 Lessons

14

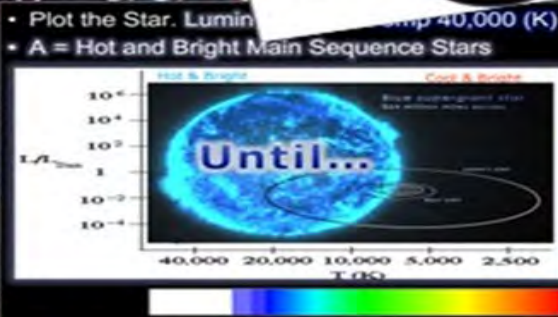


# Interactive Slideshows

## Solar Flares and CME's



- Which is true of the Hertzsprung-Russell Diagram (HR)?
- A.) Tracks the orbits of stars in the galaxy**
- B.) Identifies how far away the stars are from each other.**
- C.) Was critical in the formation of the heliocentric model of our solar system**
- D.) It plotted Luminosity to a stars temperature and found trends**
- E.) This diagram is outdated and no longer used because Hipparchus cataloged the first stars in 129 BC.**

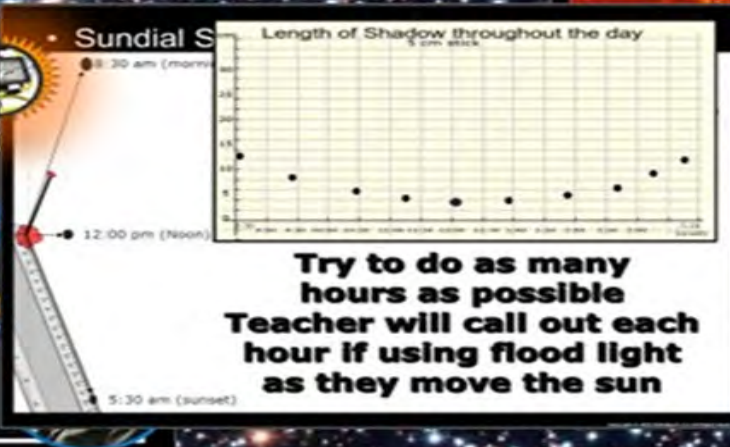


## The Carrington Event, September 1, 1859

- A giant solar storm hit earth disrupting all electronics (telegraph) and lit up the sky.
- If that event happened today the earth would be thrown into chaos without technology.



- The sun changes slowly over time converts Hydrogen into Helium at its core.





# Follow Along Work Bundle

18 Pages



# Activities, Notes, Keys, Assessments, and more all built-in

## • The Hertzprung-Russell Diagram (HR)

- It originated in 1911 when astronomers, Ejnar Hertzsprung and Henry Norris Russell plotted the absolute magnitude of stars against their color.

**Plotted Luminosity to a stars Temperature**



- What are two possible outcomes that can occur to a **Super Massive Star** as it gets close to the end?



- What are the names for these features on the surface of the Sun?



1/50 of a circle  $\rightarrow$  5 000 stadia (~800 km)  
 $\therefore$  1 circle  $\rightarrow$  50 x 5 000 stadia  
 $=$  250 000 stadia (~40 000 km)

$$\frac{7.2^\circ}{360^\circ} = \frac{800 \text{ km}}{X \text{ km}}$$

$$\frac{1}{50^\circ} = \frac{800 \text{ km}}{X \text{ km}}$$

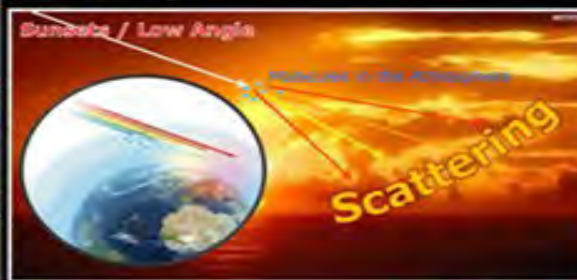
$$X \text{ km} = 50 \times 800$$

$$40,000 \text{ km}$$

Center of the Earth  
**Actual circumference is...**

- The Sun is white.

– It may appear yellow because of atmospheric scattering.



- The brightness of a star as seen from earth is called its **apparent magnitude**.

- Absolute magnitude is the brightness of a star if all stars are seen at the same distance.



Formation begins and gravity causes the nebula to contract. ...

Gravity pulls in the mass of the nebula in, then starts spinning, then the disk forms (planetary solar disk)

Gravitational energy gets converted to thermal energy (heat); gets so hot, then nuclear fusion, then the sun is born.

- The surface temperature of the star determines the color of the star.



A medium-sized, main sequence G2 star located on the spiral arm of the Milky Way, and orbited by all of the planets and other bodies in the Sol System,





Part 2: The Sun, Absolute Magnitude, Apparent Magnitude, Parsec, Stellar Classification / Spectra, Hertzsprung Russell Diagram, Composition of the Sun, Nuclear Synthesis, Layers of the Sun, Solar Flares, Coronal Mass Ejections, Carrington Event, Life Cycle of a Star, Blackhole, Neutron Star, Solar System Formation, Shadows, Sun Dials, Eratosthenes, Graphing Shadow length, Solar Eclipse, Lunar Eclipse, Path of Totality, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

## Part 2: Astronomy Unit



Part 2 Lesson 1 The Sun



Part 2 Lesson 2 HR Diagram



Part 2 Lesson 3 Inside the Sun



Part 2 Lesson 4 Solar Flares



Part 2 Lesson 5 Life Cycle of Stars



Part 2 Lesson 6 Solar System Formation More



Part 2 Lesson 7 Optional Sun Song



Part 2 Lesson 8 Shadows Sun Dials



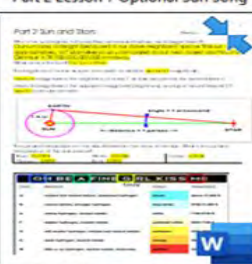
Part 2 Lesson 9 Solar Lunar Eclipse



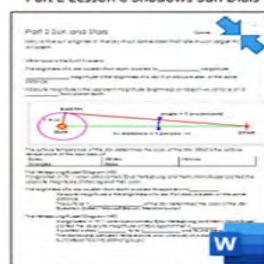
Part 2 Lesson 10 Review Game



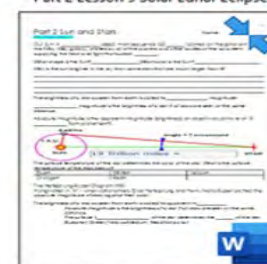
Part 2 Lesson 11 Review Game Answers



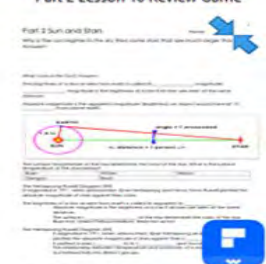
Part 2 Work Bundle Answers



Part 2 Work Bundle Digital



Part 2 Work Bundle Print



Part 2 Work Bundle Writable pdf



# SlideSpark Science



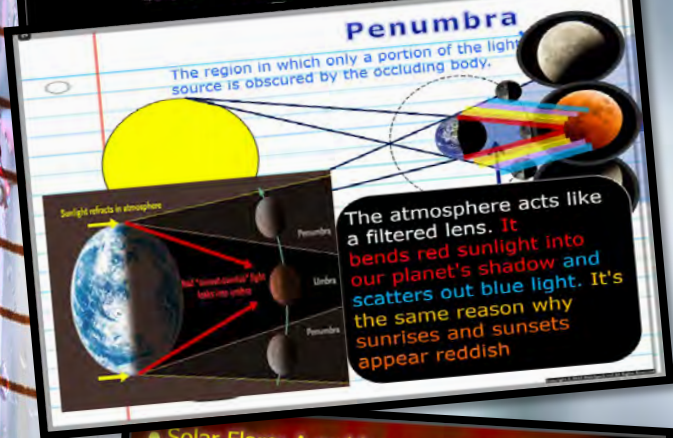
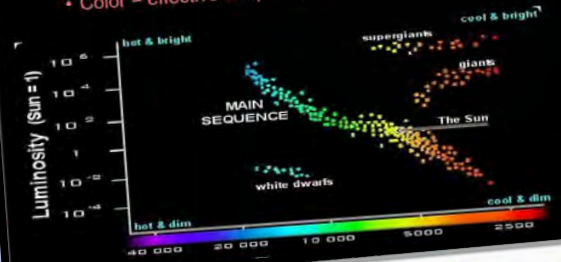
## MIDDLE-LEVEL EDUCATIONAL RESOURCES

Interactive slideshows provide the roadmap for an amazing learning experience for students in grades 5-9. A Detailed set of work bundles chronologically follow the digital learning, providing a clear and intuitive roadmap to understanding. As the teacher or student advances through a slideshow, exciting hands-on activities, fantastic visuals, fill-in notes, review opportunities, video links, assessments, and much more are strategically placed throughout. Interactive learning unfolds step by step and supported by the work bundle to reach all types of learners. Everything you need to run to an amazing learning experience is provided in this one-of-a-kind science curriculum.



Each unit in the curriculum is designed to help teachers deliver the best possible learning experience for their students. Our interactive science slideshows are filled with questions and answers, important fill-in notes, hands-on activities, projects, games, built-in quizzes, and end of the unit assessment pieces. Students follow along with a work bundle that documents the entire learning experience for a fantastic review and assessment piece.

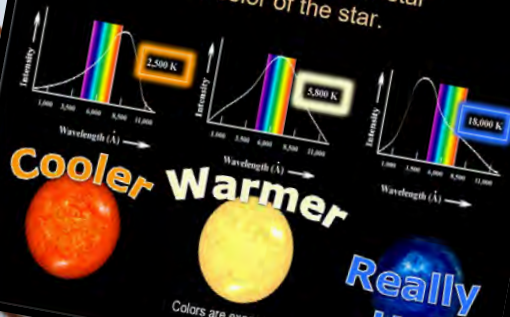
- The **Hertzsprung-Russell Diagram (HR)**
  - It originated in 1911 when astronomers, **Einar Hertzsprung** and **Henry Norris Russell** plotted the absolute magnitude of stars against their color.
  - Color = effective temperature.



- **Solar Flare:** A sudden eruption of intense high-energy radiation from the sun's surface.



- The surface temperature of the star determines the color of the star.

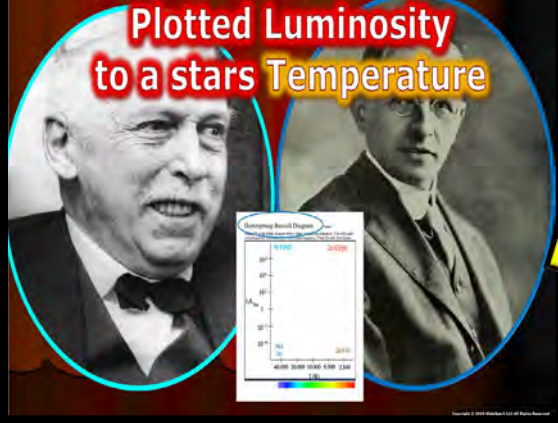




## • The Hertzsprung-Russell Diagram (HR)

- It originated in 1911 when astronomers, Einar Hertzsprung and Henry Norris Russell plotted the absolute magnitude of stars against their color.

**Plotted Luminosity  
to a stars Temperature**



### Part 2 Sun and Stars

Name: \_\_\_\_\_

Our Sun is a \_\_\_\_\_-sized, main sequence G2 \_\_\_\_\_ located on the spiral arm of the Milky Way galaxy, orbited by all of the planets and other bodies of the solar system, supplying the heat and light that sustain \_\_\_\_\_.

What shape is the Sun? \_\_\_\_\_ What color is the Sun? \_\_\_\_\_

Why is the sun brighter in the sky than some stars that are much larger than it? \_\_\_\_\_

The brightness of a star as seen from earth is called its \_\_\_\_\_ magnitude. \_\_\_\_\_ magnitude is the brightness of a star if all stars are seen at the same distance.

Absolute magnitude is the apparent magnitude (brightness) an object would have at 10 \_\_\_\_\_ from planet earth.



The surface temperature of the star determines the color of the star. What is the surface temperature of the star below?

Blue= \_\_\_\_\_ White= \_\_\_\_\_ Yellow= \_\_\_\_\_  
Orange= \_\_\_\_\_ Red= \_\_\_\_\_

The Hertzsprung-Russell Diagram was \_\_\_\_\_ originated in 1911 when astronomers, Einar Hertzsprung and Henry Norris Russell plotted the absolute magnitude of stars against their color.

\_\_\_\_\_ brightness of a star as seen from earth is called its apparent m. \_\_\_\_\_

Absolute magnitude is the brightness of a star if all stars are seen at the same distance. \_\_\_\_\_

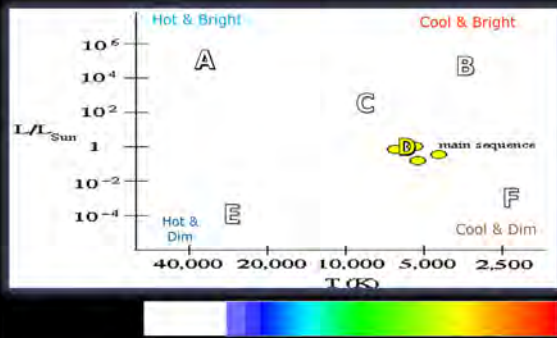
The surface \_\_\_\_\_ of the star determines the \_\_\_\_\_ of the star. Blue=Hot, Green/Yellow=Medium, Red=Not as hot

Red Slide Notes: Help students record important information in a fun and easy-to-understand way. Designed red-colored slides contain a few pieces of crucial information that students must record into their work bundle to complete the notes. Students will use these important notes throughout the work bundle.

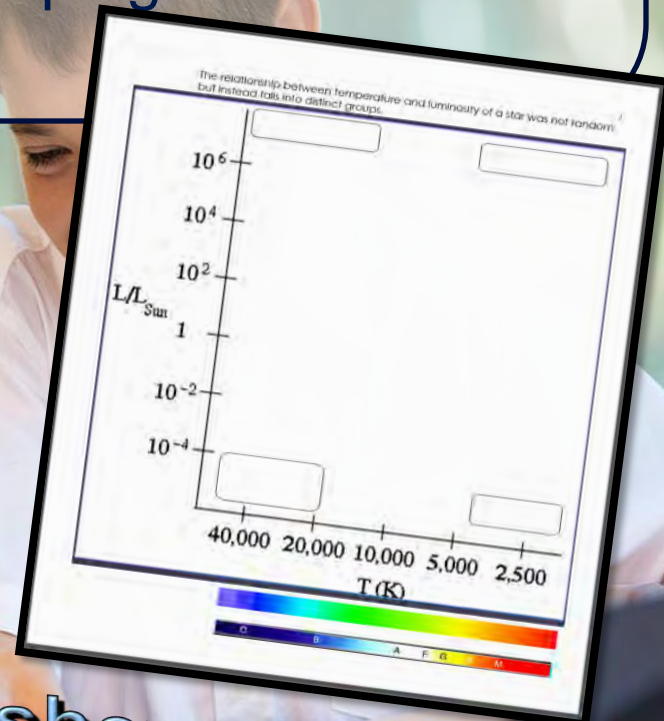
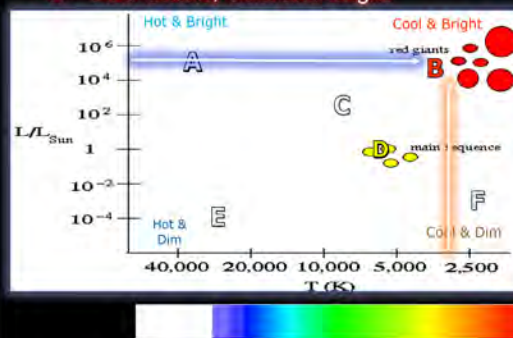


The set-up of the slideshows are designed to make learning fun and interactive for students. With a mix of questions and answers, teachers can use these slides to get their students thinking and actively participating in their education. Plus, the answers are always revealed on the next slide, providing students with immediate feedback and helping teachers assess their understanding.

- Plot the Star. Luminosity  $10^5$ , Temp 3,000 (K)



- Plot the Star. Luminosity  $10^5$ , Temp 3,000 (K)
- B = Red Giants, Cool and Bright



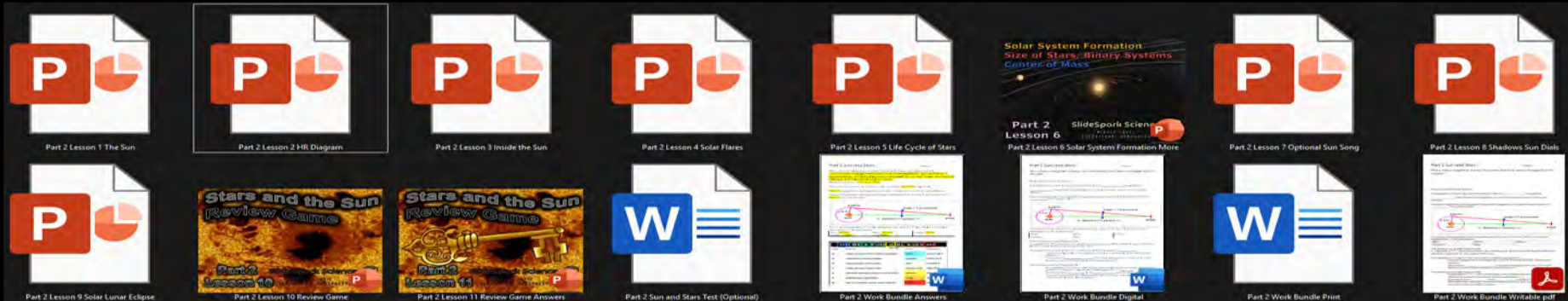
Next Slide

slideshow supports  
Work Bundle



# Lesson Planning

Daily lessons space exciting hands-on activities, red slide notes, video and academic links, projects, simulations, readings, built-in quizzes, and review opportunities throughout the slideshows. A typical day may have many different learning styles being targeted. Daily lesson planning becomes advancing through the slideshow roadmap the night before. Each lesson is roughly 50 minutes, but sometimes things can speed up or slow down. The best strategy is just to go at your classes own pace. The work bundle chronologically follows the interactive slideshow and you can always spend extra time assessing the quality of the writing within. If you don't quite finish a lesson, you can always pick it up the next day where you left off. The only real trick in timing is not starting a larger activity if you don't have the available time to complete. The slideshows have been designed to be a low stress, go at your classes own pace experience. Most activities are designed to be cost effective, using general materials that can be gathered from your local stores.



One clear, organized bundle guides students through notes, review, and assessments with ease.



# Follow Along Work Bundle

Each science unit comes with several work bundles. The bundles should be printed before the unit begins and distributed to the students on the first day of the unit. The work bundles will be due shortly after the completion of the unit. The work bundle will become a resource for the review games, crossword puzzles, and will be collected for assessment. The work bundle follows the entire learning experience and will be used every day. They are chronological to the lessons and provide places to record fill-in notes, answer questions, collect data, graph and much more. An answer version is provided that can be distributed to your support professionals. A digital version of the work bundle and some writable .pdf versions are provided if you want to go paperless. These work bundles are perfect for students looking for an easy and organized way to track their progress and stay on top of their studies.



# Sun and Stars



## Part 2 Sun and Stars

Our Sun is a \_\_\_\_\_ dwarf main sequence G2 \_\_\_\_\_ located on the spiral arm of the Milky Way galaxy, situated far from the center and outer borders of the system, supplying the heat and light that sustain \_\_\_\_\_.

What shape is the Sun? \_\_\_\_\_ What color is the Sun? \_\_\_\_\_

Why is the sun brighter than the sky than some stars that are much larger than it?

The brightness of a star as seen from earth is called by \_\_\_\_\_ magnitude.

\_\_\_\_\_ magnitude is the brightness of a star if all stars were seen at the same distance.

Applying its magnitude to the apparent magnitude (brightness) an object would have at 10 \_\_\_\_\_ from present earth.



The surface temperature of the star determines the color of the star. What is the surface temperature of the star below?

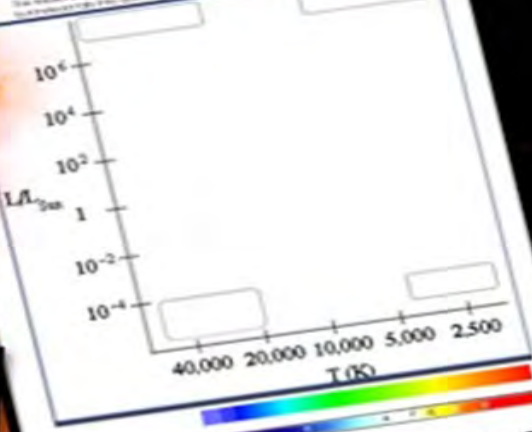
Blue \_\_\_\_\_ White \_\_\_\_\_ Yellow \_\_\_\_\_ Red \_\_\_\_\_

The Hertzsprung-Russell Diagram (HRD) is a graph showing the relationship between the absolute magnitude of stars against their color.

The temperature of a star as seen from earth is called its apparent \_\_\_\_\_.

The brightness of a star as seen from earth is called its apparent \_\_\_\_\_.

The relationship between temperature and luminosity of stars with temperature \_\_\_\_\_ luminosity \_\_\_\_\_.



## OH BE A FINE GIRL KISS ME

Class	Composition	Color	Temperature
O	Ionized and neutral hydrogen, ionized helium		
B	Ionized helium, ionized hydrogen		
F	Ionized hydrogen, ionized helium		
G	Ionized hydrogen, ionized helium		
K	Ionized hydrogen, ionized helium		
M	Ionized hydrogen, ionized helium		

The stars are divided into 7 classes designated by the letters O, B, A, F, G, K, and M. The hottest stars \_\_\_\_\_ and \_\_\_\_\_ are \_\_\_\_\_.

Astronomers can tell the \_\_\_\_\_ of a star by looking at the type of light it emits. Very \_\_\_\_\_ stars (O and B stars) look blue to our eyes, and as stars get \_\_\_\_\_ they become \_\_\_\_\_.

\_\_\_\_\_ stars (K and M stars) look red to our eyes, and as stars get \_\_\_\_\_ they become \_\_\_\_\_.

\_\_\_\_\_ stars (G and F stars) look yellow to our eyes, and as stars get \_\_\_\_\_ they become \_\_\_\_\_.

Provide some information about the type of stars below.

O	B	A	F	G	K	M

## Part 3 Lesson 2 The HR Diagram

The Hertzsprung-Russell Diagram (HRD) is a graph showing the relationship between the absolute magnitude of stars against their color.

The temperature of a star as seen from earth is called its apparent \_\_\_\_\_.

The brightness of a star as seen from earth is called its apparent \_\_\_\_\_.

Provide some information about the type of stars below.



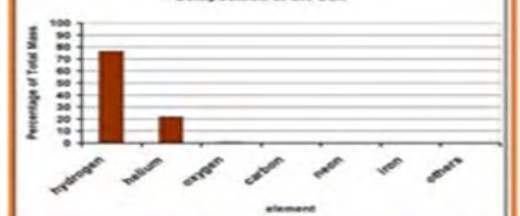
## Light Element Greater Than Helium

The Sun is a star that \_\_\_\_\_ object in the solar system.

It contains more than \_\_\_\_\_% of the total mass of the Solar System.

All \_\_\_\_\_ for our solar system comes from the Sun.

Provide answer the questions below.



The sun is primarily made of these two elements. Please estimate the % from the graph.

How much is left over for everything else?

The Sun is a \_\_\_\_\_ electrically charged particles.

Considered the fourth state of matter.

Nucleosynthesis \_\_\_\_\_ process where heavier \_\_\_\_\_ are created inside stars from hydrogen nuclei.

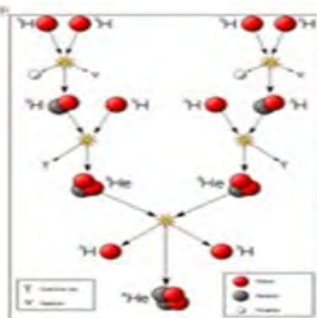
Helium is created depends on the size and \_\_\_\_\_ of the star.

Large stars may fuse carbon into \_\_\_\_\_ and magnesium, oxygen into \_\_\_\_\_, and silicon into \_\_\_\_\_.

This is the precursor to a supernova.

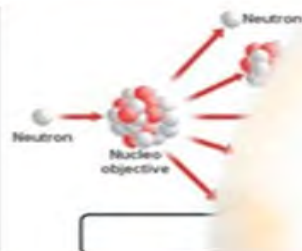
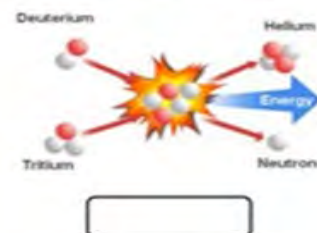
18 Pages





Where does the energy in our solar system come from? A strong answer should reference use the picture on the left.

Which is fusion, and which is fission?



#### Part 2 Lesson 4 Solar Flares and More

When is it okay to directly look at the sun?

Solar flare: A sudden eruption of intense high-\_\_\_\_\_ radiation from the sun's surface.

Solar prominence: the stretching out of \_\_\_\_\_ components to a length that can reach thousands of kilometers on the surface of the sun.

Sunspot: A \_\_\_\_\_ darker spot on the sun.

Associated with an increase in \_\_\_\_\_ field. They are regions of reduced surface temperature caused by concentrations of field flux that inhibit convection.

Flare: the action or process of flowing or flowing out.

A coronal mass ejection (CME) is a massive \_\_\_\_\_ of solar above the solar corona or being released into space.

Please fill in the Venn Diagram below as described.



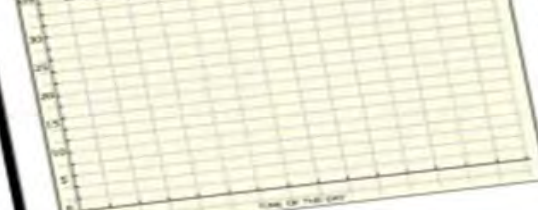
Which one is more disruptive to life on planet earth? Which one moves through space faster? Both CME's and Solar flares occur here?

#### Part 2 Lesson 4 Solar Flares and More

A sunspot is a darker spot on the sun. It is caused by the \_\_\_\_\_ of the sun's magnetic field. Add a correct adjective to the phrase below: What time of day could the sun be in the \_\_\_\_\_ and why?

Label the "components" of the sun in the sky as they are for the activity.

Length of Shadow throughout the day



#### Part 2 Lesson 4 Solar System Formation: Size of Stars, Center of Mass

Our own solar system was believed to have formed from the remains after a giant star \_\_\_\_\_ (Supernova).

Our Sun and solar system formed from a solar \_\_\_\_\_ (Gas and Dust cloud). About \_\_\_\_\_ billion years ago. Called the nebular hypothesis.

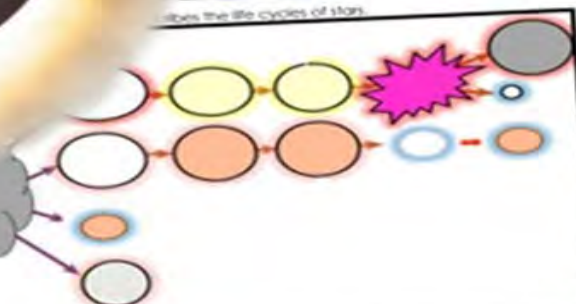
How did the solar system form? Use the picture for steps 1-4.



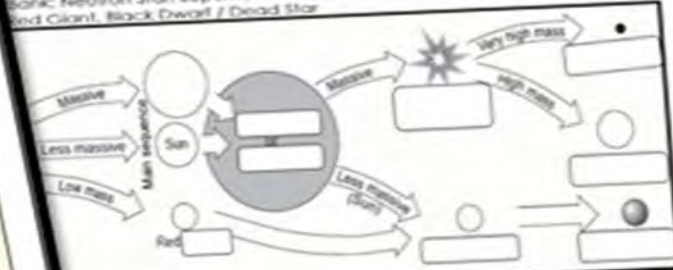
1
2
3
4/5

What is the biggest object in the universe? Explain \_\_\_\_\_.

\_\_\_\_\_ of a star \_\_\_\_\_ the life cycles of stars.

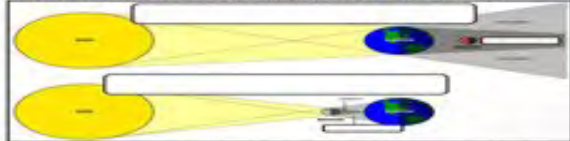


Label the boxes below to describe the life cycle of a star. Basic: Neutron Star, Supernova, White Dwarf, Dwarf, Super Giant, Black Dwarf, Black Dwarf / Dead Star.





Which is a solar and which is a lunar eclipse? Label them. Remember



Why is a lunar eclipse often called a blood moon? Explain and add information to the picture below! Get out your colored pencils to show me.

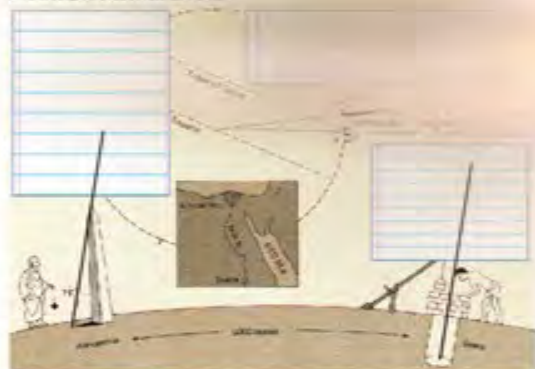


When is the next lunar eclipse and solar eclipse in or near your state? Record the dates and times below. Let's make an effort to check one out sometime.

Is it the sun that moves across the sky or is the earth rotating?

Which way does the sun travel vs. the shadow?

What is so special about Eratosthenes?



## Part 2 Review

1-20 = 5 pts  
21-25 = bonus = 1 pt  
Society with owl in  
Final Question = 3 pts

STAIR LOG				
1)	4)			
2)	7)			
3)	6)	13)	16)	12)
4)	9)	14)	19)	14)
5)	10)	15)	20)	15)

Final Question Wager: 25 Answer:

2020/05/05 10:00:00 AM

What is the difference between a solar and a lunar eclipse?

Use a ruler to trace the path of the shadow on the diagram below.

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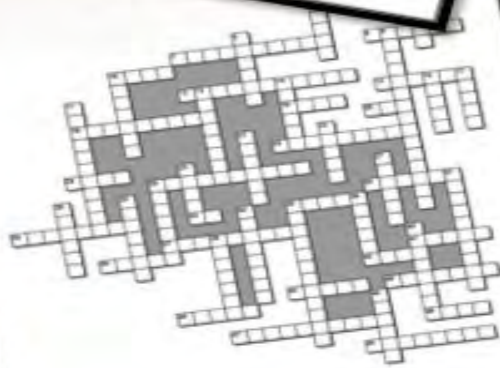
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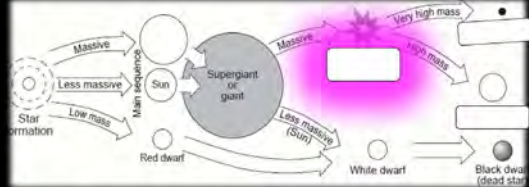




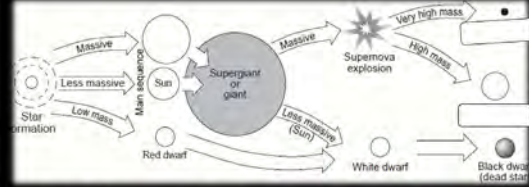


# Built-in Questions and Assessments

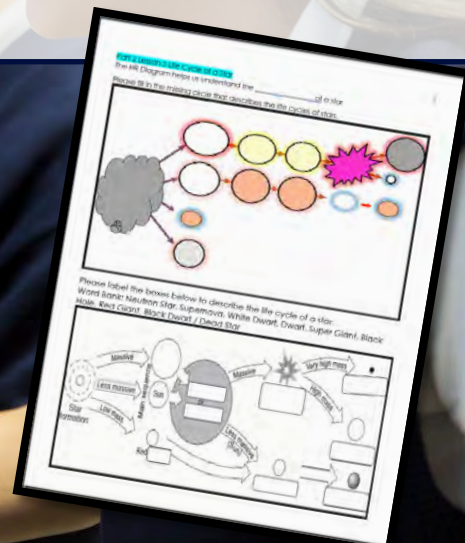
Many slides will have relevant terms covered with a box. When advancing through the slideshow an outline around the box will glow with a bright color. The next slide will make the box disappear. These slides allow the teacher to call upon students or table groups / check for understanding before advancing. The team at SlideSpark has found that using this technique helps to keep the students focused. Constantly recalling and reviewing information learned is necessary when moving through a large unit. The slideshows don't just give everything away for free. Students should be able to demonstrate knowledge before moving on. Some slides have full questions instead of just covered terms. In these slides, the teacher should encourage small group work. The teacher can then call upon one or two groups to share before advancing the slide. The next slide will always reveal the correct answer.



Word Bank: Neutron Star, Supernova,  
White Dwarf, Super Giant, Dwarf,  
Black Hole, Red Giant,  
Black Dwarf / Dead Star



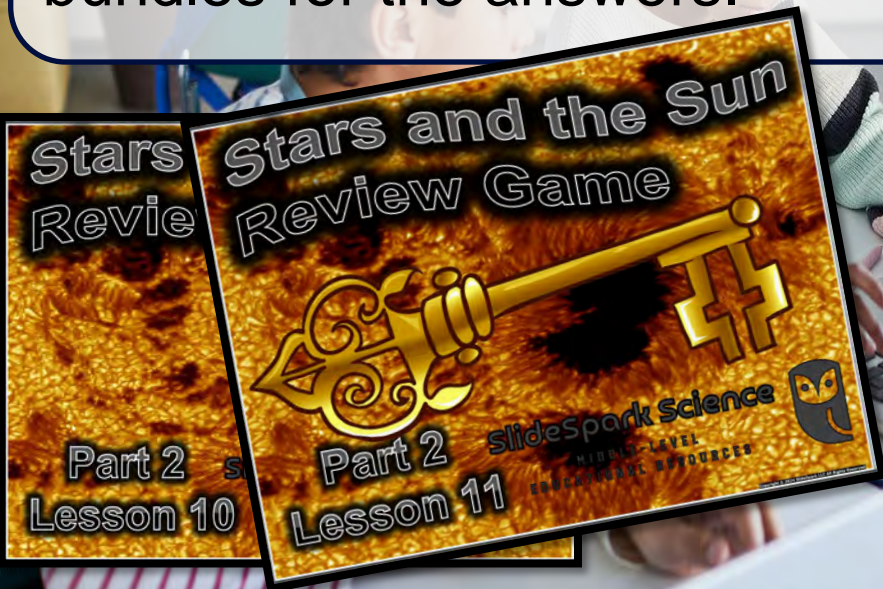
Word Bank: Neutron Star, Supernova,  
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Black Hole, Red Giant,  
Black Dwarf / Dead Star





# Review Game / Assessments

Each of the Units concludes with a review quiz. Answers are provided in slideshow form so students can self assess. A blank template sheet is provided in the work bundle. Students can benefit from working together in small table groups with quiet communication. You can decide if you want to allow the use of work bundles or not. These are a nice review opportunity and get the students looking through their work bundles for the answers.



Part 2 Review Game Sun and Stars

1:20 = 5 pts  
\*20\*25\* = Bonus = 1 pt  
(Secretly write out in correct space + 1 pt)  
Final Question = 5 pt wager

STAR LIGHT	STAR BRIGHT	FIRST STAR	SEE TONIGHT
1) THE SUN IS A GIANT BALL OF GASES	6) LETTER B PLAYS	11) IT'S A DENSE CLOUD OF GAS AND DUST	16) SUN RISES IN EAST UNUSUAL IN THE WEST
2) LETTER B WHITE	7) LETTER D PLAYS	12) MICROWAVE OVEN COOKS	17) SHADOWS FORM IN OPPOSITE DIRECTION WEST TO EAST
3) ABSOLUTE MAGNITUDE	8) SOLAR FLARE	13) NEUTRON STAR IS BLACKHOLE	18) ECLIPSE ANTIMATTER BOMBARD
4) THE BLUE/WHITE STAR IS THE HOTTEST	9) SUN SPOTS	14) THE HERTZSPRUNG-RUSSELL DIAGRAM LUMINOSITY TEMPERATURE	19) SOLAR FLARE
5) HYDROGEN COMBINATION OF DEUTERIUM	10) NUCLEAR FUSION NUCLEON PROTONS AND NEUTRONS	15) STELLAR EVOLUTION	20) PLAN OF TOLDOVA

Final Question Wager: \_\_\_\_\_ Answer: \_\_\_\_\_

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# SUN & STARS

## Quiz Game

- The brightness of a star as seen from earth is called its **apparent magnitude**.
- Absolute magnitude** is the brightness all stars are seen at the same distance.

This star is extremely bright but also **FAR AWAY**



This star is close



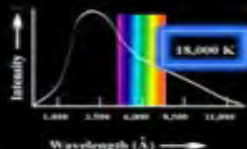
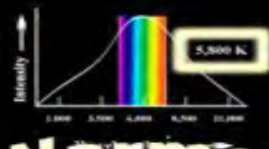
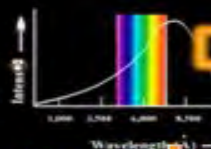
What is the Sun?

B

D

The answer is...

- The surface temperature of the star determines the color of the star.
- Which star has the hottest surface temperature?



**Cooler** **Warmer**



Colors are exaggerated

**Really Hot**

- Why is the sun brighter in the sky than some stars that are much larger than it?

1

Our close neighbor

93 million miles

147 million km

Away

**Big Difference**

**Closest star**

Proxima Centauri

39,900,000,000,000

km away.

4.24 light-years away



- What is one way a new nebula can form?

# Stellar Ejections 15

Also  
Supernova

Can aid in Nebula formation (some debate)

- A formation process of a star often begins with a Nebula. A Nebula is a...

- A.) Largest Object in the Universe
- B.) A Superheated Blackhole
- C.) A Supernova
- D.) A dense cloud of gas and dust
- E.) Cannot be determined

11



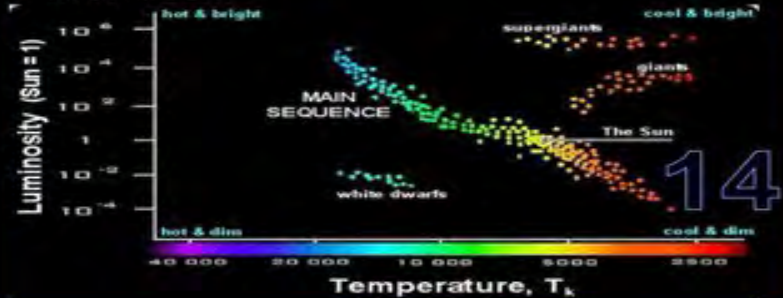
- What are two possible outcomes that can occur to a **Super Massive Star** as it gets close to the end?

Neutron  
Star

13



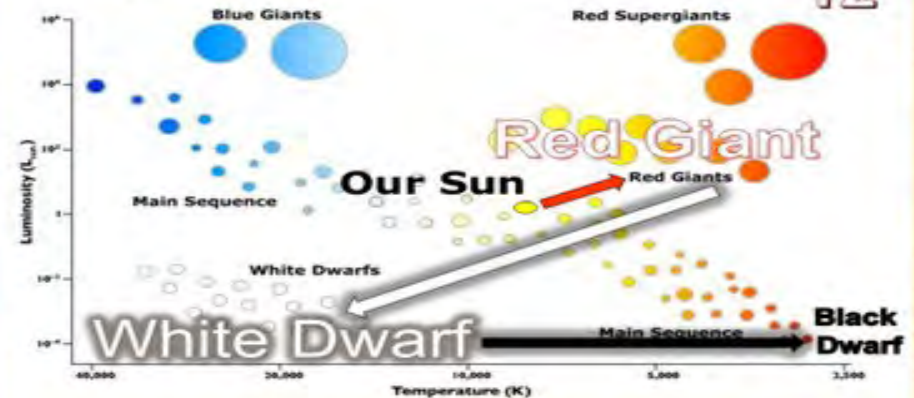
- This diagram... **Hertzsprung-Russell (HR)**
- Found that the relationship between **temperature** and **luminosity** of a star was not random



14

- What is going to happen to our sun? What two types of stars will it turn into?

12



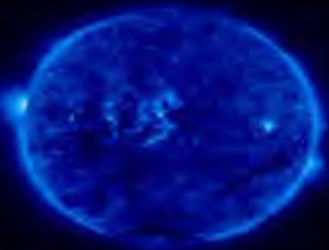


- Name this process? The Sun is primarily composed of these two chemical elements?



- The state of matter that best represents the Sun is a...

- A.) Gas
- B.) Solid
- C.) Liquid
- D.) Plasma
- E.) Cannot be determined.



7 answer is...

- What are the names of these features circled below?

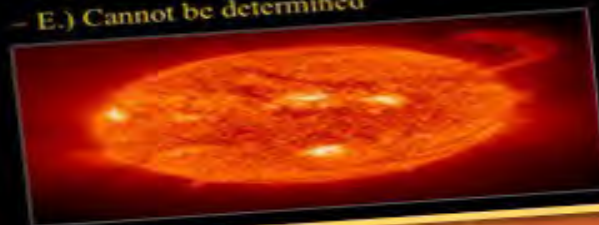


- What are the names for these features on the surface of the Sun? Associated with an increase in magnetic field.

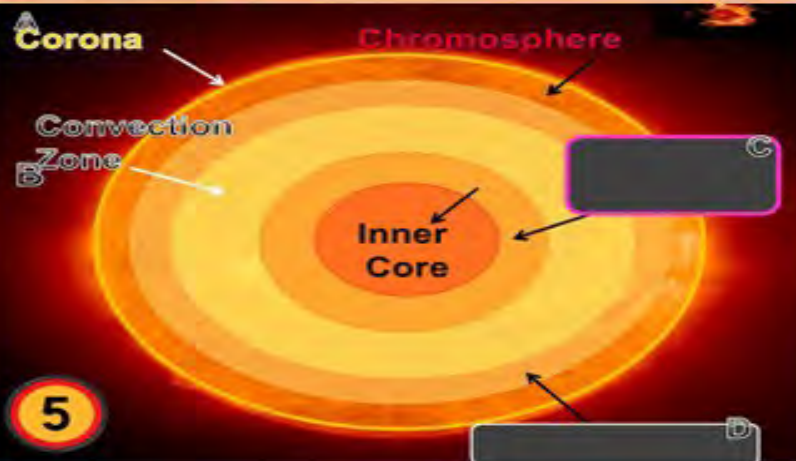


- The Sun makes up this percent of our solar system by mass?

- A.) 50%
- B.) 99.8%
- C.) 25%
- D.) 1%
- E.) Cannot be determined

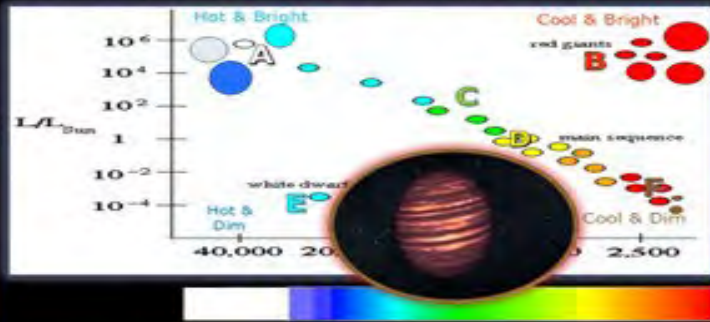


6





- Plot the Star. Luminosity  $10^{-4}$ , Temp 2,500 (K)
- F = Cool and Dim Main Sequence Stars



- Name this event as seen from planet earth?

19

# Solar Eclipse



- The sun rises in the **East**, and sets in the **West**. The shadows travel in the opposite direction.
- When are the shadows the longest and shortest?

17

**East**  
Sunrise **West to East**  
Noon  
(Short Shadows) **West**  
Sunset

- What is this called? Name A and B?

## Lunar Eclipse

18



- What is the name for the shaded region that travels across the surface of the Earth during a solar eclipse?

20

## Path of Totality



What causes  
the apparent movement  
of the Sun across the sky?

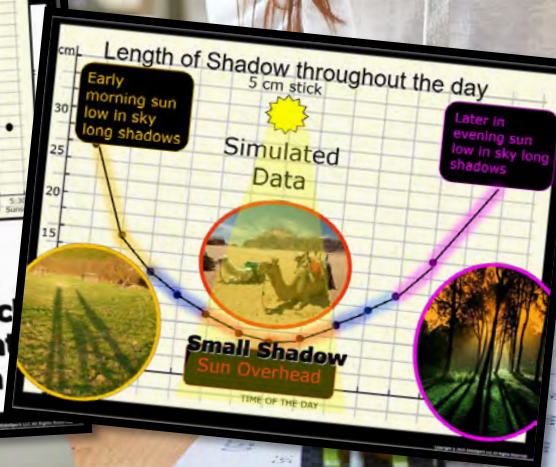
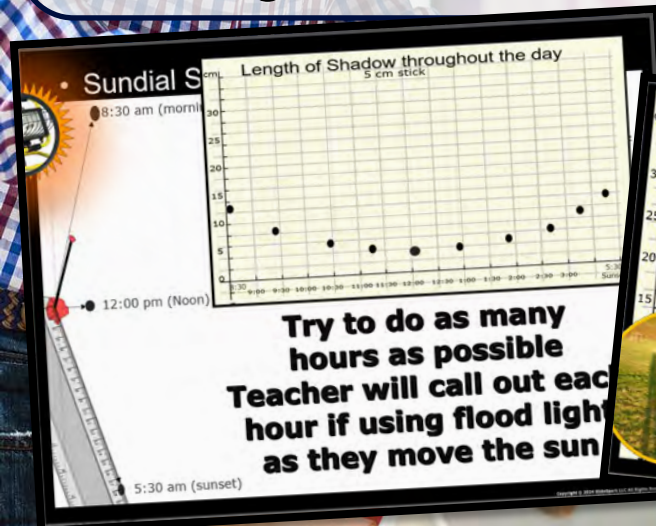
16





# Activities / Labs

Our science activities are designed to help students explore and understand complex scientific concepts in an engaging and interactive way. Each science unit includes several hands-on activities that encourage students to collect data and think critically about the world around them. Our easy-to-follow slideshow provides detailed visuals, simple materials, and clear directions, making it easy for both students and teachers to navigate the activities.



What directions did the shadow travel? **West to East (Opposite of Sun)**  
(North, NE, East, South East, South, South West, West, North West)

Is it the sun that moves across the sky or is the earth rotating?

It's the rotation of the earth. It looks like the sun is moving across the sky from East to West but that is just the planet rotating on its axis.

Which way does the sun travel vs. the shadow?

The sun appears to travel from East to West. The shadow goes in the opposite direction from West to East throughout the day.

Please create the correct shadow below.

Let's look at some

The figure shows a diagram of a stick with a shadow and a photograph of a building with a shadow.



# Built-in Video Links

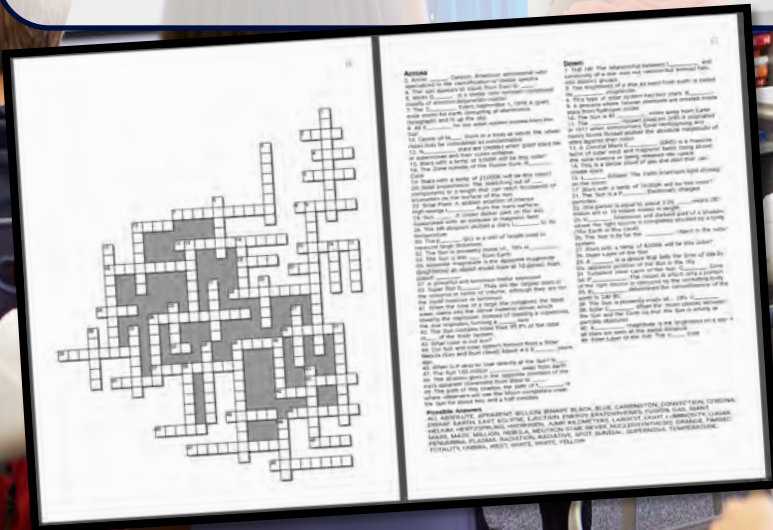
Our science education program is designed with the modern, multimedia learner in mind, and our video links are a perfect complement to our educational materials. These short clips are embedded into the slideshow at just the right places for a fantastic review. Whether you're studying biology, chemistry or physics, our video links are an excellent way to reinforce your learning.





# Games and Review

Games are a fantastic way for students to learn scientific concepts while having fun. We incorporate a variety of games into our curriculum, including interactive quizzes and puzzles that challenge students to think critically about the material. Our Hidden Box Games are a particularly popular feature, which conclude each unit by revealing a picture related to the topic. Students try to guess what the picture might be, making learning an engaging experience.





- In earlier times it was believed that the Sun was something much like a piece of charcoal that was slowly burning.
  - It wasn't until the nuclear age that the answers were revealed.



- In earlier times it was believed that the Sun was something much like a piece of charcoal that was slowly burning.
  - It wasn't until the nuclear age that the answers were revealed.



The Owl - Each Part of the slideshow has a small clipart Owl hiding somewhere in a slide. The owl is incredibly small and blended into just the right slide. If a student spots the “Owl” they can raise their hand high into the air. When you call upon the student they can say “Owl” and be the student who spotted the Owl. Each PowerPoint Review game also has an owl hiding in it worth one point. Remind the students that they secretly write the word "owl" rather than yell it out during the review games. The Owl search is not included in every lesson. A slide at the beginning of the lesson will alert the students that today is an “Owl’ day. Everything arrives editable so delete if you wish. You will find that some students will become the expert owl hunters in the group.



# Google Classroom Compatible

Our digital learning programs are designed for students to learn science in a flexible and engaging environment. Our Google Classroom-compatible units provide a seamless learning experience whether your students are in the classroom or learning from home. Our step-by-step slideshows and student work bundles ensure that students can complete their work independently. The PowerPoint Slideshows and step-by-step work bundles can easily be loaded to your Google Drive and posted in your Google Classroom. These are great for daily lessons, students who need additional time, and for a student who was absent and looking to catch up in their work bundle.







## [Part 2 Lesson 5 Life Cycle o...](#)

Google Slides



## [Part 2 Lesson 2 HR Diagram](#)

Google Slides



## [Part 2 Lesson 1 The Sun](#)

Google Slides



## [Part 2 Lesson 9 Solar Lunar ...](#)

Google Slides



## [Part 2 Lesson 10 Review Ga...](#)

Google Slides



## [Part 2 Lesson 7 Optional Su...](#)

Google Slides



## [Part 2 Lesson 3 Inside the S...](#)

Google Slides



## [Part 2 Lesson 4 Solar Flares](#)

Google Slides



## [Part 2 Lesson 6 Solar Syste...](#)

Google Slides



## [Part 2 Lesson 8 Shadows Su...](#)

Google Slides



# Astronomy Unit

A composite image featuring a large, blue, 3D-style title 'Astronomy Unit' at the top. Below the title is a photograph of the Earth from space, showing a bright sun rising over the horizon. In the foreground, a space station or satellite with a large circular component is visible against the Earth's blue and white clouds.

## Astronomy Unit

60 Lessons (6<sup>th</sup> -8<sup>th</sup> Medium Difficulty) Part 1 is 6 Lessons and 18 Page Work Bundle, Part 2 is 10 Lessons and 19 Page Work Bundle, Part 3 is 14 Lessons and 19 Page Work Bundle, Part 4 is 9 Lessons and 20 Page Work Bundle, Part 5 is 6 Lessons and 13 Page Work Bundle, Part 6 is 8 Lessons and 17 Page Work Bundle, Part 7 is 9 Lessons and 19 Page Work Bundle



[Part 1: Astronomy Unit](#) : Introduction to Astronomy, Copernicus, Heliocentrism, Galileo, Kepler's Laws of Planetary Motion, Ellipse, Perihelion, Aphelion, Orbits, Orbital Velocities, Eccentricity, Calculating Eccentricity, Astronomical Units, Distances in the Solar System, Graphing Planetary Data, Order of the Planets, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess.

[Part 2: Astronomy Unit](#): The Sun, Absolute Magnitude, Apparent Magnitude, Parsec, Stellar Classification / Spectra, Hertzsprung Russell Diagram, Composition of the Sun, Nuclear Synthesis, Layers of the Sun, Solar Flares, Coronal Mass Ejections, Carrington Event, Life Cycle of a Star, Blackhole, Neutron Star, Solar System Formation, Shadows, Sun Dials, Eratosthenes, Graphing Shadow length, Solar Eclipse, Lunar Eclipse, Path of Totality, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

[Part 3: Astronomy Unit](#): The Habitable Zone, Important data about Mercury, Venus, Earth, Venn Diagram of Earth and Venus, Moon Formation Theories, Earth's Axial Tilt, Seasons on Earth, Equinox, Solstice, Earth's EM Field, Aurora borealis, Synchronous Orbit of the moon, Features of the moon, Phases of the Moon (with OREOS), Tides, Neap Tide, Spring Tide, Tidal Cycle, Reading a Tide Chart, Mars, Features on Mars, Moons of Mars, Rover Exploration, Missions Past and Future, End Unit Assessment with Answer Version so Students can Self-Assess

[Part 4: Astronomy Unit](#): Rocketry, Apollo Missions, Parts of the Saturn V Rocket, Apollo Modules, Parts of a Rocket, Water Bottle Rockets, Newton's Laws, Lift, Drag, Thrust, Weight, Law of Gravitation, Einstein and Gravity, Spacetime, Space Shuttle Program, International Space Station, Future in Space, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

[Part 5: Astronomy Unit](#) : Main Asteroid Belt, protoplanet Ceres, Vesta, Meteors, Meteorites, Asteroids, Bolides, Chicxulub Crater, Tunguska Event, Chelyabinsk meteor, Craters, Parts of a Crater, Crater Impact Activity, NEO's, Torino Scale, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

[Part 6 Astronomy Unit](#): The Outer Planets, Gas Giants, Ice Giants, Density of Outer Planets, Jupiter, Red Spot, Composition of Outer Planets, Jovian Moons, Saturn and its Moons, Uranus and its Moons, Neptune and its Moons, The Kuiper Belt, Demotion of Pluto, Oort Cloud, Comets, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

[Part 7: Astronomy Unit](#): Constellations, Hubble Space Telescope, Spitzer Space Telescope, Speed of Light, Nebulas, Types of Nebulas, Galaxy, Type of Galaxies, Gravity, The Special Theory of Relativity , Blackholes, Neutron Stars, Spacetime, Pulsars, Quasars, Exoplanets, Hubble Deep Field, Beyond the Solar System, Black holes, Exoplanets, The Big Bang, Evidence for the Big Bang, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess



# Astronomy Mega Bundle

What are two possible reasons that our Solar System is so different from other systems?

**Neutron Star**

During powered flight, the propellants of the propulsion system are constantly being exhausted from the nozzle. This creates a

**Penumbra**

The region of partial shadow of an object that is illuminated by a light source that is not a point source.

**Cooler Warmer Really Hot**

**The Habitable Zone**

The relationship between temperature and distance from a star is not random but follows a predictable pattern.

**Eccentricity** is a measure of how an orbit deviates from circular. Eccentricity values range from 0 to 1.

**Linear Module (LM)**

**7 Units**

# INTERACTIVE SLIDESHOWS

Name the types of galaxies below?

**Barred** **Irregular** **Elliptical** **Spiral**

**NEBULA 5**

This is the name for a large cloud of gas and dust which can form stars and galaxies.

**Which two should be switched between Earth and Venus?**

**Jupiter** **Earth**

**Name A.B.C.D?**

**Winter Solstice** (Northern, June 21st) **Equinox** (March 20th) **Summer Solstice** (Northern, June 21st) **Equinox** (September 22nd)

**Olympus Mons**

What is the name of this extinct volcano on Mars that's one of the largest mountains in the solar system?

**Secured with Duct Tape**

Fins need to be above nozzle, their bases should be parallel, organized a distance apart. Need 3+ fins, and limit their size to avoid unnecessary drag.

# Follow Along Bundles

**Hundreds of pages**

# Activities, Projects, Assessments, All Built-in

**Plot the Star, Luminosity 10<sup>36</sup> Watts 3,000 K**

**Our Sun**

Will become a Red Giant in a few billion years.

**The size and color tell us where the star is in its life cycle.**

**Inner Core**

**Photosphere**

**Can you name the three best astronomers?**

**Johannes Kepler** **Galileo Galilei** **Nicolaus Copernicus**

**Centrifugal Force of a Planet**

**Eccentricity**

**Cooler Warmer Really Hot**

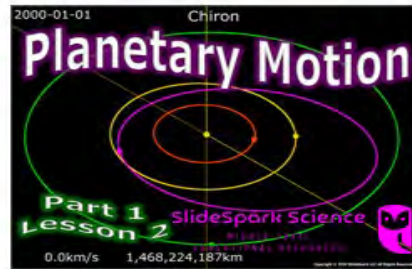


# Introduction to Astronomy, Copernicus, Heliocentrism, Galileo, Kepler's Laws of Planetary Motion, Ellipse, Perihelion, Aphelion, Orbits, Orbital Velocities, Eccentricity, Calculating Eccentricity, Astronomical Units, Distances in the Solar System, Graphing Planetary Data, Order of the Planets, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

## Part 1: Astronomy Unit



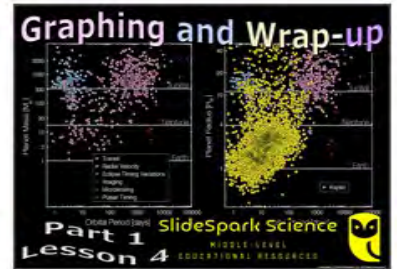
Part 1 Lesson 1 Introduction Kepler



Part 1 Lesson 2 Planetary Motion



Part 1 Lesson 3 Distances Solar System



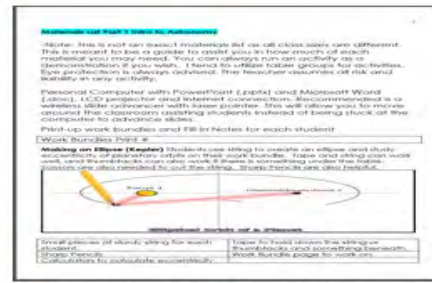
Part 1 Lesson 4 Graphing Wrap Up



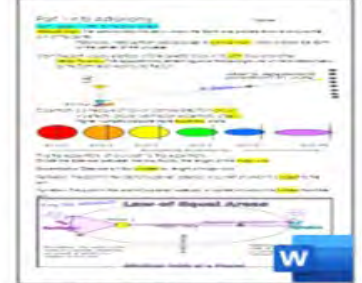
Part 1 Lesson 5 Review Game



Part 1 Lesson 6 Review Game Answers



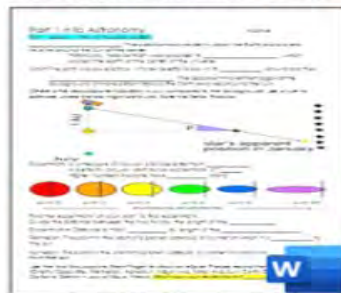
Part 1 Materials List Intro to Solar System



Part 1 Work Bundle Answers



Part 1 Work Bundle Digital



Part 1 Work Bundle Print



Part 1 Work Bundle Writable pdf



Part 2: The Sun, Absolute Magnitude, Apparent Magnitude, Parsec, Stellar Classification / Spectra, Hertzsprung Russell Diagram, Composition of the Sun, Nuclear Synthesis, Layers of the Sun, Solar Flares, Coronal Mass Ejections, Carrington Event, Life Cycle of a Star, Blackhole, Neutron Star, Solar System Formation, Shadows, Sun Dials, Eratosthenes, Graphing Shadow length, Solar Eclipse, Lunar Eclipse, Path of Totality, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so Students can Self-Assess

## Part 2: Astronomy Unit



Part 2 Lesson 1 The Sun



Part 2 Lesson 2 HR Diagram



Part 2 Lesson 3 Inside the Sun



Part 2 Lesson 4 Solar Flares



Part 2 Lesson 5 Life Cycle of Stars



Part 2 Lesson 6 Solar System Formation More



Part 2 Lesson 7 Optional Sun Song



Part 2 Lesson 8 Shadows Sun Dials



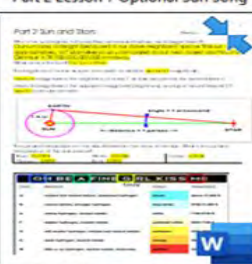
Part 2 Lesson 9 Solar Lunar Eclipse



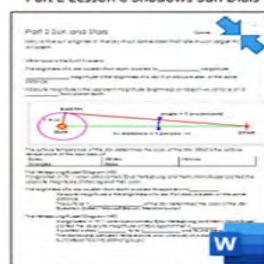
Part 2 Lesson 10 Review Game



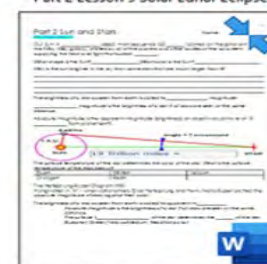
Part 2 Lesson 11 Review Game Answers



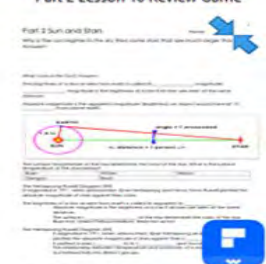
Part 2 Work Bundle Answers



Part 2 Work Bundle Digital



Part 2 Work Bundle Print



Part 2 Work Bundle Writable pdf

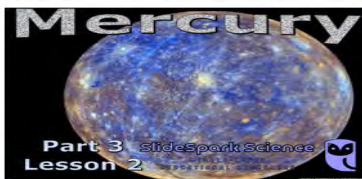


Part 3: The Habitable Zone, Important data about Mercury, Venus, Earth, Venn Diagram of Earth and Venus, Moon Formation Theories, Earth's Axial Tilt, Seasons on Earth, Equinox, Solstice, Earth's EM Field, Aurora borealis, Synchronous Orbit of the moon, Features of the moon, Phases of the Moon (with OREOS), Tides, Neap Tide, Spring Tide, Tidal Cycle Reading a Tide Chart, Mars, Features on Mars, Moons of Mars, Rover Exploration Missions Past and Future

## Part 3: Astronomy Unit



Part 3 Lesson 1 Inner Planets



Part 3 Lesson 2 Mercury



Part 3 Lesson 3 Venus



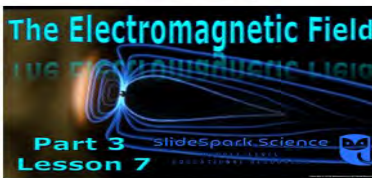
Part 3 Lesson 4 Earth and Moon



Part 3 Lesson 5 Axial Tilt



Part 3 Lesson 6 Solstice Equinox



Part 3 Lesson 7 EM Field



Part 3 Lesson 8 Phases of Moon 1



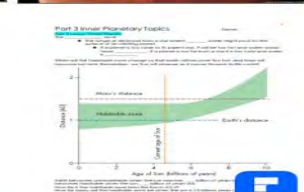
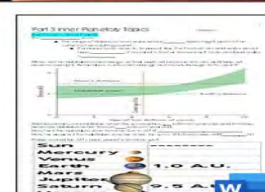
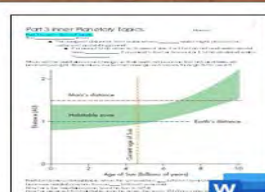
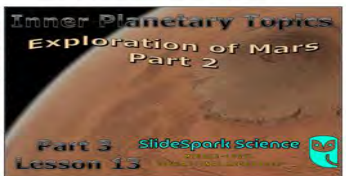
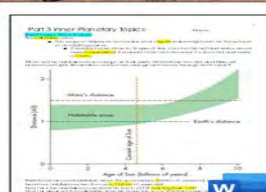
Part 3 Lesson 9 Phases of Moon 2



Part 3 Lesson 10 Phases Quiz



Part 3 Materials List





# Astronomy Unit Part 4: Rocketry, Apollo Missions, Parts of the Saturn V Rocket, Apollo Modules, Parts of a Rocket, Water Bottle Rockets, Newton's Laws, Lift, Drag, Thrust, Weight, Law of Gravitation, Einstein and Gravity, Spacetime, Space Shuttle Program, International Space Station, Future in Space

## Part 4: Astronomy Unit



Part 4 Lesson 1 Mission to the Moon



Part 4 Lesson 2 Water Rockets Gravity



Part 4 Lesson 3 Gravity Rocket Built Cont



Part 4 Lesson 4 Space Shuttle ISS



Part 4 Lesson 5 Newton's 1st Law



Part 4 Lesson 6 2nd Law of Motion



Part 4 Lesson 7 3rd Law of Motion



Part 4 Lesson 8 Rocketry Wrap Up



Part 4 Lesson 9 Review Game



Part 4 Lesson 10 Review Game Answers



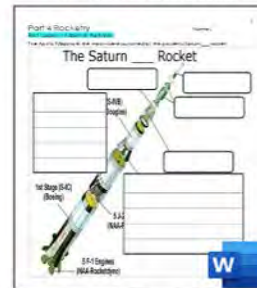
Part 4 Materials List



Part 4 Work Bundle Answers



Part 4 Work Bundle Digital



Part 4 Work Bundle Print



Part 4 Work Bundle Writable pdf



# Part 5: Main Asteroid Belt, protoplanet Ceres, Vesta, Meteors, Meteorites, Asteroids, Bolides, Chicxulub Crater, Tunguska Event, Chelyabinsk meteor, Craters, Parts of a Crater, Crater Impact Activity, NEO's, Torino Scale,

## Part 5: Astronomy Unit



Part 5 Lesson 1 Main Asteroid Belt



Part 5 Lesson 2 Tunguska Event



Part 5 Lesson 3 NEO's



Part 5 Lesson 4 Impact Lab



Part 5 Lesson 5 Research and Wrap Up



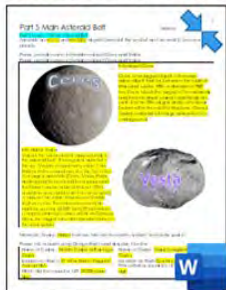
Part 5 Lesson 6 Review Game



Part 5 Lesson 7 Review Game Answers



Part 5 Materials List



Part 5 Work Bundle Answers



Part 5 Work Bundle Digital



Part 5 Work Bundle Print



Part 5 Work Bundle Writable pdf



**Part 6 of Astronomy Unit: The Outer Planets, Gas Giants, Ice Giants, Density of Outer Planets, Jupiter, Red Spot, Composition of Outer Planets, Jovian Moons, Saturn and its Moons, Uranus and its Moons, Neptune and its Moons, The Kuiper Belt, Demotion of Pluto, Oort Cloud, Comets**

## Part 6 Astronomy Unit



Part 6 Lesson 1 Gas Giants



Part 6 Lesson 2 Jupiter



Part 6 Lesson 3 Jovian Moons



Part 6 Lesson 4 Saturn



Part 6 Lesson 5 Ice Giants



Part 6 Lesson 6 Outer Solar System



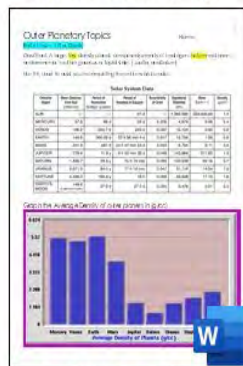
Part 6 Lesson 7 Review Game



Part 6 Lesson 8 Review Game Answers



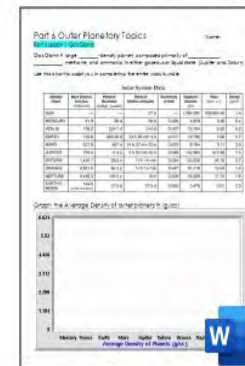
Part 6 Lesson 9 Space Expo Project



Part 6 Work Bundle Answers



Part 6 Work Bundle Digital



Part 6 Work Bundle Print



# Astronomy Unit Part 7: Constellations, Hubble Space Telescope, Spitzer Space Telescope, Speed of Light, Nebulas, Types of Nebulas, Galaxies, Type of Galaxies, Gravity, The Special Theory of Relativity, Blackholes, Neutron Stars, Spacetime, Pulsars, Quasars, Exoplanets, Hubble Deep Field, Beyond the Solar System, Black holes, Exoplanets, The Big Bang, Evidence for the Big Bang

## Part 7: Astronomy Unit

### Beyond the Solar System



Part 7 Lesson 1  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 1 Constellations Hubble

### Light, Gravity, Blackholes, spacetime



Part 7 Lesson 2  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 2 Speed of Light More

### spacetime, Gravity, and more



Part 7 Lesson 3  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 3 Spacetime

### Nebula, Pulsar, Quasar, Neutron Stars, Galaxies



Part 7 Lesson 4  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 4 Pulsar Neutron Star galaxy

### Galaxies



Part 7 Lesson 5  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 5 Galaxies

### Exoplanets



Part 7 Lesson 6  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 6 Exoplanets

### Big Bang



Part 7 Lesson 7  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 7 Big Bang

### Review Game



Part 7 Lesson 8  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

Part 7 Lesson 8 Review Game

### Review Game

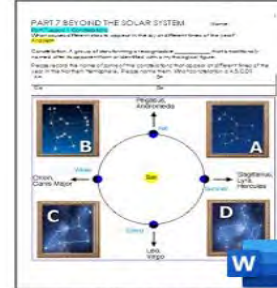


Part 7 Lesson 9  
SlideSpark Science  
MIDDLE-LEVEL  
EDUCATIONAL RESOURCES

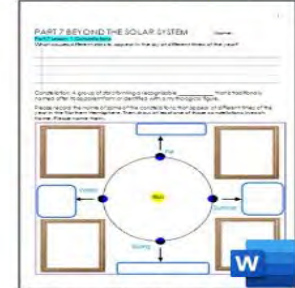
Part 7 Lesson 9 Review Game Answers



Part 7 Work Bundle Answers



Part 7 Work Bundle Digital



Part 7 Work Bundle Print










# Curriculum Guide

Number of Lessons in each unit (50 min, daily lessons) and difficult rating scale / intended grade level.

 =Easier,

 = More difficult,

 =Most difficult

Earth Science Units	Daily Lessons	Intended Grade	
Geology Topics Unit	60 Lessons	6-8 medium difficulty	
Weather and Climate Unit	40 Lessons	6-8 medium difficulty	
Astronomy Unit	60 Lessons	6-8 medium difficulty	
Weathering, Soil Sciences	28 Lessons	5-7 easier	
Rivers and Water Quality	25 Lessons	5-7 easier	
Water Molecule Unit	20 Lessons	5-7 easier	
Biogeochemical Cycles Unit	16 Lessons	5-7 easier	



# Earth Science Curriculum

SlideSpark Science

MIDDLE-LEVEL  
EDUCATIONAL RESOURCES



## Entire Water Unit

27 Lessons

Rivers, Lakes, Water Quality Unit

20+ Lessons

7 Units • 250 Lessons

Interactive Slideshows with Chronological Work Bundles  
Hundreds of Pages, Activities, Projects, Videos, Academic Links, Assessments, Games & Keys All Built-In for Seamless, Ready-to-Go Learning

## Biogeochemical Cycles

17 Lessons

## GEOLOGY Mega Bundle

6 Parts, 60 Lessons

Weathering, Soil Science, Ice Ages, Glaciers Unit

5 Parts 36 Lessons

## Interactive Slideshows Follow Along Bundles

### Weather and Climate Mega Bundle

40 Lessons

7 Units

### Astronomy Mega Bundle











60 Lessons

7 Units

Grades 5-10



# Life Science Units

Life Science Units	Daily Lessons	Intended Grade	
Ecology Feeding Levels Unit	13 Lessons	5-6 easier	
Ecology Interactions Unit	30 Lessons	5-6 easier	
Ecology Abiotic Factors Unit	13 Lessons	5-6 easier	
Botany Unit	50 Lessons	5-7 easier	
Evolution and Natural Selection	40 Lessons	5-7 easier	
Taxonomy and Classification	50 Lessons	6-8 medium difficulty	
Infectious Diseases Unit	30 Lessons	7-9 more difficult	
DNA and Genetics Unit	42 Lessons	8-10 most difficult	
Human Body Systems Unit	85 Lessons	6-8 medium difficulty	
Cell Biology Unit	30 Lessons	8-10 most difficult	



# Life Science Curriculum

SlideSpark Science

MIDDLE-LEVEL  
EDUCATIONAL RESOURCES



## Interactive Slideshows Follow Along Bundles

10 Units of Study



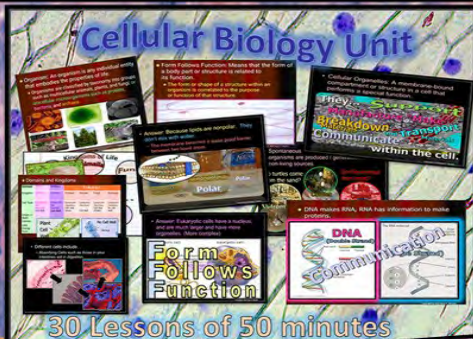
### Botany Unit



### Human Body Systems Unit



### Cellular Biology Unit



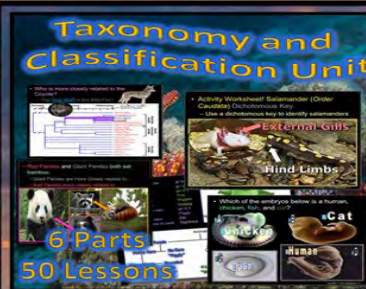
### DNA and Genetics Unit



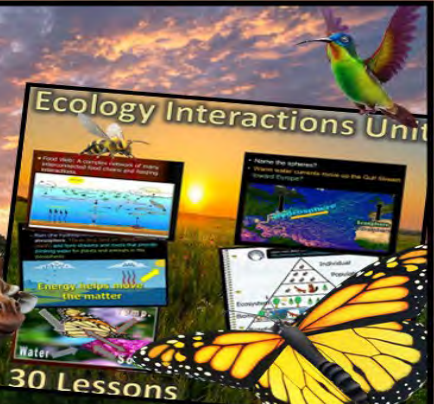
### Infectious Diseases



### Taxonomy and Classification Unit



### Ecology Interactions Unit



### Ecology Feeding Level Full Unit




### Ecology Abiotic Factors Unit





# Physical Science

	Daily Lessons	Intended Grade	
Laws of Motion and Machines Unit	33 Lessons	8-10 most difficult	
Matter Energy and the Environment	58 Lessons	7-10 medium difficulty	
Atoms and Periodic Table Unit	44 Lessons	8-10 most difficult	
Science Skills Unit	30 Lessons	5-7 medium difficulty	

[Physical Science Curriculum](#)

[Entire SlideSpark Science Curriculum](#)





# Physical Science Curriculum

SlideSpark Science

MIDDLE-LEVEL  
EDUCATIONAL RESOURCES



## Science Skills Unit

5 Parts, 30 Lessons

Physical Science Curriculum,  
4 Units • 165 Lessons of 50  
mins, Interactive Slideshows  
with Chronological Work  
Bundles, Hundreds of Pages,  
Activities, Labs, Projects,  
Video & Academic Links,  
Assessments, Games, Keys,  
All Built-In for Seamless  
Ready-to-Go Learning

Thousands of Interactive Slides

67 Pages of Follow Along  
Work Bundle

Assessments, Games,  
Video Links, and more

Everything you need to run an  
amazing learning experience

## Interactive Slideshows Follow Along Bundles

Grades 7-10

Laws of Motion and  
Simple Machines Unit

33 Lessons

With Follow Along  
Work Bundles

63 Pages

Assessments, Activities,  
Projects, and so much more

## Atoms and Periodic Table Unit

6 Parts, 44 Lessons

Thousands of Interactive Slides

Follow Along Work Bundle

108 Pages, with Labs,  
Quizzes, more, all built-in

Exciting Activities, Questions,  
Videos, All built-in

## Matter and Energy and the Environment Unit

58 Lessons

Interactive Slideshows

with Follow Along Work Bundles

125 Pages

Activities, Assessments,  
and more, all built-in



Dear Valued Educator,

Our fully editable .pptx and .doc resources are perfect for educators looking to bring enthusiasm and creativity to their lessons. We encourage you to make changes to fit your needs and style. As science educators, we're committed to providing students with the tools they need to succeed in the classroom and beyond. Each unit in the curriculum includes a range of resources that have been developed through extensive research and use in a busy classroom. Our teaching approach is designed to make science education engaging and exciting for learners of all ages. We offer a one-of-a-kind science curriculum that will challenge, inspire, and educate students to become tomorrow's scientists and leaders. Join us today and learn more about how our program can help you achieve your classroom goals.

With appreciation,

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Sincerely,

[Support@slidespark.net](mailto:Support@slidespark.net)



# SlideSpark Science

MIDDLE-LEVEL  
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[SlideSpark Science on TpT](#)