

Planetary Motion Unit

Preview is a compressed file

The terms below are a measurement of how in the shape of an orbit. The further the orbit is from a perfect circle, the higher the eccentricity. Higher numbers indicate more eccentric orbits.



10

Kepler's three laws of planetary motion can be described as follows:

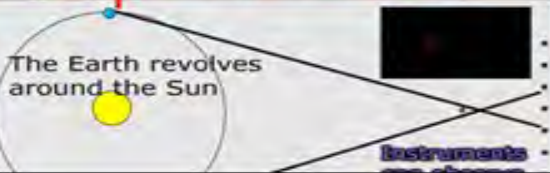
1. Planets move in elliptical orbits with the sun at one focus.
2. A line segment joining a planet and the sun sweeps out equal areas in equal intervals of time.
3. (The Law of Equal Areas)



- Galileo Galilei (1564-1642)
 - Italian physicist, mathematician, astronomer, and philosopher.
 - Played a major role in the Scientific Revolution.
 - His achievements include improvements to the telescope, astronomical observations, and support for Copernicanism.



against the background of more distant stars as the Earth revolves around the Sun.



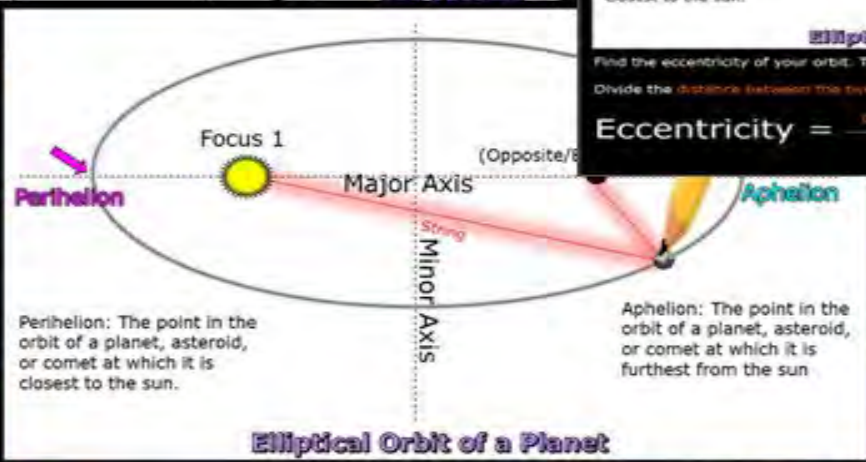
$$9.5 \text{ cm} / 20 \text{ cm} = .47 \text{ eccentricity}$$



Elliptical Orbit

Find the eccentricity of your orbit. To find eccentricity, divide the distance between the foci by the length of the major axis.

$$\text{Eccentricity} = \frac{\text{Distance between foci}}{\text{Length of major axis}}$$



Elliptical Orbit of a Planet

Distances of Planets in Astronomical Units



of the universe.

Geocentric Model Heliocentric Model



Earth=Center



Sun=Center

6 Lessons

Interactive Slideshows

Galileo Galilei (1564-1642)
 Italian natural philosopher, astronomer, and mathematician who made fundamental contributions to the sciences of motion, astronomy, and the scientific method. His formulation of (circular) inertia, the law of falling bodies from the leaning tower, and trajectories marked a change in the study of motion.

He brought the sciences where experimentation became a method. He improved the telescope and pioneered Copernican heliocentrism. This belief eventually resulted in the Roman Inquisition process against him and he spent the rest of his life in prison, although he did sneak some papers out of his house now and again.

Polish astronomer who proposed that the planets have the Sun as the fixed point, and that Earth is a planet which, besides orbiting the Sun every year, this is called the heliocentric or the sun centered system. He also recognized that the earth turns once daily on its own axis and that slow long term changes in the direction of this axis account for the precession of the equinoxes (seasons).

Johannes Kepler (1571-1630)
 German astronomer who discovered three laws of planetary motion. He recognized that the planets move in elliptical orbits with the Sun at one focus. He recognized that the time necessary to move around any one of the planetary orbits is proportional to the area of the sector between the central body and that sun, "equal areas law".

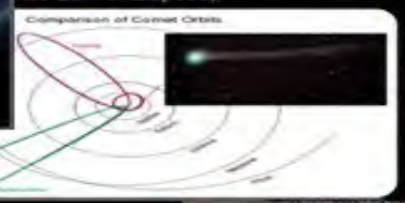
He also recognized that there is an exact relationship between the squares of the planets' periodic times and the cubes of the radii of their orbits, the "harmonic law". Kepler passed the way for future astronomers including Isaac Newton.

The Milky Way is also traveling through space

This should be you!
 You are moving
 At 1.3 million miles per hour right now!

The Cosmic Background Explorer satellite in 1989 and 1990, suggest that our galaxy is moving at 600 kilometers per second (1.34 million miles per hour)!

The laws of planetary motion can be follows:
 comets are even more elliptical in the center of the sun being located at The Law of Ellipses)



- Answer the questions with one of the words below.
- A.) Orbit B.) Ellipse C.) Circular D.) Perihelion E.) Aphelion F.) Focus G.) Heliocentrism H.) Major Axis

This planets orbit is at its...

Try to sketch Law of Equal Areas

Equal Intervals of Time

Perihelion

Focus 1

Major Axis

(Opposite/Empty) Focus 2

Aphelion

Equal Intervals of Time

Planet	Mean Distance from Sun (million km)	Period of Revolution (Earth years)	Period of Rotation at Equator (Earth days)	Equatorial Diameter (km)	Mass (Earth = 1)	Density (g/cm ³)
SUN	—	—	24 h	1,392,000	333,000.00	1.4
MERCURY	57.9	88 d	58 d	4,878	0.055	5.4
VENUS	108.2	224.7 d	243 d	12,104	0.82	5.2
EARTH	149.6	365.26 d	23 h 56 min 4 s	12,756	1.00	5.5
MARS	227.9	687 d	24 h 37 min 23 s	6,794	0.11	3.9
JUPITER	778.4	11.9 y	9 h 56 min 30 s	142,984	317.83	1.3
SATURN	1,429.7	29.5 y	10 h 14 min	120,536	95.16	0.7
URANUS	2,871.0	84.0 y	17 h 14 min	51,118	14.54	1.3
NEPTUNE	4,496.3	164.8 y	16 h	49,528	17.10	1.8
EARTH'S MOON	384,400	27.3 d	27.3 d	3,476	0.01	3.3



1 day on Venus = 243 Earth days
 1 year on Venus = 225 Earth days

Which planets day is longer than its year?
 Which planets have roughly the same length of their days?

Neptune 164.8 years
Jupiter 11.9 years
27 days Mercury
Venus and Earth 224.7 d
Mercury by 1403 km
Earth 5.5 g/cm³
Saturn 95.16
Venus

- Can you name the three below?



A



B



C

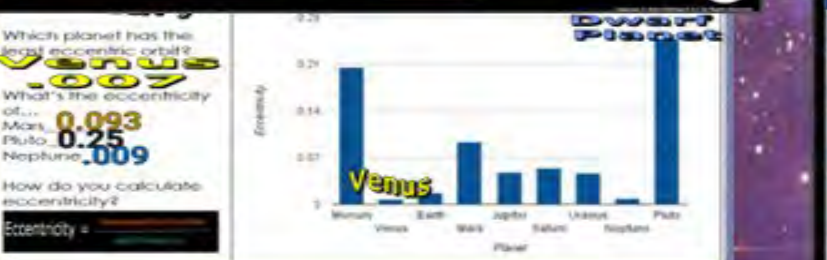


Which one improved the telescope and had to recant his belief in heliocentrism?

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



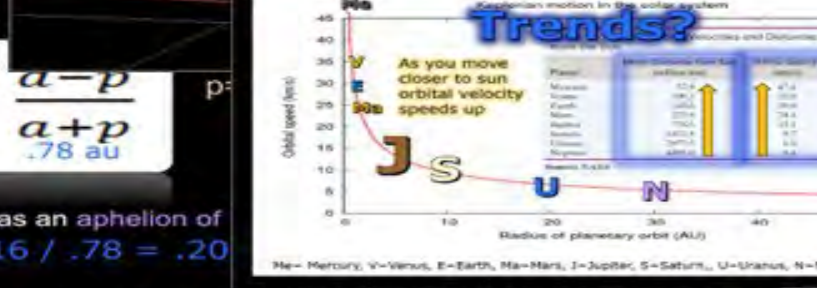
- Name this early German astronomer (1571-1630), mathematician, and astrologer.
 - He is a key figure in the 17th-century scientific revolution
 - Best known for his laws of planetary motion.



Eccentricity = $\frac{\text{Distance between the two Focus Points}}{\text{Length of the major axis}}$



- Please graph the orbital velocity of each planet below.



Mercury has an aphelion of .31 au. $.16 / .78 = .20$

What's the eccentricity of Mercury (note: it will always be between 0 and 1)

Planet	Aphelion	Perihelion
Mercury	.47	.31
Venus	.73	.72
Earth	1.02	.99
Mars	1.67	1.52
Jupiter	5.46	4.95
Saturn	10.12	9.2
Uranus	20.118	18.31
Neptune	30.44	28.32

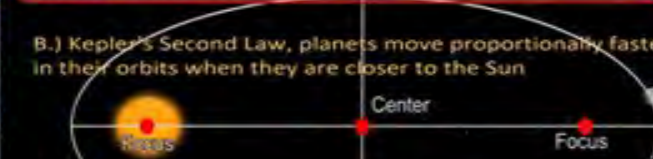
Aphelion: The point in the orbit of a planet, asteroid, or comet at which it is furthest from the sun.
 Perihelion: The point in the orbit of a planet, asteroid, or comet at which it is closest to the sun.

Kepler used simple mathematics to formulate three laws of planetary motion.

A.) Kepler's First Law stated that planets move in elliptical paths around the Sun.

B.) Kepler's Second Law, planets move proportionally faster in their orbits when they are closer to the Sun

C.) Kepler's Third Law explained the relationship between the distance of a planet from the Sun and the amount of time it took to orbit the Sun. Together these laws of celestial mechanics revolutionized astronomy.

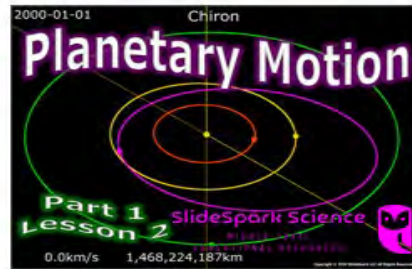


Introduction to Astronomy, Copernicus, Heliocentrism, Galileo, Kepler's Laws of Planetary Motion, Ellipse, Perihelion, Aphelion, Orbits, Orbital Velocities, Eccentricity, Calculating Eccentricity, Astronomical Units, Distances in the Solar System, Graphing Planetary Data, Order of the Planets, Box Game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

Part 1: Astronomy Unit



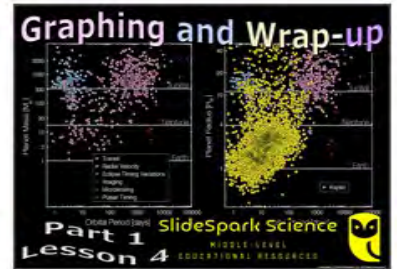
Part 1 Lesson 1 Introduction Kepler



Part 1 Lesson 2 Planetary Motion



Part 1 Lesson 3 Distances Solar System



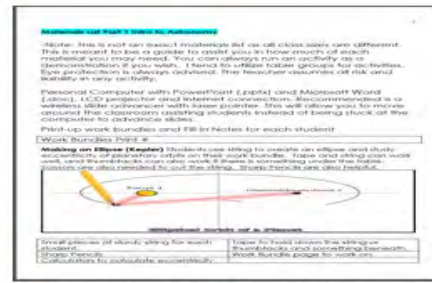
Part 1 Lesson 4 Graphing Wrap Up



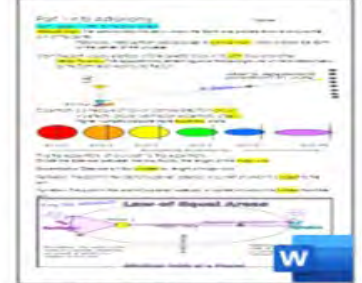
Part 1 Lesson 5 Review Game



Part 1 Lesson 6 Review Game Answers



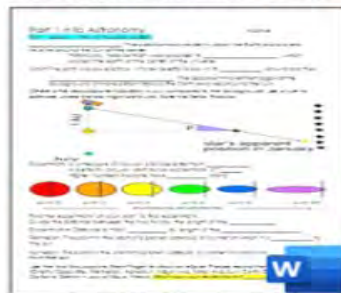
Part 1 Materials List Intro to Solar System



Part 1 Work Bundle Answers



Part 1 Work Bundle Digital



Part 1 Work Bundle Print



Part 1 Work Bundle Writable pdf

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.

Which planet has the largest equatorial diameter? Jupiter 142,984 km
Which planet has the smallest equatorial diameter? Mercury 4,879 km
Which two planets are roughly the same size? Venus and Earth
How much larger is Venus than our own moon? $12,104 - 3,476 = 8628$ km
What object in the solar system has by far the largest diameter? Compare the inner planets equatorial diameter to the outer planets? How are the different?

Planet	Equatorial Diameter (km)
SUN	1,392,000
JUPITER	142,984
SATURN	120,536
URANUS	50,724
NEPTUNE	49,532
PLUTO	2,377
Mercury	4,879
Venus	12,104
Earth	12,756

• Stellar parallax: The apparent movement against the background of more distant stars as the Earth revolves around the Sun.

The Earth revolves around the Sun

Instruments

• Keplers three laws of planetary motion can be described as follows:

- An imaginary line drawn from the center of the sun to the center of the planet will sweep out equal areas in equal intervals of time.
- (The Law of Equal Areas)

Equal

SUN

Focus

Focus

• Eccentricity is a measure of how an orbit deviates from circular.

- A perfectly circular orbit has an eccentricity of zero.
- Higher numbers indicate more eccentric orbits.

e=0.0 e=0.2 e=0.5 e=0.8 e=0.9 e=0.95

Increasing eccentricity

Eccentricity must be Between 0 and 1

- Orbit: The path (usually elliptical) of one celestial body in its revolution around another

2018-08-02 02:00 C/2018 V1



27.2km/s 481,239,572km

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Part 1 Into Astronomy

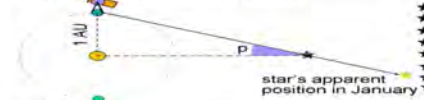
Name: _____

The astronomical model in which the Earth and planets revolve around the Sun at the center. Historically, heliocentrism was opposed to _____, which placed the earth at the center of the universe.

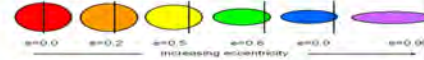
Orbit: the path (usually elliptical) of one celestial body in its _____ around another.

_____ the apparent movement against the background of more distant stars as the Earth revolves around the Sun.

Where is the stars apparent position in July compared to the background. Use a ruler to estimate where the star might be found. Note the Stellar Parallax.



July
Eccentricity is a measure of how an orbit deviates from _____
A perfectly circular orbit has an eccentricity of _____
Higher numbers indicate more _____ orbits.



Find the eccentricity of your orbit. To find eccentricity _____

Divide the distance between the two foci by the length of the _____

Eccentricity = Distance b/t foci _____ by length of the _____

Perihelion: The point in the orbit of a planet, asteroid, or comet at which it is _____ to the sun.

Aphelion: The point in the orbit of a planet, asteroid, or comet at which it is _____ from the sun.

Use the two focus points (Next Page) to draw an ellipse. Please record the Focus 1, Focus 2 (Empty/Opposite), Perihelion, Aphelion, Major Axis, Minor Axis, Sun, Earth, Elliptical Orbit.

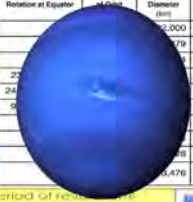
Copyright © 2014 SlideQuest, LLC. What was your eccentricity? _____

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.

Celestial Object	Mean Distance from Sun (million km)	Period of Revolution (Earth days)	Period of Rotation at Equator	Eccentricity of Orbit	Equatorial Diameter (km)	Mass (Earth = 1)	Density (g/cm ³)
SUN	—	—	27 d	—	1,392,000	333,000.00	1.4
MERCURY	57.9	88 d	59 d	0.206	4,879	0.06	5.4
VENUS	108.2	224.7 d	243 d	0.007	12,104	0.82	5.2
EARTH	149.6	365.26 d	23 h 56 min 4 s	0.017	12,756	1.00	5.5
MARS	227.9	687 d	24 h 37 min 23 s	0.093	6,794	0.11	3.9
JUPITER	778.4	11.9 y	9 h 50 min 30 s	0.048	142,984	317.63	1.3
SATURN	1,426.7	29.5 y	10 h 14 min	0.054	120,536	95.16	0.7
URANUS	2,871.0	84.0 y	17 h 14 min	0.047	51,118	14.54	1.3
NEPTUNE	4,496.3	164.8 y	16 h	0.009	49,528	17.15	1.8
EARTH'S MOON	149.6	27.3 d	27.3 d	0.055	3,476	0.01	3.3

Which planet has longest period of revolution? How many earth years is one of its years?	
Which planet has the shortest day? (Period of rotation)	
How long is one day on the Sun?	
Which planet has the most eccentric orbit?	
Which two planets are roughly the same size? (Equatorial Diameter)	
How many earth masses equal the mass of Jupiter?	
Which is larger, the moon or Mercury?	
Which planet has the highest density (g/cm ³)?	
Which planet could float in water? (Has a density of less than 1g/cm ³)	
Which planets day is longer than its year?	
Which planets have roughly the same length of their day?	



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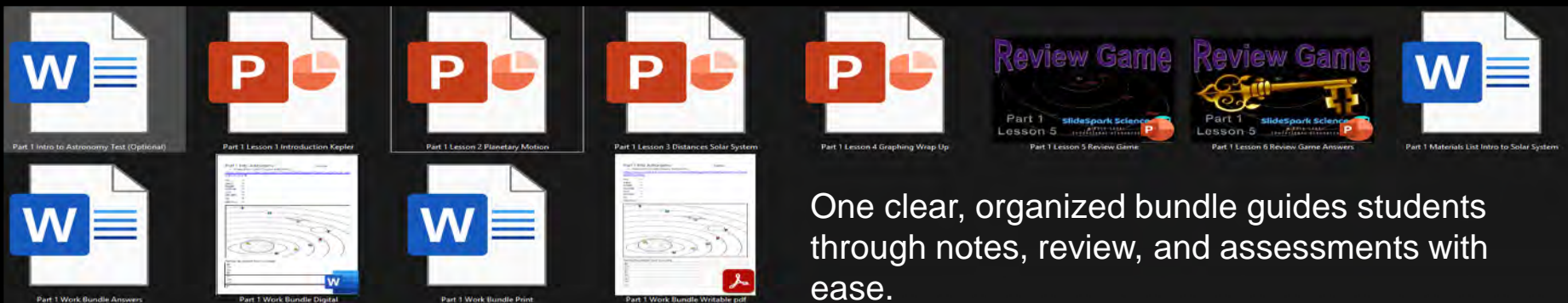
Which planet has longest period of revolution? How many earth years is one of its years?	Neptune 164.8 years
Which planet has the shortest day? (Period of rotation)	
How long is one day on the Sun?	
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Which planets day is longer than its year?	
Which planets have roughly the same length of their day?	

Next Slide

slideshow supports
Work Bundle

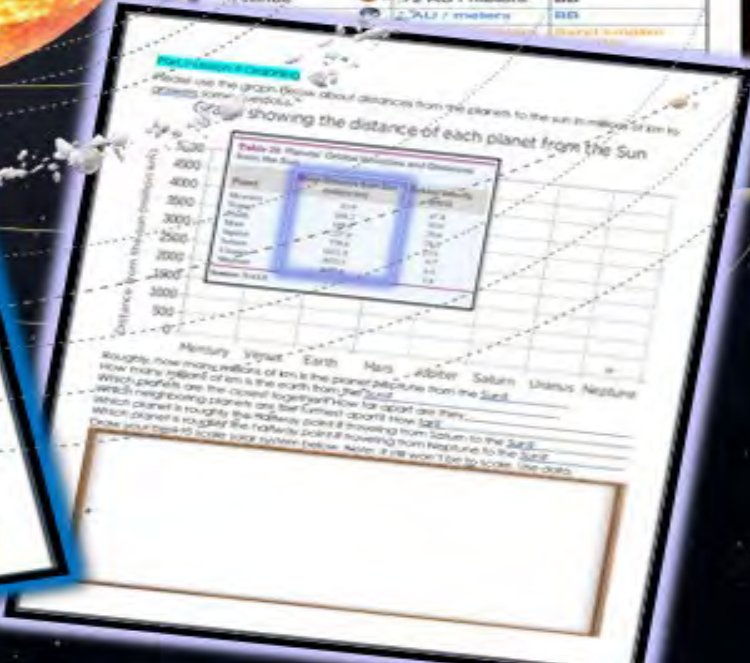
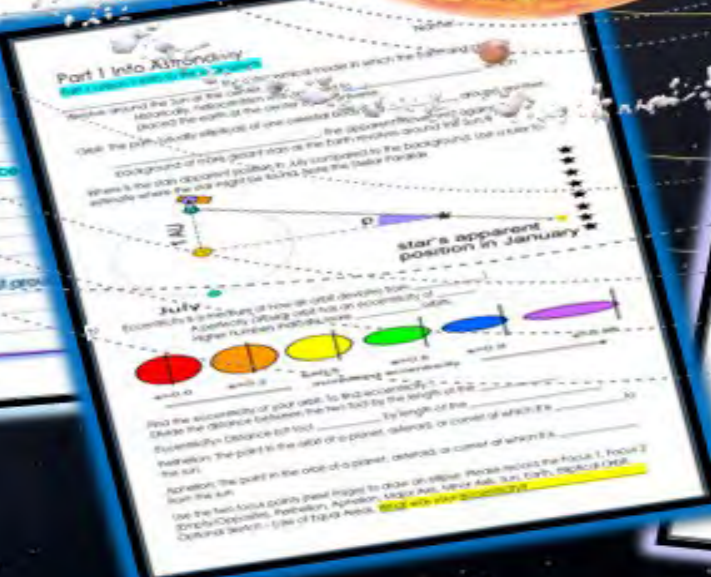
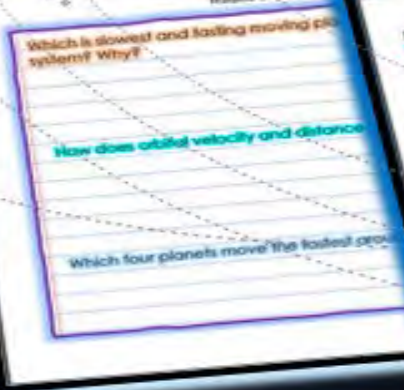
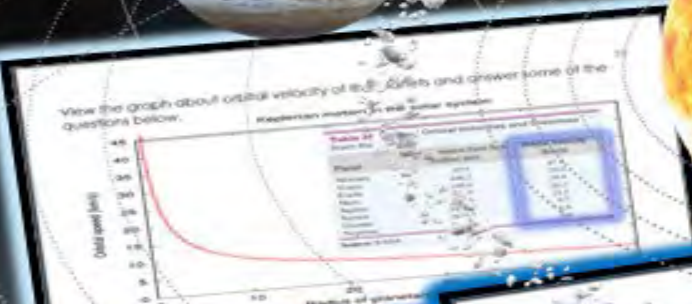
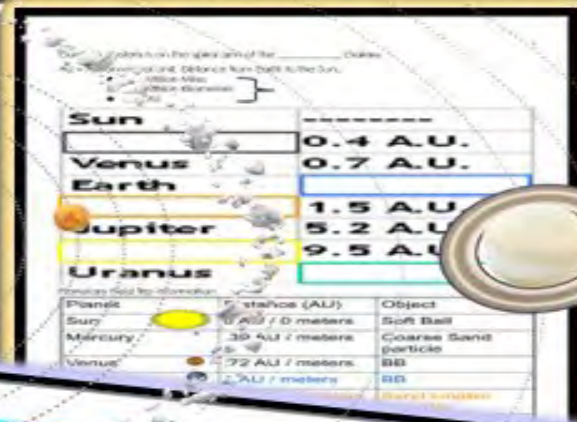
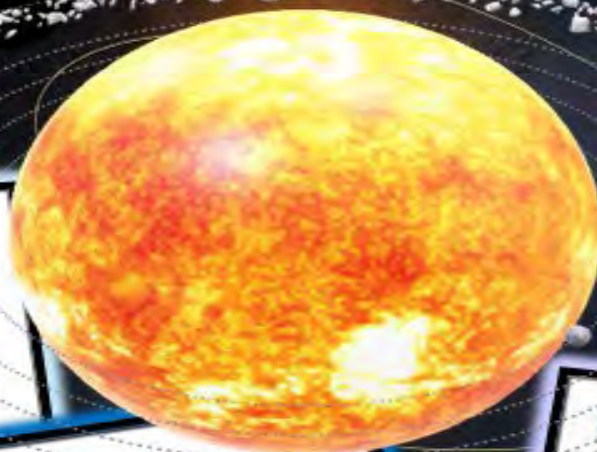
Lesson Planning

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.

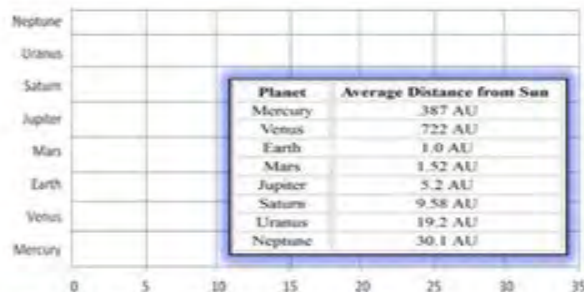


Follow Along Work Bundle

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.



Distances of Planets from Sun in Astronomical Units



Which planet is furthest from the sun? How many AU is it? Neptune, 30.1 AU
 Roughly, how many AU's is Jupiter from the Sun? 5.2 AU
 Why is Mercury less than 1 AU? It is the closest planet to the Sun.
 How many AU's is the earth from the Sun? 1.0 AU
 Roughly, how many AU's is the earth from the planet Jupiter? 4.7 AU
 Which planets have the furthest distance between them? Roughly, how far? Neptune and Uranus, 11.1 AU

Solar System Data

Celestial Object	Average Distance from Sun (million km)	Period of Revolution (Earth days)	Period of Rotation at Equator (Earth days)	Essentiality of Orbit	Equatorial Diameter (km)	Mass (Earth = 1)	Density (g/cm ³)
SUN	—	—	27 d	—	1,392,000	333,000.00	1.4
MERCURY	57.9	88 d	58 d	0.206	4,879	0.06	5.4
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EARTH'S MOON	384,400 (km Earth)	27.3 d	27.3 d	0.055	3,476	0.01	3.3

Which planet has longest period of revolution? How many earth years is one of its years? Neptune, 164.8 years
 Which planet has the shortest day? (Period of rotation) Mercury, 58 days
 How long is one day on the Sun? 27.3 days
 Which planet has the most eccentric orbit? Mercury
 Which two planets are roughly the same size? (Equatorial Diameter) Jupiter and Saturn
 How many earth masses equal the mass of Jupiter? 317.83
 Which is larger, the moon or Mercury? Mercury
 Which planet has the highest density (g/cm³)? Earth
 Which planet could float in water? (Has a density of less than 1.0 g/cm³) Saturn
 Which planet's day is longer than its year? Venus
 Which planets have roughly the same length of their day? Earth and Mars

Elliptical Orbit of a Planet

Kepler's Third Law: The ratio of the square of the period of revolution to the cube of the average distance from the Sun is the same for all planets.



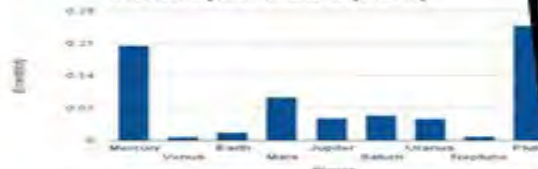
Part 1: Kepler's Third Law



Name the planet / other (not to scale). Can you sketch in the Main Asteroid Belt? Feel free to add in more (asteroids) as we explore the solar system and learn more.

Please use the data sheet to graph the distances of the planets from the Sun in AU's, and at least one other form of data from the data sheet.

Eccentricity of the Planets (+ Pluto)



Which planet has the most eccentric orbit?

Which planet has the least eccentric orbit?

What's the eccentricity of...

Mars

Pluto

Neptune

How do you calculate...

Practice

Mercury

$e = \frac{a-p}{a+p}$

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

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Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Please calculate the eccentricity (always between 0 and 1) of the planets in the table below if given the aphelion and perihelion, the given are in the video line, use it as a guide to help. One planet will be incorrect, which one will it be.

Sum

$$e = \frac{a-p}{a+p}$$

Sum

$$e = \frac{a-p}{a+p}$$

Sum

$$e = \frac{a-p}{a+p}$$

Sum

$$e = \frac{a-p}{a+p}$$

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$$e = \frac{a-p}{a+p}$$

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$$e = \frac{a-p}{a+p}$$

Sum

$$e = \frac{a-p}{a+p}$$

Sum

$$e = \frac{a-p}{a+p}$$

Planet/Comet	Aphelion	Perihelion	Eccentricity
Mercury	69.8 AU	46.0 AU	0.2056
Venus	108.9 AU	68.7 AU	0.0068
Earth	152.1 AU	147.1 AU	0.0167
Mars	249.1 AU	206.3 AU	0.0934
Jupiter	816.6 AU	740.5 AU	0.0483
Saturn	1012.9 AU	912.9 AU	0.0549
Uranus	300.7 AU	287.1 AU	0.0472
Neptune	454.6 AU	444.6 AU	0.0086
Pluto	493.0 AU	29.7 AU	0.2488

Which planet has the most eccentric orbit?

Which planet has the least eccentric orbit?

What's the eccentricity of...

Mars

Pluto

Neptune

How do you calculate...

Practice

Mercury

$e = \frac{a-p}{a+p}$

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

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Eccentricity

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Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

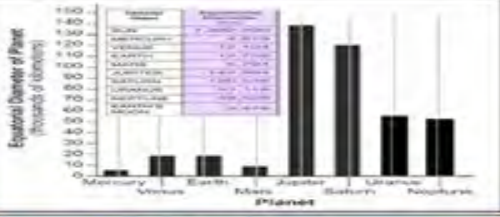
Eccentricity

Mercury

47 AU

46 AU

Eccentricity



Which planet has the largest equatorial diameter?

Which planet has the smallest equatorial diameter?

Which two planets are roughly the same size?

How much larger is Venus than our own moon?

What object in the solar system has by far the largest diameter? Compare the inner planets' equatorial diameter to the outer planets! How are the different?

Practice

Mercury

$e = \frac{a-p}{a+p}$

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

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Eccentricity

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

Part 1 Review Game

1-20 = 5 pts, 21-30 = 10 pts, 31-40 = 15 pts, 41-50 = 20 pts, 51-60 = 25 pts, 61-70 = 30 pts, 71-80 = 35 pts, 81-90 = 40 pts, 91-100 = 45 pts

First Question = 5 pts, 2nd = 10 pts, 3rd = 15 pts, 4th = 20 pts, 5th = 25 pts, 6th = 30 pts, 7th = 35 pts, 8th = 40 pts, 9th = 45 pts, 10th = 50 pts

11. The ratio of the squares of the periods of any two planets is equal to the ratio of the cubes of their average distance from the sun.

12. Johannes Kepler (1571-1630) described that the orbits of the planets were not the perfect circles described by Copernicus but were flattened circles we call ellipses.

13. Galileo (1564-1642) Italian physicist, mathematician, astronomer, and philosopher. Played a major role in the Scientific Revolution. His achievements include improvements to the telescope, astronomical observations, and support for Copernicanism.

14. What object in the solar system has by far the largest diameter?

15. This planet is 1 AU from the Sun.

16. Eccentricity = Distance b/t foci

17. by length of major axis

18. This planet has the slowest orbit around the sun

19. Second Planet in the Solar System

20. Our Solar System is in the spiral arm of the Milky Way Galaxy

21. This planet has the fastest orbit around the sun

22. 4th Planet from the Sun

23. 5th Planet from the Sun

24. This planet has an aphelion of 73 AU and perihelion of 72 AU and eccentricity of 0.0086

25. This planet is roughly 30AU from the Sun

26. This planet has the largest equatorial diameter

27. Which planet has the smallest equatorial diameter?

28. Which two planets are roughly the same size?

29. How much larger is Venus than our own moon?

30. What object in the solar system has by far the largest diameter? Compare the inner planets' equatorial diameter to the outer planets! How are the different?

31. Practice

Mercury

$e = \frac{a-p}{a+p}$

Mercury

47 AU

46 AU

Eccentricity

Mercury

47 AU

46 AU

Eccentricity

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Eccentricity

Mercury

47 AU

46 AU

Ecc

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.

- Kepler's three laws of planetary motion can be described as follows:

- An imaginary line drawn from the center of the sun to the center of the planet will sweep out equal areas in equal intervals of time.

- (The Law of Equal Areas)

Note how the planets velocity increases when it's closer to the sun.



- Kepler's three laws of planetary motion can be described as follows:

- An imaginary line drawn from the center of the sun to the center of the planet will sweep out equal areas in equal intervals of time.

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Note how the planets velocity increases when it's closer to the sun.



Please fill in the **box**. Hint: Is in the slideshow/video link.

- Kepler's three laws of planetary motion can be described as follows:
 - the time required for a planet to **L** the sun, called its period, is proportional to the **L** of the **L**.
 - **L** raised to the 3/2 power, the **constant** is proportional to the **L**.
 - It is often called the Law of **L**.
 - The ratio of the squares of the periods of any two planets is equal to the ratio of the **L** of **L**.
 - (The Law of **L**)

Equal
In equal intervals of

Perihelion **Aphelion**

Focus **Focus**

SUN

Perihelion **Aphelion**

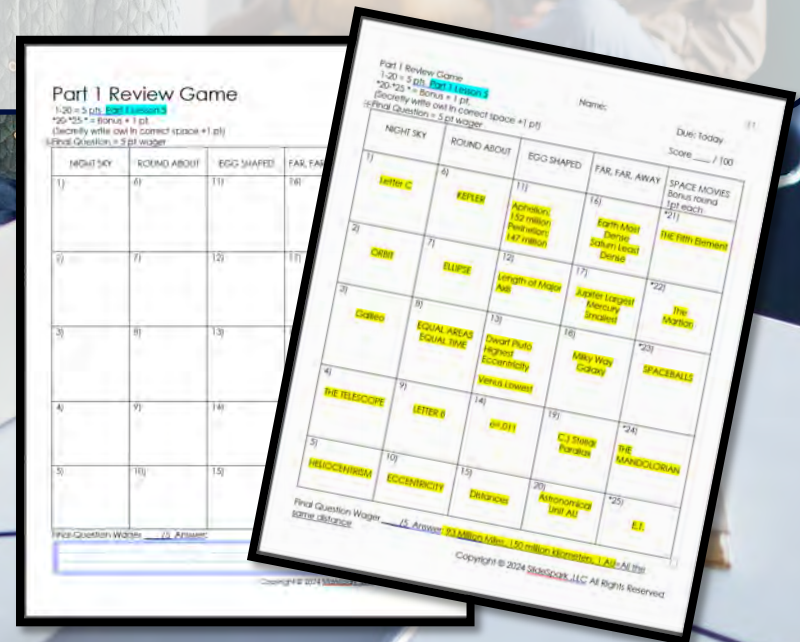
Note:

Name the planet / other (put in scale) Can you switch in the Main Asteroid Belt? Feel free to add in more **planets** as we explore the solar system and learn more.

Please use the data sheet to graph the distances of the planets from the Sun in AU's, and at least one other form of data from the data sheet.

Review Game / Assessments

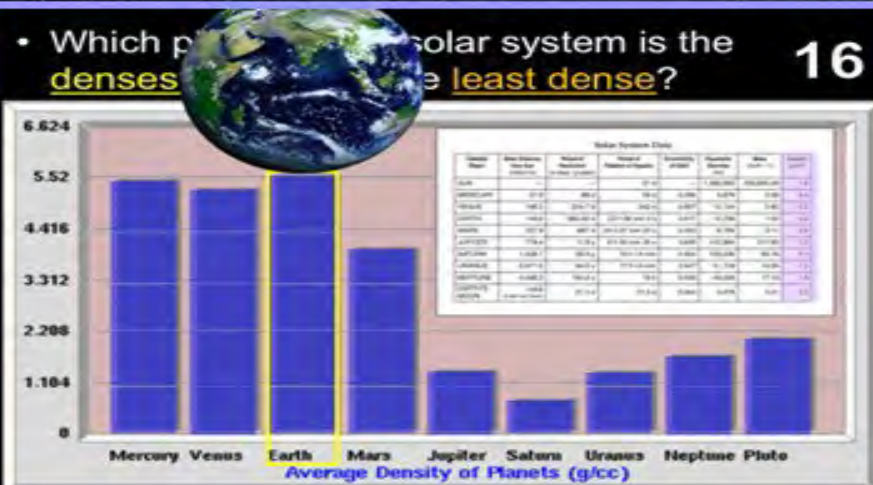
Each of the Units concludes with a review quiz. Answers are provided in slideshow form so students can self assess. A blank template sheet is provided in the work bundle. Students can benefit from working together in small table groups with quiet communication. You can decide if you want to allow the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



Astronomy Quiz Game

- Which planet in our solar system is the **densest** and which is the **least dense**?

16

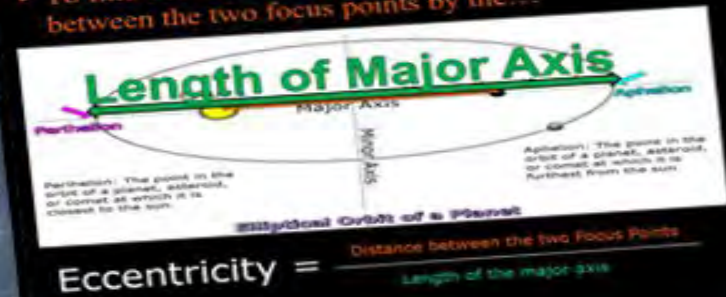


- This is the name for the path (usually one celestial body in its revolution around another celestial body).



- To find eccentricity, you divide the distance between the two focus points by the...

12



- The terms below are a measurement of how an orbit deviates from circular.
 - A perfectly circular orbit has an eccentricity of zero.
 - Higher numbers indicate more eccentric orbits.



What's the perihelion and aphelion of planet earth?
Aphelion: Furthest from sun
 152 million

Perihelion: Closest to the sun
 147 million

11

- Which is not one of Kepler's three laws of planetary motion?

9

- A.) The path of the planets about the sun is elliptical in shape, with the center of the sun being located at one focus. (The Law of Ellipses)
- B.) A planetary body will always have a highly elliptical orbit as it travels around the sun. (The Law of Eccentricity)

The planets in our solar systems are only slightly elliptical. Most have eccentricity of less than 0.1 (Mercury has the most).



- Planetary motion.

- A line between a planet and the Sun covers equal areas in equal times.



8

- Name this Italian physicist (1564-1642), mathematician, astronomer, and philosopher.

- Played a major role in the Scientific Revolution.
- His achievements include improvements to the telescope, astronomical observations, and support for Copernicanism.

3



- Galileo helped improve this device?

- Originally invented by Spectacle makers Hans Lippershey & Zacharias Janssen and Jacob Metius in the Netherlands (1608).



4

- Planetary motion.

- Planets move in orbits shaped like an ellipse.
- A.) Circle
- B.) Orbit
- C.) Ellipse
- D.) Egg
- E.) Perihelion



7

the idea of heliocentrism that planets revolved around a stationary sun.

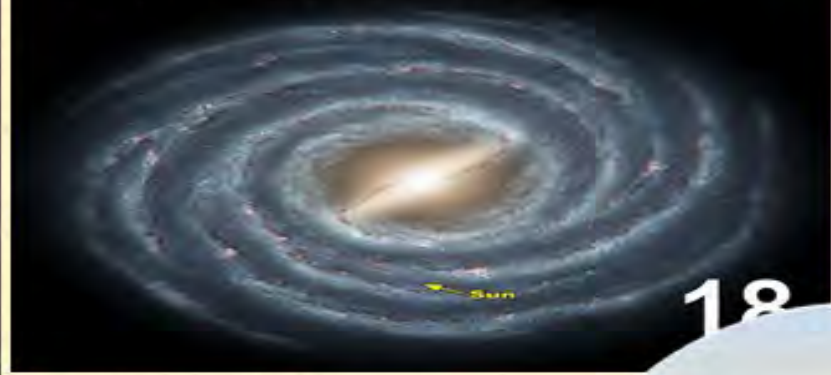
Galileo recanted his beliefs and spent the rest of his life under house arrest.

Heliocentrism

5



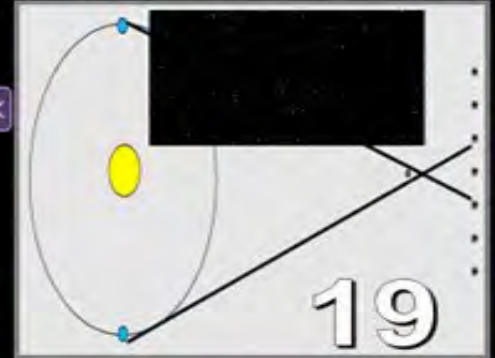
- Our solar system (The Sol System) is on the on spiral arm of this galaxy?



18

- This is the name for the apparent movement against the background of more distant stars as the Earth revolves around the Sun.

- A.) Equinox
- B.) Aphelion
- C.) Stellar Parallax
- D.) Perihelion
- E.) Harmonic Function



19

- The earth is approximately this far from the sun?

- 93 Million Miles
- 150 Million Kilometers
- 1 AU

} Same



Final Question

- This is a unit of measurement, it's the distance from The Sun to Earth.
It equals= 149,598,000 kilometers



20

- Kepler's three laws of planetary motion can be described as follows:



- The ratio of the squares of the periods of any two planets is equal to the ratio of the cubes of their average distances from the sun.
- (The Law of Harmonies)

15

- Eccentricity can also be calculated by this equation.

$$e = \frac{a - p}{a + p}$$

a = aphelion
b = perihelion

30.44 - 29.77 au .67
30.44 + 29.77 au 60.21

Neptune has an aphelion of 30.44 au, and perihelion of 29.77 au. $.67 / 60.21 = .011$

What's the eccentricity of Neptune? **e=.011**

(note: it will always be between 0 and 1)

14

- Which planet / dwarf planet has the highest and lowest eccentricity?



13

- Which letter below is the correct order of the planets in our solar system from the Sun outward?
- A.) Mercury, Venus, Mars, Earth, Saturn, Jupiter, Neptune, Uranus
- B.) Venus, Mercury, Earth, Mars, Saturn, Jupiter, Neptune, Uranus
- C.) Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, Neptune
- D.) Mars, Mercury, Venus, Earth, Jupiter, Saturn, Uranus, Neptune
- E.) Mercury, Venus, Earth, Jupiter, Xena, Uranus, Neptune

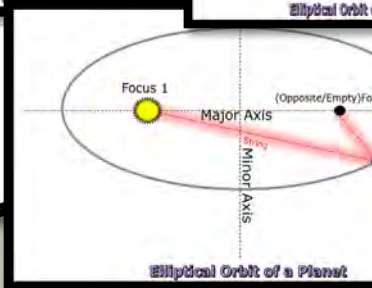
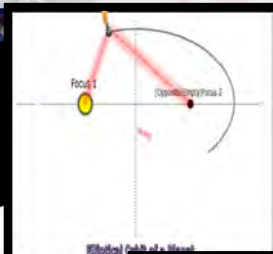
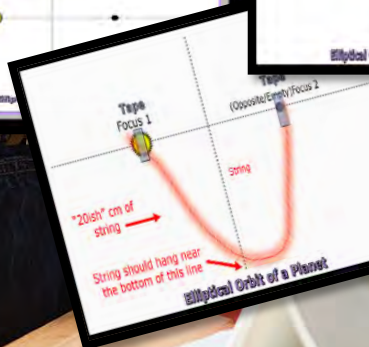
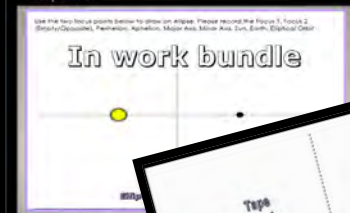
1

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.

Activity / Demonstration of the Law of Ellipses.

In work bundle

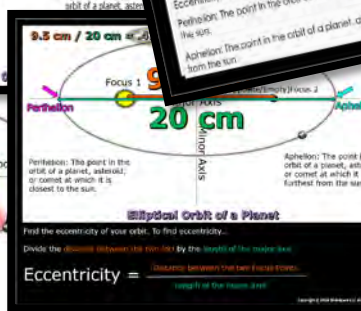


- Just make sure you have recorded the correct notes.

Eccentricity is a measure of how an orbit deviates from a perfectly circular orbit. Higher numbers indicate more deviation from a circle.

Find the eccentricity of your orbit. To find eccentricity, divide the distance between the two foci by the length of the major axis.

Eccentricity = $\frac{\text{Distance between foci}}{\text{Length of major axis}}$



Planet Field Trip Walk / Create

- Use a large tape measure (or one large step = 1 meter) to walk the astronomical units (AU) of the planets.
- Each AU = 1 meter.
- This is an attempt to make things to scale but is challenging because of special, time, and material restrictions.
- Use the chart on the next page with a long tape measure in meters, plates to put the planets on

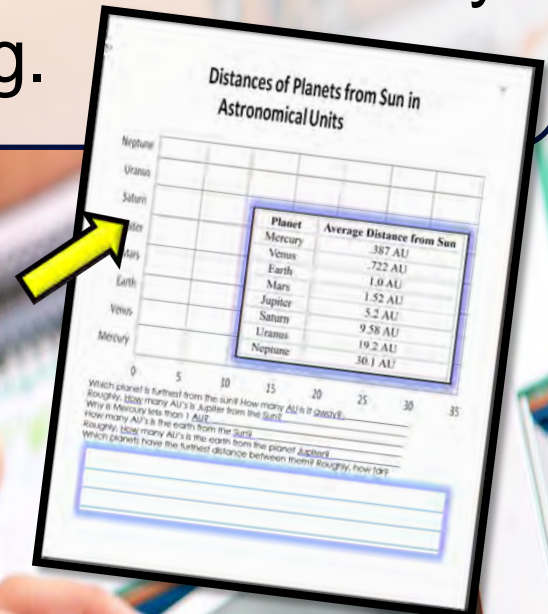
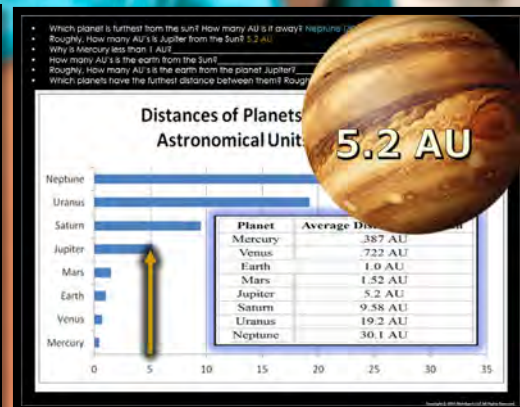
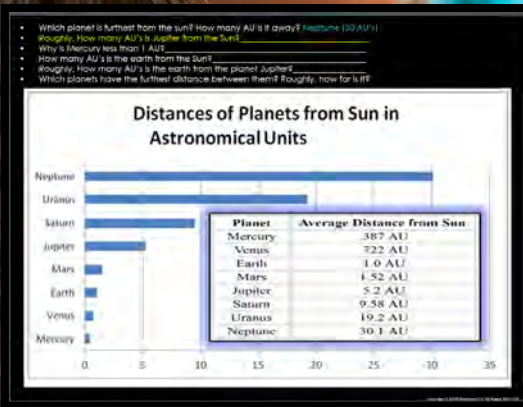
The Teacher could give you the materials, and you need to work together.

- Each table group would be in charge of a planet, measuring tape and items that represent planets on a plate will be provided.



Built-in Graphing

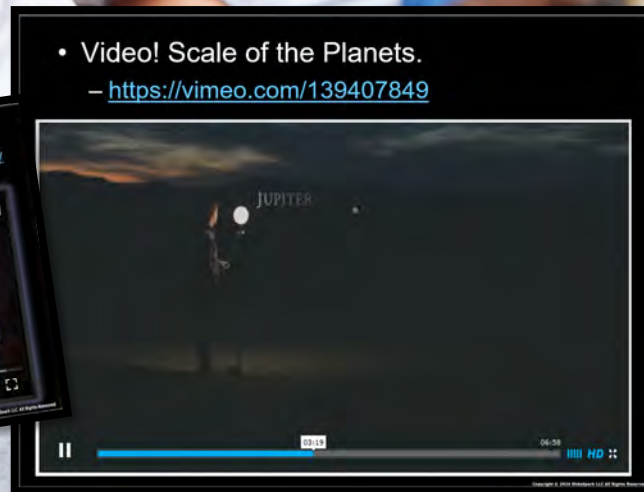
This unit contains built-in graphing opportunities that students answer in their work bundle. With the question revealed before the answer, the teacher can easily call on individual students or table groups to respond. These provide an effective and efficient way for teachers to assess student learning.



Quiz in Work Bundle

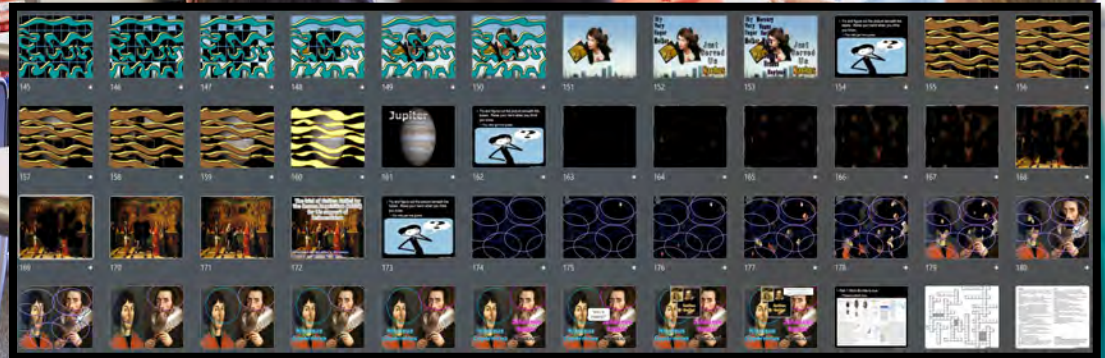
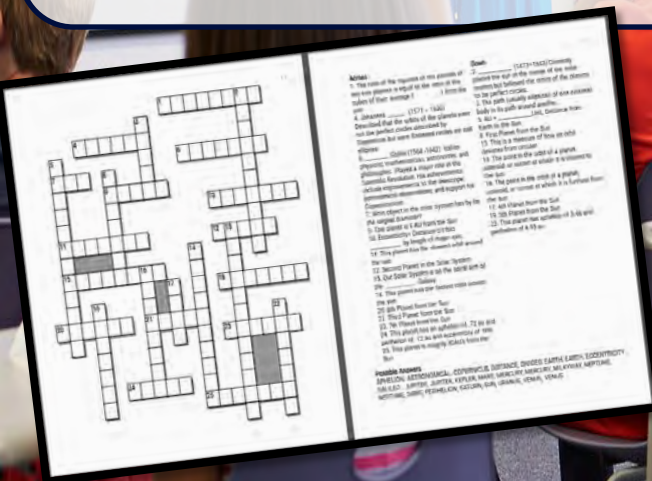
Built-in Video Links

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.



- Reproduction of Galileo's telescope next to a modern day one.



- Reproduction of Galileo's telescope next to a modern day one.



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 1 Lesson 1 Introduction ...](#)

Google Slides



[Part 1 Lesson 2 Planetary M...](#)

Google Slides



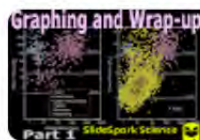
[Part 1 Lesson 3 Distances S...](#)

Google Slides



[Part 1 Lesson 5 Review Game](#)

Google Slides



[Part 1 Lesson 4 Graphing Wr...](#)

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 large satellite or space station with a prominent circular dish and various instruments is visible, extending across the frame.

Astronomy Unit

60 Lessons (6th -8th 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 1.0.

Linear Module (LM)

Service Module (SM)

Hall of Mirrors

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 10³, Temp 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

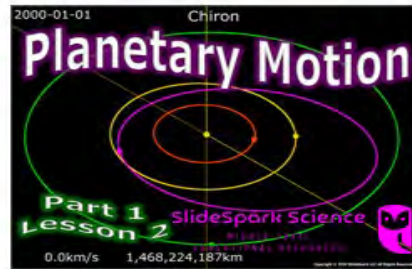
Cooler Warmer Really Hot

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



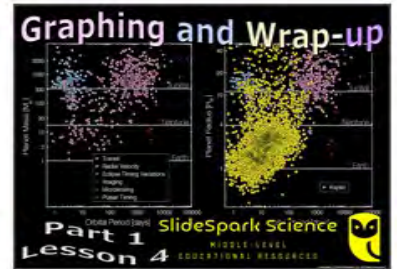
Part 1 Lesson 1 Introduction Kepler



Part 1 Lesson 2 Planetary Motion



Part 1 Lesson 3 Distances Solar System



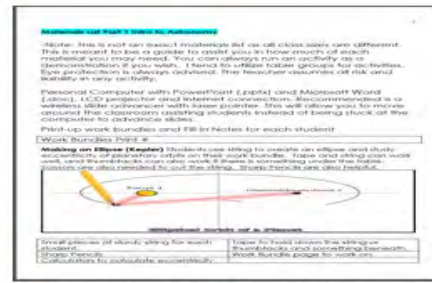
Part 1 Lesson 4 Graphing Wrap Up



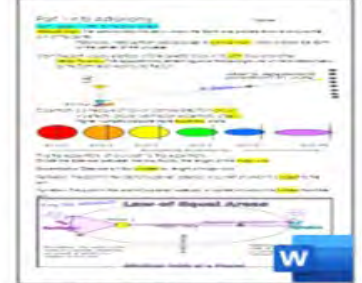
Part 1 Lesson 5 Review Game



Part 1 Lesson 6 Review Game Answers



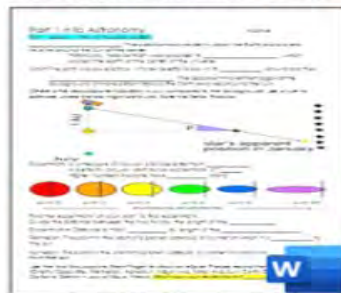
Part 1 Materials List Intro to Solar System



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



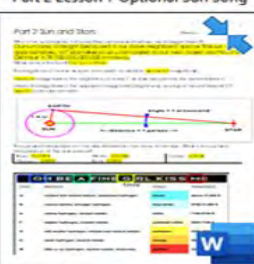
Part 2 Lesson 9 Solar Lunar Eclipse



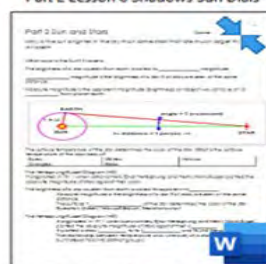
Part 2 Lesson 10 Review Game



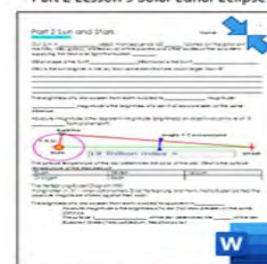
Part 2 Lesson 11 Review Game Answers



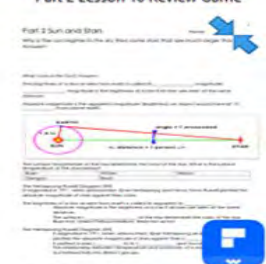
Part 2 Work Bundle Answers



Part 2 Work Bundle Digital



Part 2 Work Bundle Print



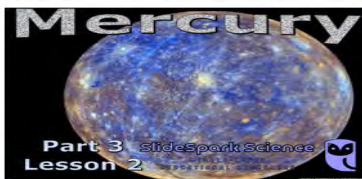
Part 2 Work Bundle Writable pdf

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



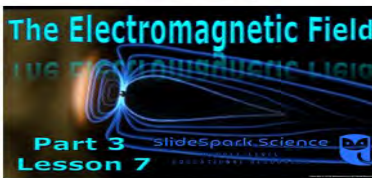
Part 3 Lesson 4 Earth and Moon



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



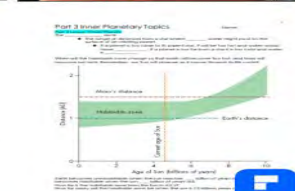
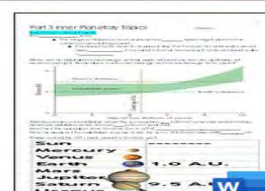
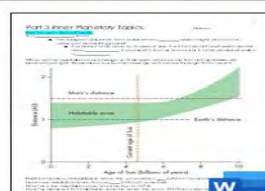
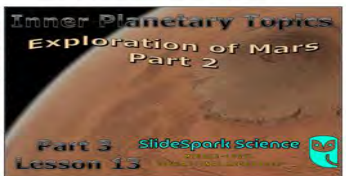
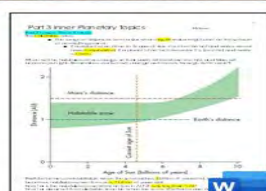
Part 3 Lesson 9 Phases of Moon 2



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



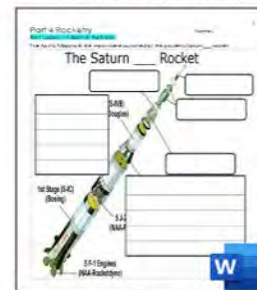
Part 4 Materials List



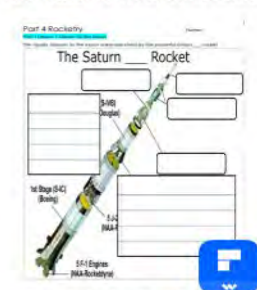
Part 4 Work Bundle Answers



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



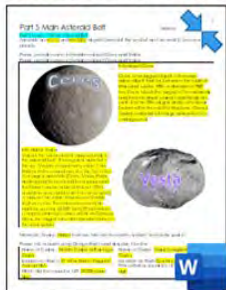
Part 5 Lesson 6 Review Game



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



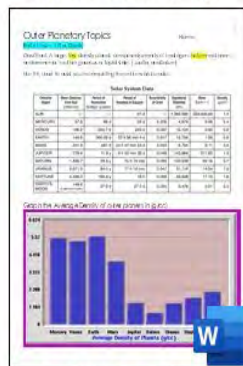
Part 6 Lesson 7 Review Game



Part 6 Lesson 8 Review Game Answers



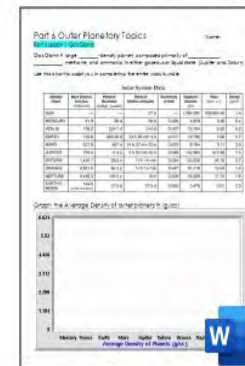
Part 6 Lesson 9 Space Expo Project



Part 6 Work Bundle Answers

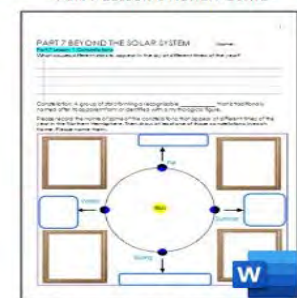
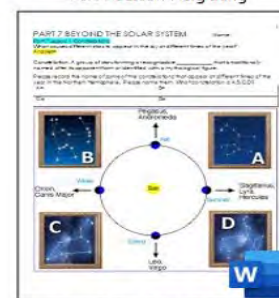
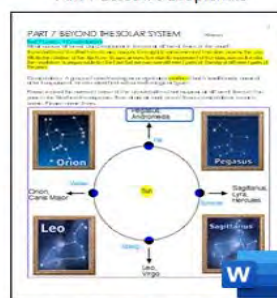
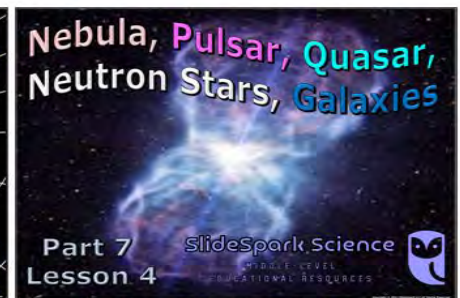


Part 6 Work Bundle Digital



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










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



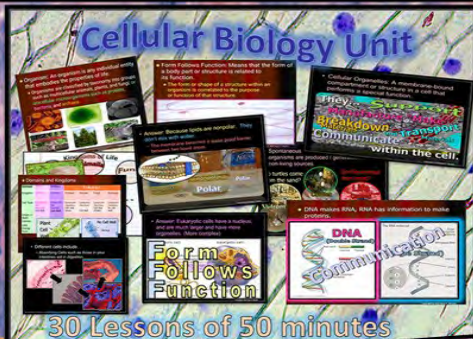
Botany Unit



Human Body Systems Unit



Cellular Biology Unit



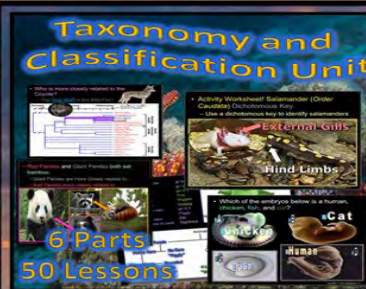
DNA and Genetics Unit



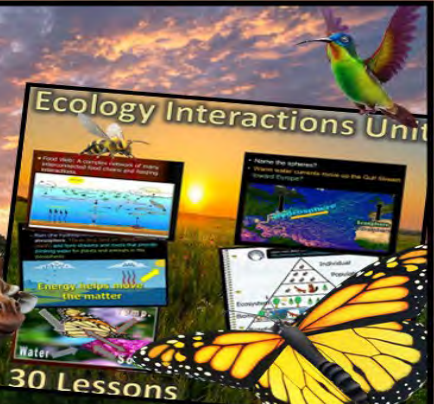
Infectious Diseases



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

Activities, Assessments,
and more, all built-in

125 Pages

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Sincerely,

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SlideSpark Science

MIDDLE-LEVEL
EDUCATIONAL RESOURCES



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