Asteroids, Craters, NEO's

Preview is a compressed file

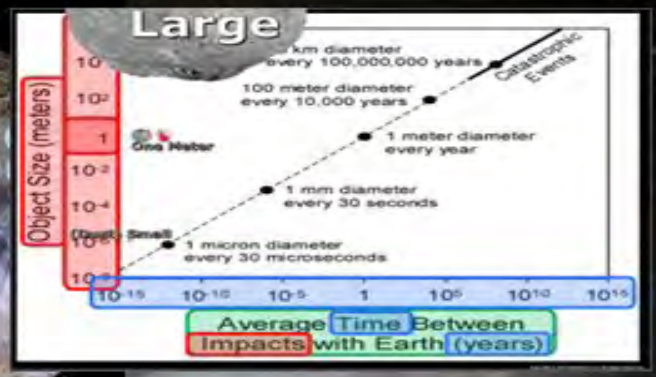
- Asteroids are rocky and metallic objects th
  orbit the sun but are too small to be
  considered planets.

- Which is Ceres and which is Vesta?

A

Vesta

Cere



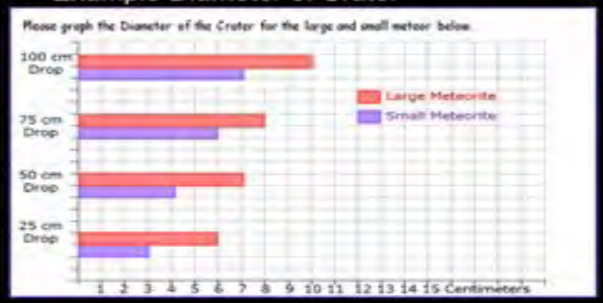
- Lake Manicouagan, Canada
  – 212 million years old.

- Vesta Protoplanet

Protoplanet: A large body of matter in orbit around the sun or a star and thought to be developing into a planet.

Planetary Embryo

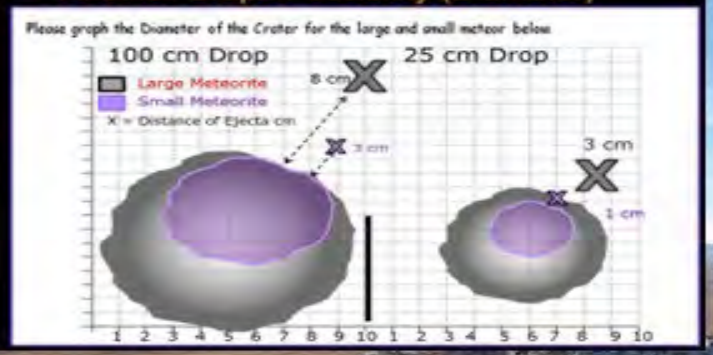
- Example Diameter of Crater



- Meteorite: Space matter that has fallen to the earth's surface from outer space.

Interactive Slideshows

- Another Graph Possibility (Diameter)



- NEO's: Near Earth Objects
  - (Comets and asteroids that come very close to Earth.)

- Craters can be found on earth, but most craters are eroded away by wind and water.
  - Small meteors also burn up in our atmosphere.

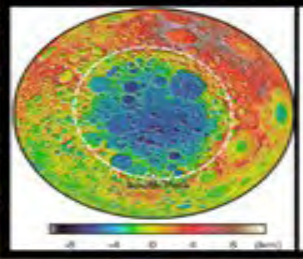
- There are three main types of meteorites.
  - Iron, Stone, and Stony-Iron

Stony-Irons: They are comprised of roughly equal amounts of nickel-iron and stone. They are thought to have formed at the core/mantle boundary of their parent bodies.

Stone——: Once formed part of the outer crust of a planet or asteroid. Contain small, colorful, grain-like inclusions known as "chondrules." These tiny grains originated in the solar nebula, and therefore pre-date the formation of our planet and the rest of the solar system

- Chicxulub Crater
  - 65 million years ago

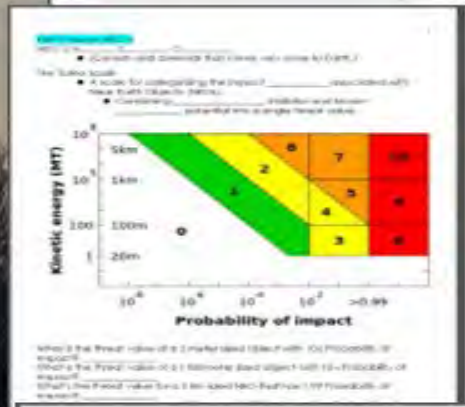
- The largest known impact basin in the solar system is the…
  - South Pole-Aitken Basin on far-side of the moon. 3.9 billion years ago. During Late Bombardment

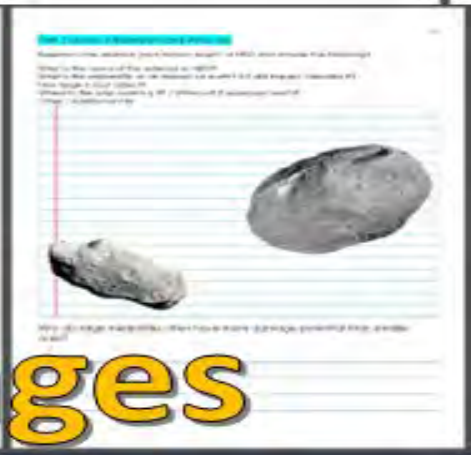


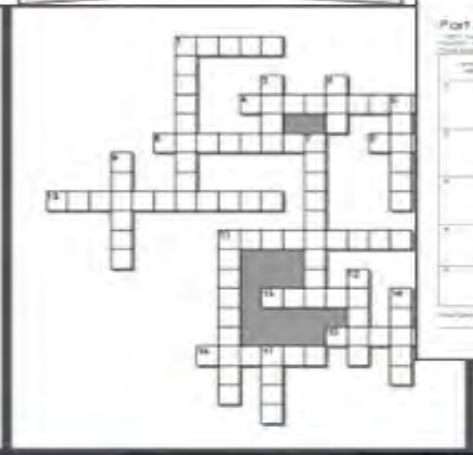
Asteroid 2004 MN4 will come close to Earth on April 13, 2029, but it will not hit.
- (It's a Friday the 13th …Ohhh)

…nall (dust size to coin) piece of …t hits the earth's atmosphere and …

Follow Along Work Bundle







13 Pages

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

- The Torino Scale
  - A scale for categorizing the impact hazard associated with Near-Earth Objects (NEOs).
    - Combining probability statistics and known damage potentials into a single threat value.

- Why do large meteorites often have more damage potential than smaller ones?
  - A.) Large meteorites travel faster.
  - B.) Large meteorites have more mass.
  - C.) Large meteorites are made of iron.
  - D.) Large meteorites explode in the air.
  - E.) Large meteorites spin as they travel.

19

F=ma

- Tunguska event (1908).
  - A (comet or meteorite) exploded just above the surface of the earth causing a massive explosion.

- Name this famous crater in Arizona?
  - It was from an impactor about 50,000 years ago.

- Chelyabinsk Asteroid. February 15th, 2013
  - Injured 1,200 people in Chelyabinsk, Russia.
  - Created a supersonic shockwave that collapsed roofs and blew out windows.
    - Parts of the asteroid exploded 42 miles above the ground.

The "Asteroid" is really A bolide.
Bolide: A large meteor that explodes in the atmosphere.

- A layer of Iridium can be found across the globe in rock layers around 65 million years ago. K-T(Pg) Mass Extinction Event
  - Iridium is found on Meteorites.

- Which is an asteroid, meteorite, and meteor?

- Tunguska event (1908).
  - A (comet or meteorite) exploded just above the surface of the earth causing a massive explosion.

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 NEOs

Part 5 Lesson 4 Impact Lab

Part 5 Lesson 5 Research and Wrap Up

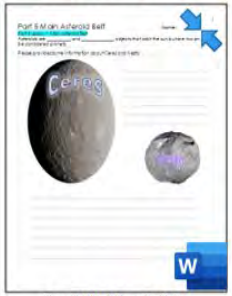
Part 5 Lesson 6 Review Game

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

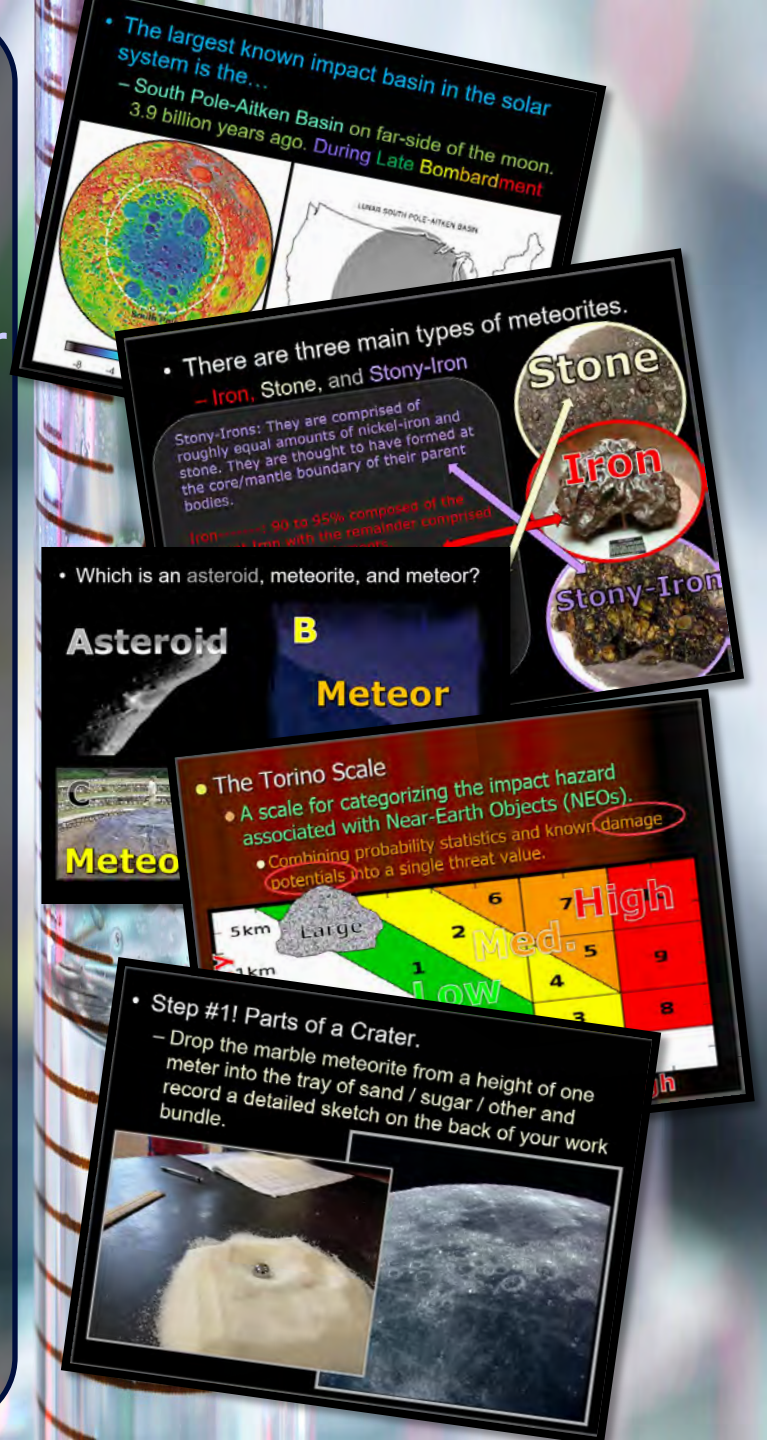
Part 5 Work Bundle Writable pdf

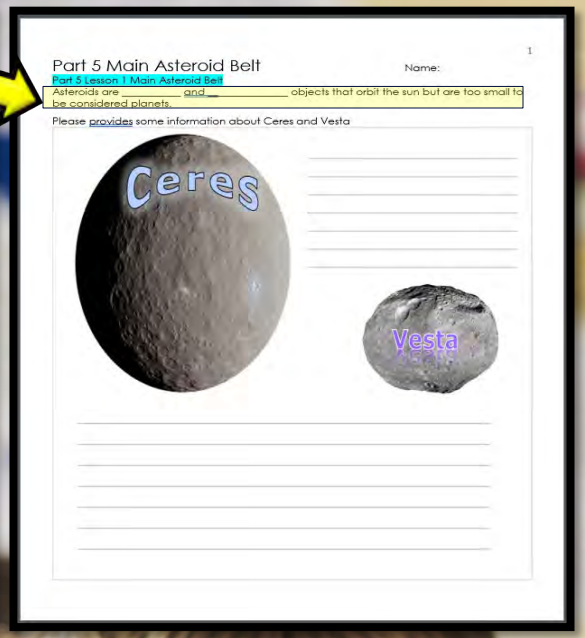
SlideSpark Science

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.

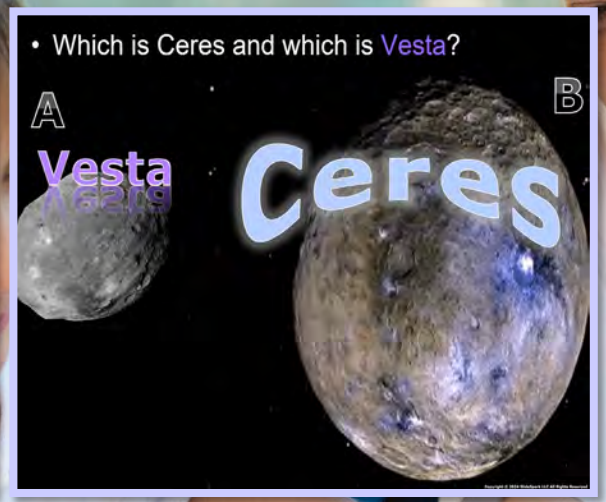
Each unit in the curriculum is designed to help teachers deliver the best possible learning experience for their students. Our interactive science slideshows are filled with questions and answers, important fill-in notes, hands-on activities, projects, games, built-in quizzes, and end of the unit assessment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

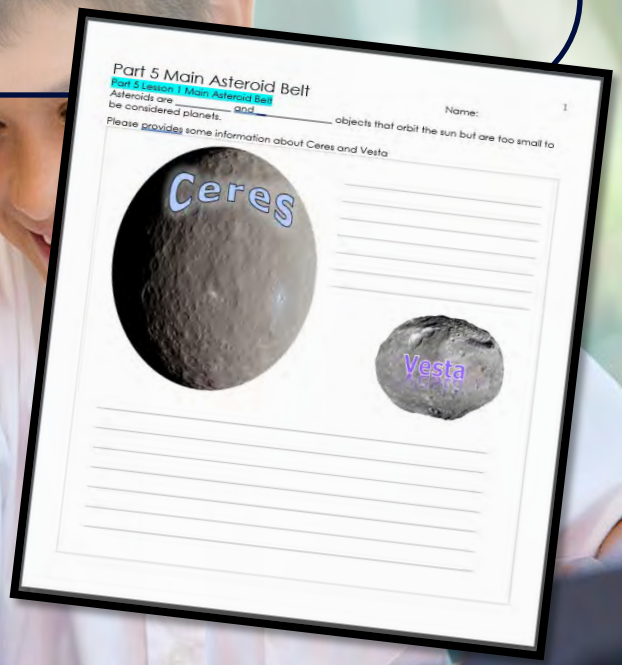




Red Slide Notes: Help students record important information in a fun and easy-to-understand way. Designed red-colored slides contain a few pieces of crucial information that students must record into their work bundle to complete the notes. Students will use these important notes throughout the work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



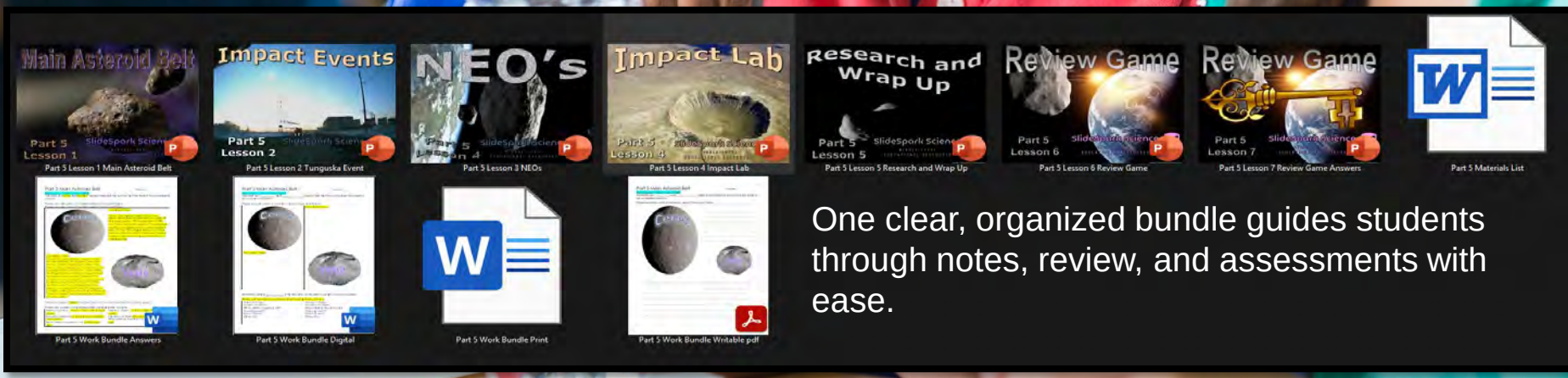


Next Slide

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.

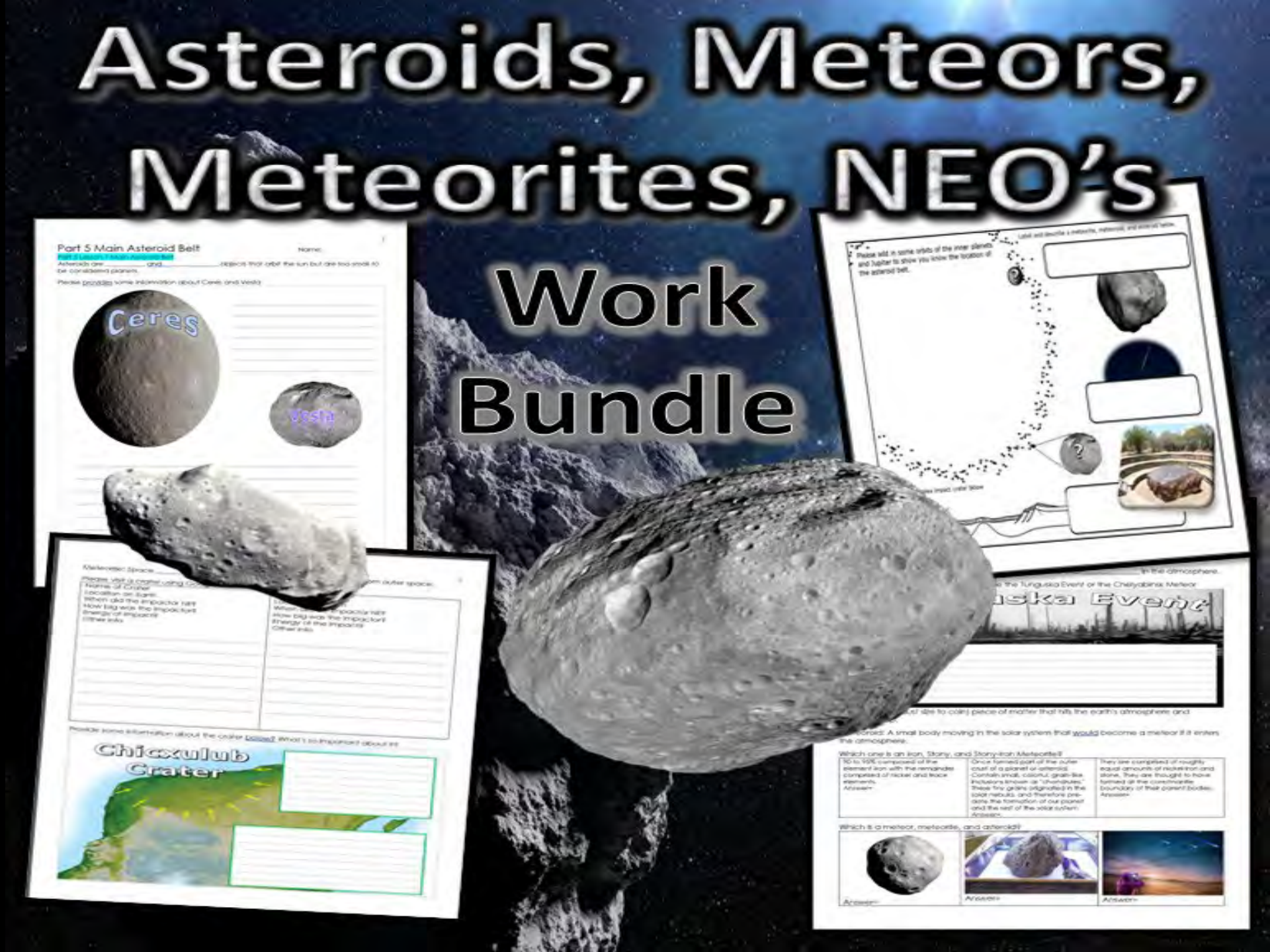


One clear, organized bundle guides students through notes, review, and assessments with ease.

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 that 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.

Asteroids, Meteors, Meteorites, NEO's Work Bundle



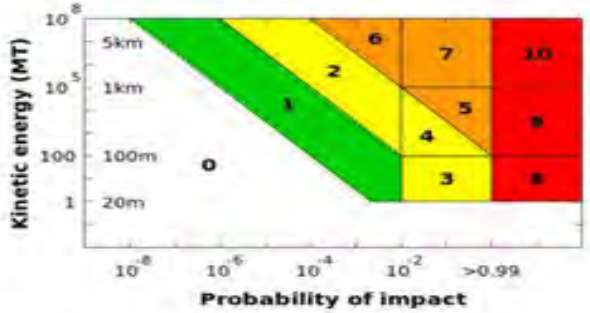
Part 2 (page/NEO's)

NEO's: N_____ E_____ O_____

- (Comets and Asteroids that come very close to Earth.)

The Torino Scale

- A scale for categorizing the impact _____ associated with Near Earth Objects (NEOs).
- Combining _____ statistics and known _____ potential into a single threat value.

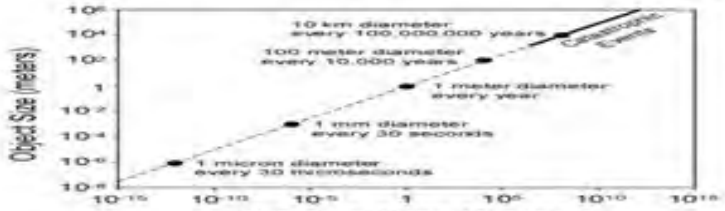


What is the threat value of a 5 meter sized object with 10-6 Probability of impact? _____

What is the threat value of a 1 kilometer sized object with 10-4 Probability of impact? _____

What's the threat value for a 5 km sized NEO that has >.99 Probability of impact? _____

What's the threat value for a 100 m sized NEO that has 10-4 Probability of impact?



How often do smaller meteoroids one millimeter (mm) enter earth's atmosphere?	
How often do smaller meteoroids 1 micron in diameter enter earth's atmosphere?	
How large does the object need to be to cause a catastrophic event?	
The Tunguska impactor may have been 100 meters, how often does an impact of this magnitude occur?	
The Chicxulub impactor may have been 10+km in diameter, how often do impacts of this size occur? What happened 65 million years ago?	

Are large or small impacts/mass common? Explain below using data:

Visit the reading of Asteroid 2011 AG5

https://www.space.com/14463-big-asteroid-2011-ag5-threat-earth.html

When could it hit?

Is the earth in danger if it hits us? Consider its mass and composition. Are these known values?

What are the odds of impact? Are you worried?

Part 3 (page/Impact Lab)

Meteor Impact Activity

Please label the impact crater below as described in the slideshow.

Small Meteorite

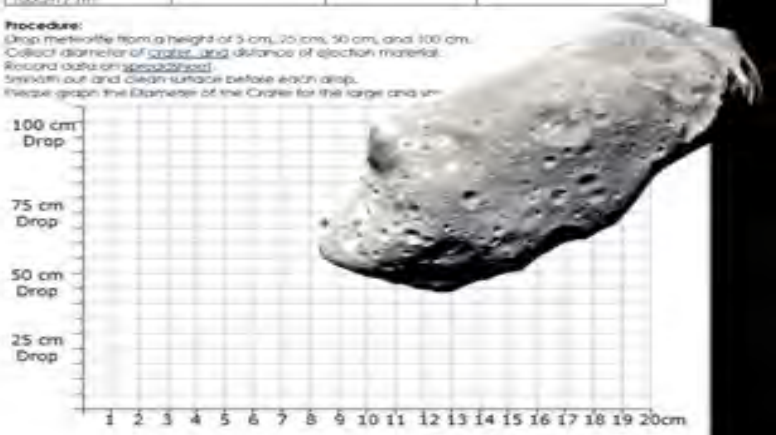
Height (Centimeters)	Mass of Meteor	Diameter of Crater	Distance of Ejecta (cm)
25cm			
50cm			
75cm			
100m / 1m			

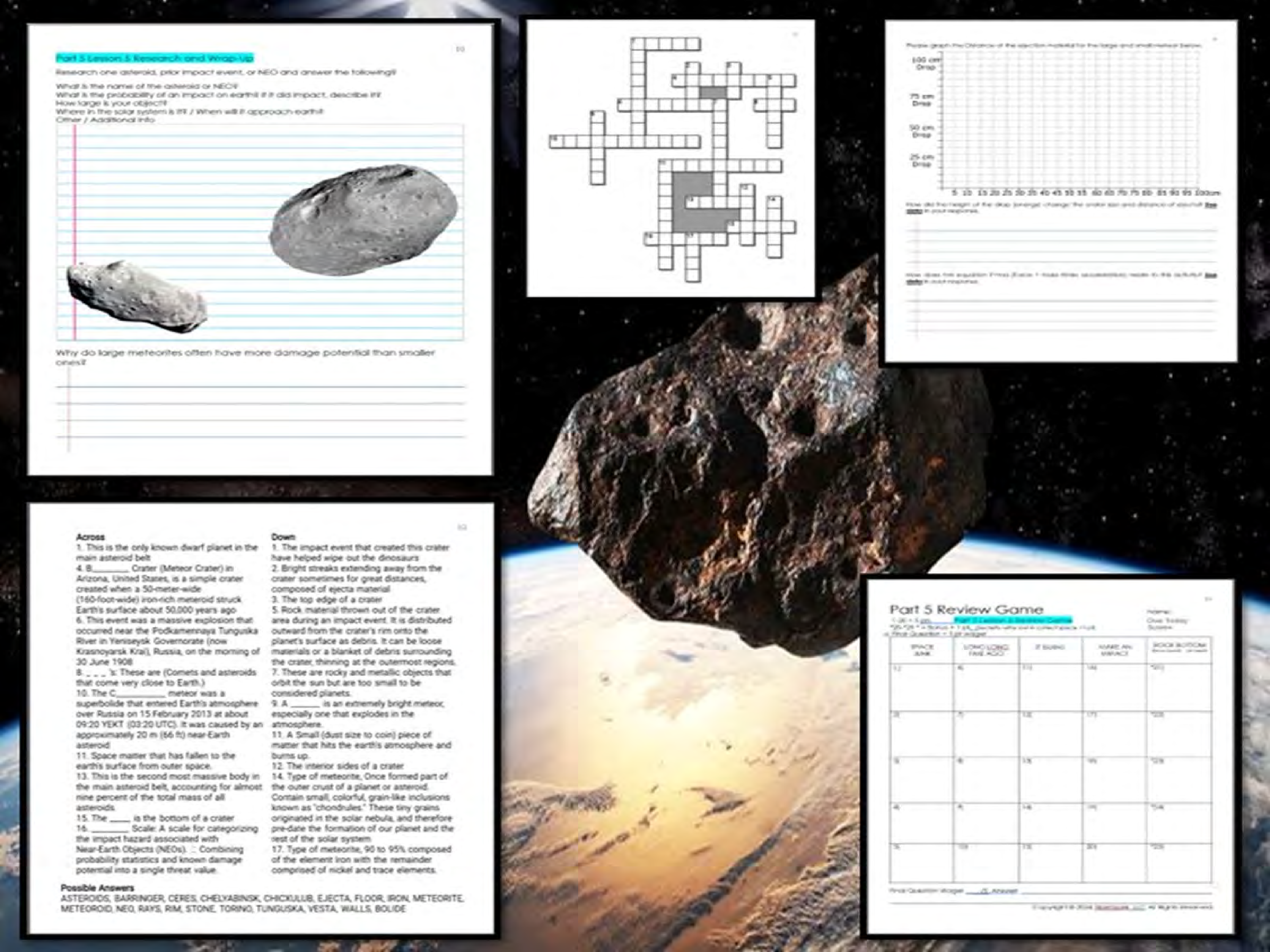
Large Meteorite

Height (Centimeters)	Mass of Meteor	Diameter of Crater	Distance of Ejecta (cm)
25cm			
50cm			
75cm			
100cm / 1m			

Procedure:

Drop meteorite from a height of 5 cm, 25 cm, 50 cm, and 100 cm.
Collect diameter of crater and distance of ejection material.
Record data on spreadsheet.
Smooth out and clean surface before each drop.
Please graph the Diameter of the Crater for the large and s





Part 5 Lesson 5 Research and Wrap-Up

Research one asteroid, prior impact event, or NEO and answer the following!!

What is the name of the asteroid or NEO?
What is the probability of an impact on earth? If it did impact, describe it?
How large is your object?
Where in the solar system is it? / When will it approach earth?
Other / Additional Info

Why do large meteorites often have more damage potential than smaller ones?

Across

1. This is the only known dwarf planet in the main asteroid belt
4. B_______ Crater (Meteor Crater) in Arizona, United States, is a simple crater created when a 50-meter-wide (160-foot-wide) iron-rich meteroid struck Earth's surface about 50,000 years ago
6. This event was a massive explosion that occurred near the Podkamennaya Tunguska River in Yeniseysk Governorate (now Krasnoyarsk Krai), Russia, on the morning of 30 June 1908
8. _ _ _ 's: These are (Comets and asteroids that come very close to Earth.)
10. The C__________ meteor was a superbolide that entered Earth's atmosphere over Russia on 15 February 2013 at about 09:20 YEKT (03:20 UTC). It was caused by an approximately 20 m (66 ft) near-Earth asteroid
11. Space matter that has fallen to the earth's surface from outer space.
13. This is the second most massive body in the main asteroid belt, accounting for almost nine percent of the total mass of all asteroids
15. The ____ is the bottom of a crater
16. ________ Scale: A scale for categorizing the impact hazard associated with Near-Earth Objects (NEOs). : Combining probability statistics and known damage potential into a single threat value.

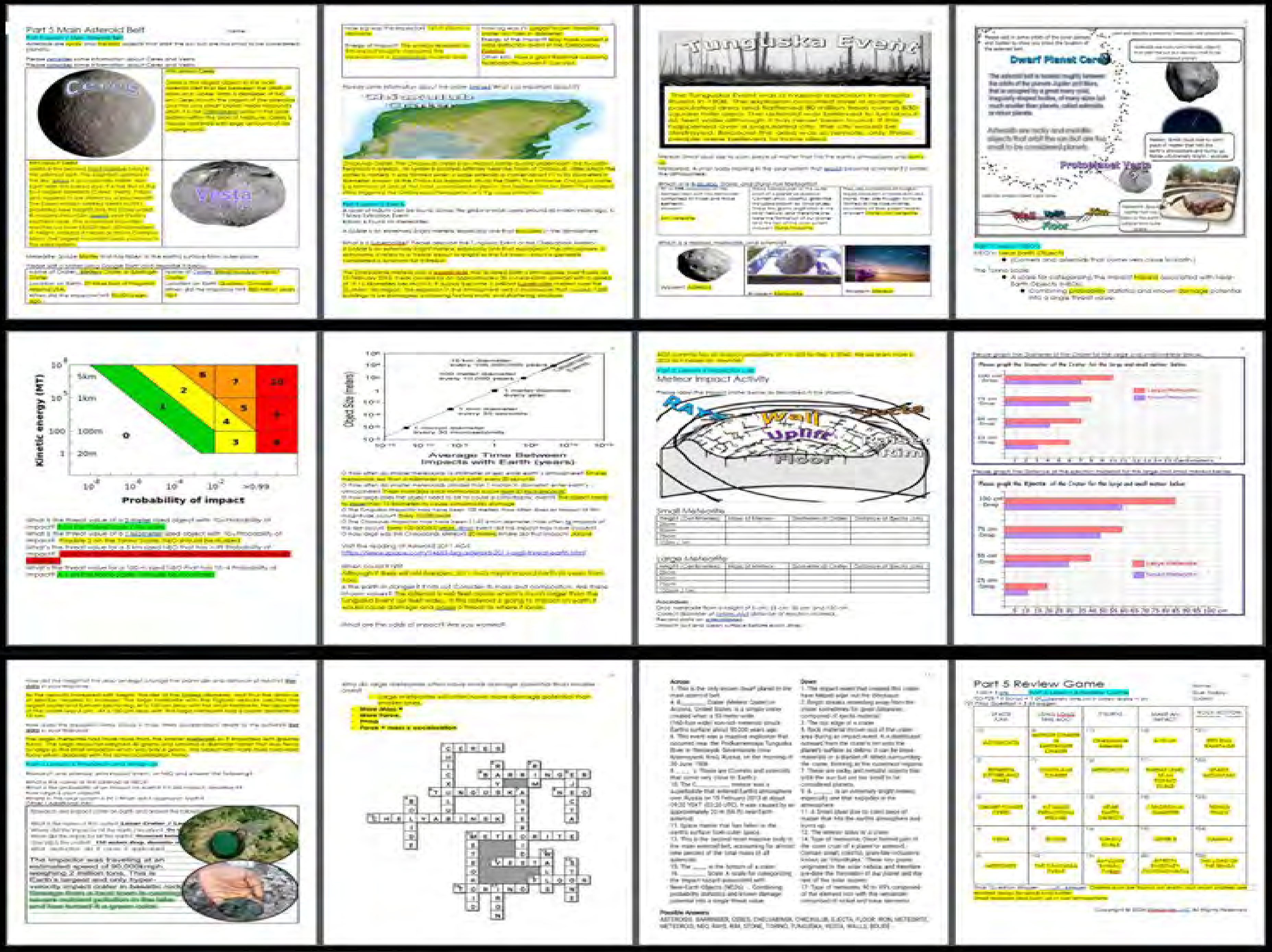
Down

1. The impact event that created this crater have helped wipe out the dinosaurs
2. Bright streaks extending away from the crater sometimes for great distances, composed of ejecta material
3. The top edge of a crater
5. Rock material thrown out of the crater area during an impact event. It is distributed outward from the crater's rim onto the planet's surface as debris. It can be loose materials or a blanket of debris surrounding the crater, thinning at the outermost regions.
7. These are rocky and metallic objects that orbit the sun but are too small to be considered planets.
9. A ______ is an extremely bright meteor, especially one that explodes in the atmosphere.
11. A Small (dust size to coin) piece of matter that hits the earth's atmosphere and burns up.
12. The interior sides of a crater
14. Type of meteorite, Once formed part of the outer crust of a planet or asteroid. Contain small, colorful, grain-like inclusions known as "chondrules." These tiny grains originated in the solar nebula, and therefore pre-date the formation of our planet and the rest of the solar system
17. Type of meteorite, 90 to 95% composed of the element iron with the remainder comprised of nickel and trace elements.

Possible Answers

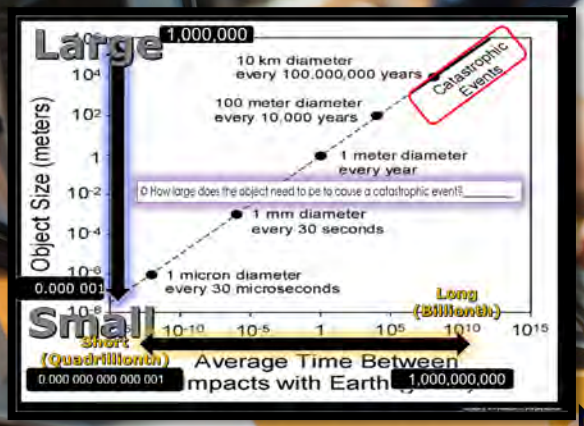
ASTEROIDS, BARRINGER, CERES, CHELYABINSK, CHICKULUB, EJECTA, FLOOR, IRON, METEORITE, METEOROID, NEO, RAYS, RIM, STONE, TORINO, TUNGUSKA, VESTA, WALLS, BOLIDE

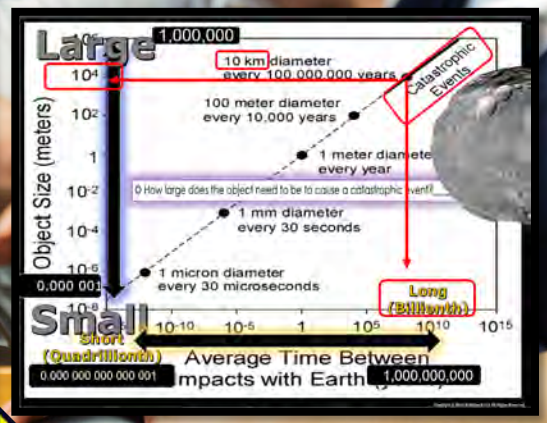
Part 5 Review Game

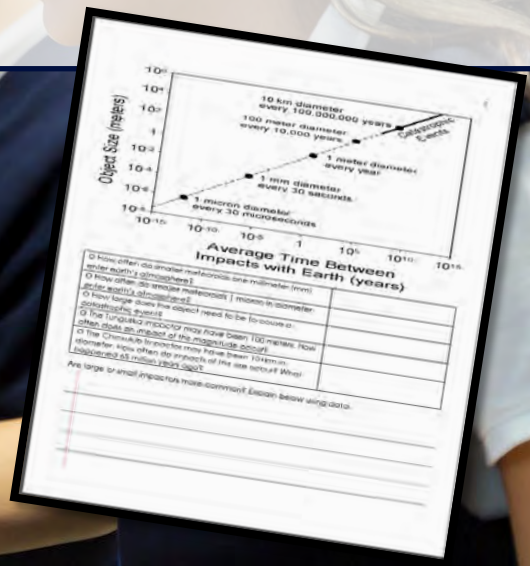

Part 5 Main Asteroid Belt
Ceres
Vesta
Tunguska Event
Dwarf Planet Ceres
Protoplanet Vesta
Wall
Uplift
Floor
Kinetic energy (MT)
Probability of impact
Average Time Between Impacts with Earth (years)
Object Size (meters)
Meteor Impact Activity
Rays
Wall
Uplift
Floor
Rim
Small Meteorite
Large Meteorite
Part 5 Review Game

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.

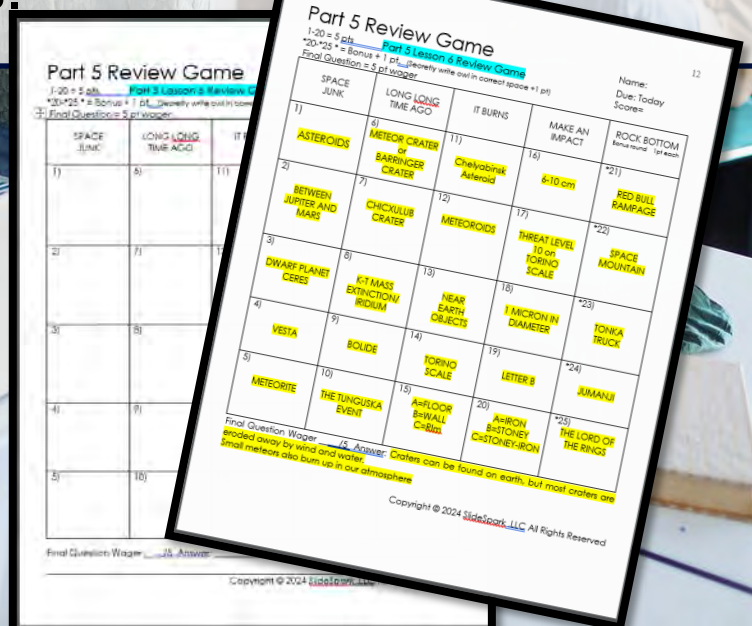






Review Game / Assessments

Each of the 11 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.



Asteroids, Meteors, Meteorites, NEO's

Quiz Game

- This is the name for rocky and metallic objects that orbit the sun but are too small to be considered planets.

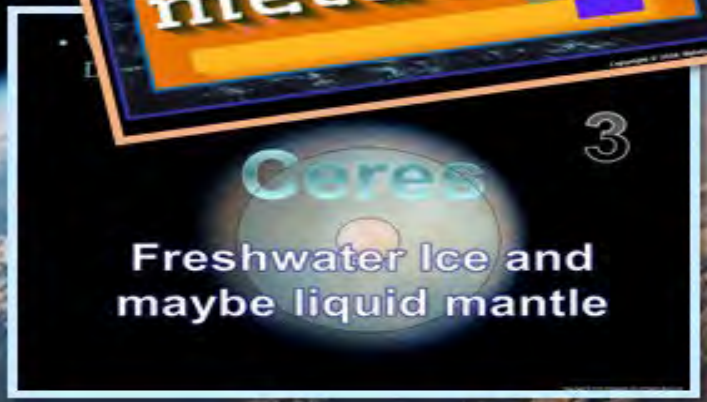
1

- This is the second largest object by both mass and volume in the asteroid belt with a minor-planet designation:
  - It constitutes an estimated 9% of the mass of the asteroid belt and also has the largest mtn in the solar system.

4

- This is the name for space matter that has fallen to the earth's surface from outer space.

5

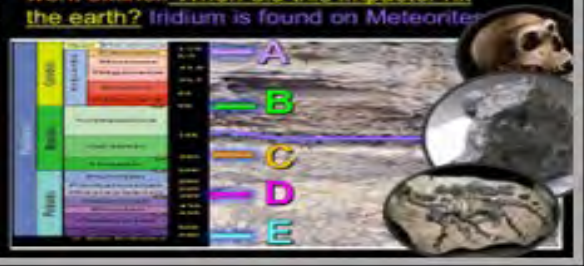


3

- The Main Asteroid Belt lies between these two planets?

- Name this famous crater in Arizona?
  - It was from an impactor about 50,000 years ago.

- A layer of Iridium can be found across the globe in rock layers when the dinosaurs went extinct. When did this impactor hit the earth? Iridium is found on Meteorites



- Name this crater whose impactor may have contributed the extinction of the dinosaurs? 7

- This is an extremely bright meteor, especially one that explodes in the atmosphere.

- This event occurred in (1908) over remote Siberia where a comet or meteorite exploded just above the surface of the earth causing a massive explosion.

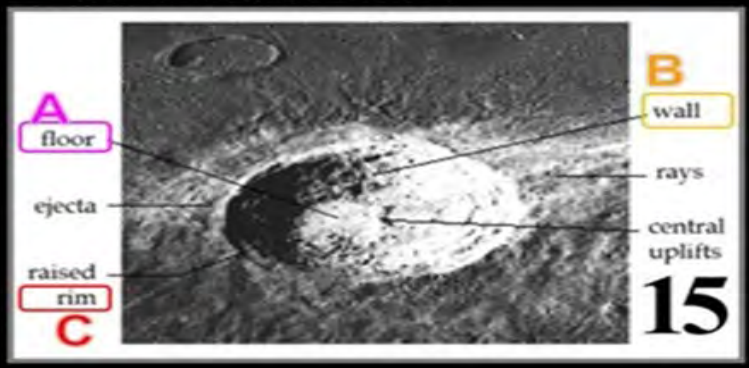
- This meteor exploded in the air above Russia February 15th, 2013 11
  - Injured 1,200 people
  - Created a supersonic shockwave that collapsed roofs and blew out windows.
    - Parts of the asteroid exploded 42 miles above the ground. Some parts landed in a lake.
  - Weighed 10 tons and was traveling at 45,000 mph

- This is a piece of matter that hits the earth's atmosphere and (burns up).

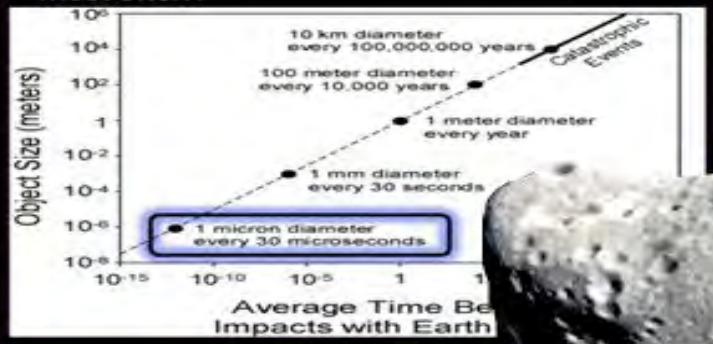
- NEO's stand for _____
  - (These are comets and asteroids that come very close to Earth.)

- This is a scale for categorizing the impact hazard associated with (NEOs).
  - Combining probability statistics and known damage potentials into a single threat value.

- Please name the terms below?



- What size meteorites enter our atmosphere most often?



- There are three main types of meteorites. 20
  - Which is Iron, Stone, and Stony-Iron

Stony-Irons: They are comprised of roughly equal amounts of nickel-iron and stone. They are thought to have formed at the core/mantle boundary of their parent bodies.

Iron------: 90 to 95% composed of the element iron with the remainder composed of nickel and trace elements.

Stone------: Once formed part of the outer crust of a planet or asteroid. Contain small, ful, grain-like inclusions known as les." These tiny grains originated ebula, and therefore pre-date ur planet and the rest of

- What is the threat value on the Torino Scale?
  - A 5 km size object with a very high probability of impact. Threat Level 10

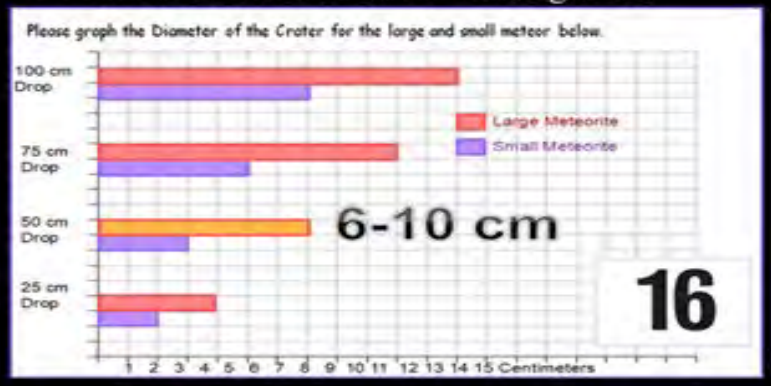
arge meteorites often have more potential than smaller ones?

- e meteorites travel faster.
- ge meteorites have more mass.
- Large meteorites are made of iron.
- D.) Large meteorites explode in the air.
- E.) Large meteorites spin as they travel.

19

F=ma

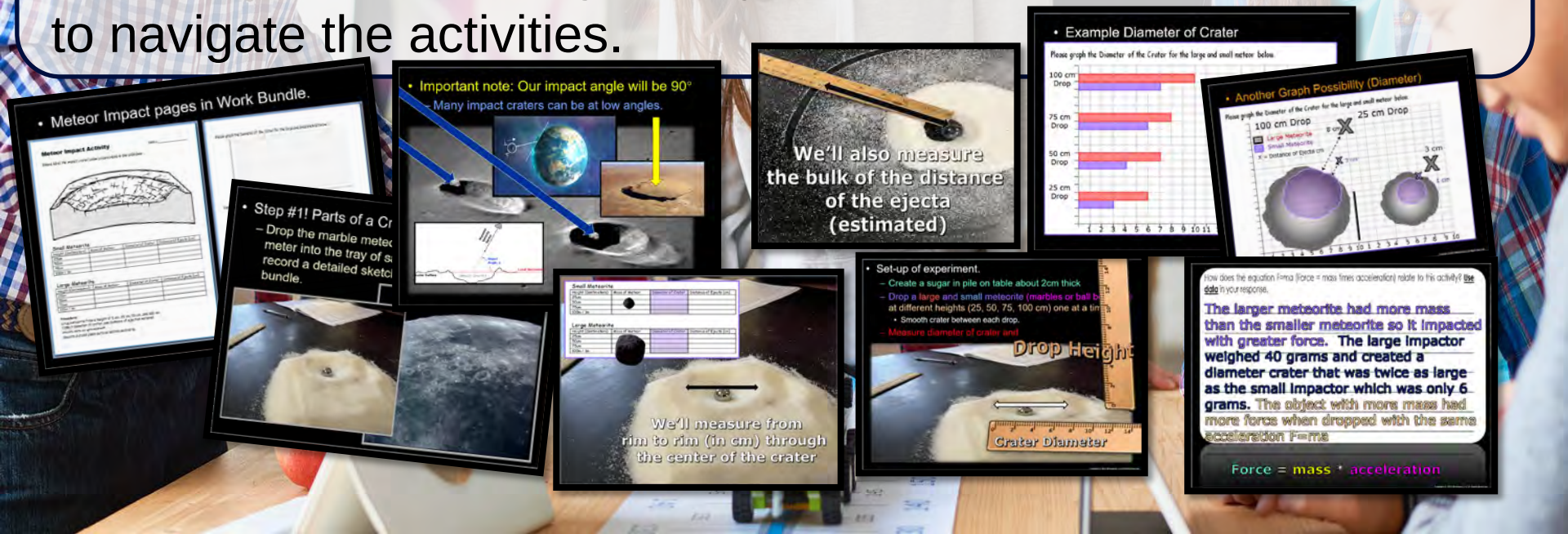
- Predict the diameter of the missing crater



- Craters can be found on earth, but most craters are eroded away by wind and water.
  - Small meteors also burn up in our atmosphere.

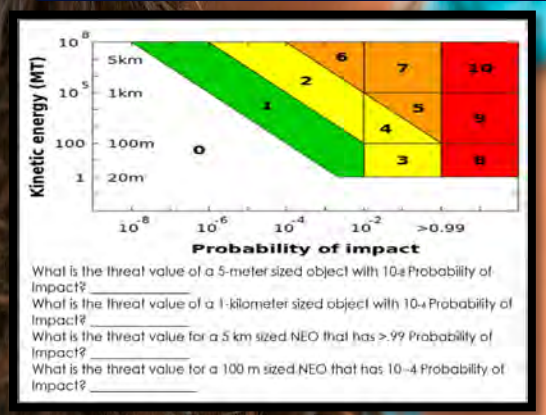
Activities

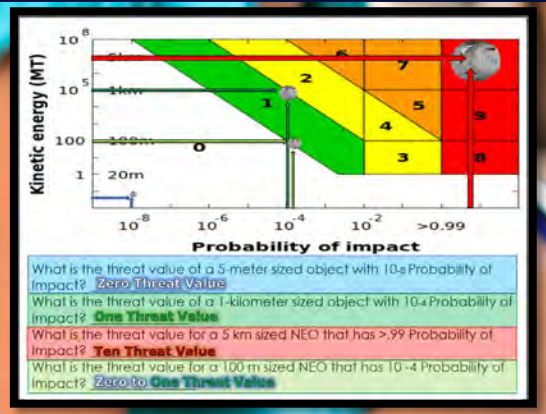
Our science activities are designed to help students explore and understand complex scientific concepts in an engaging and interactive way. Each science unit includes several hands-on activities that encourage students to collect data and think critically about the world around them. Our easy-to-follow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

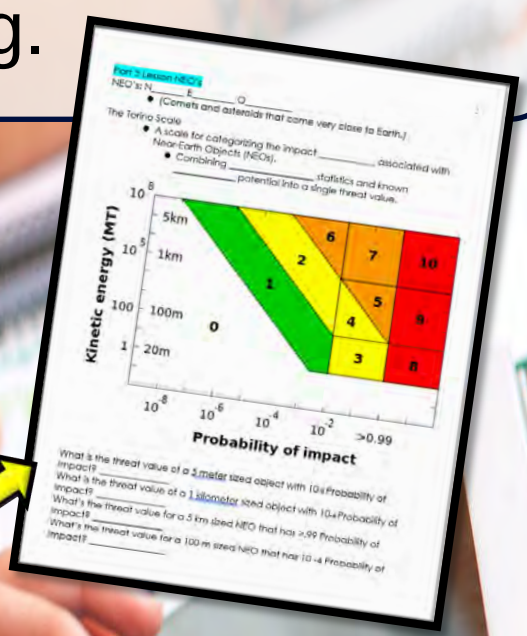


Built-in Assessment

This unit contains built-in assessment questions 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.







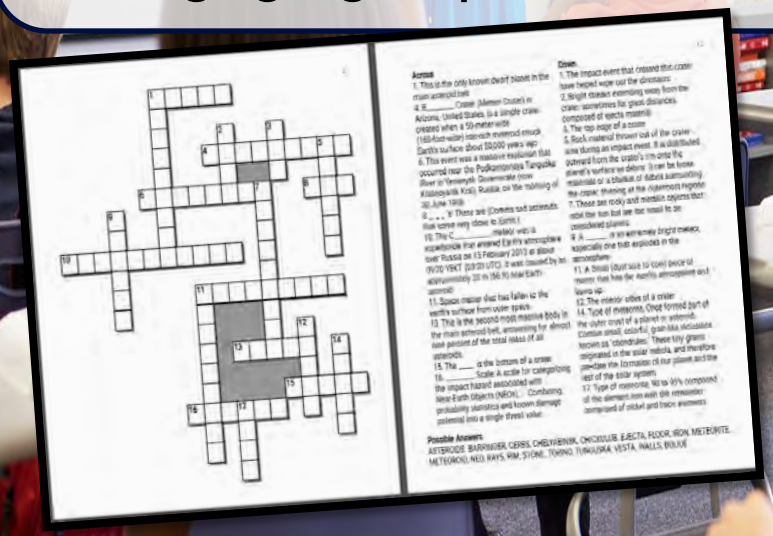
Quiz in Work Bundle

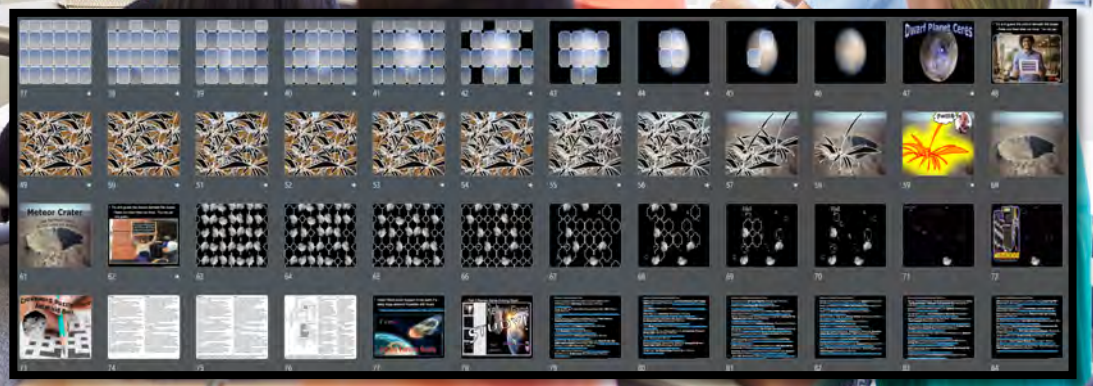
Built-in Video Links

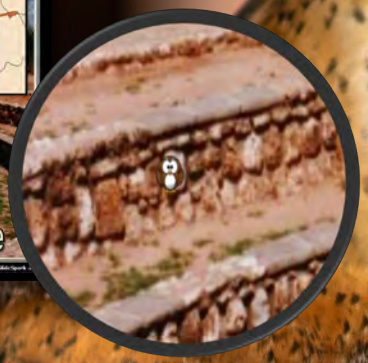
Our science education program is designed with the modern, multimedia learner in mind, and our video and academic links are a perfect complement to our educational materials. These short clips are embedded into the slideshow at just the right places for a fantastic review. Whether you're studying biology,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



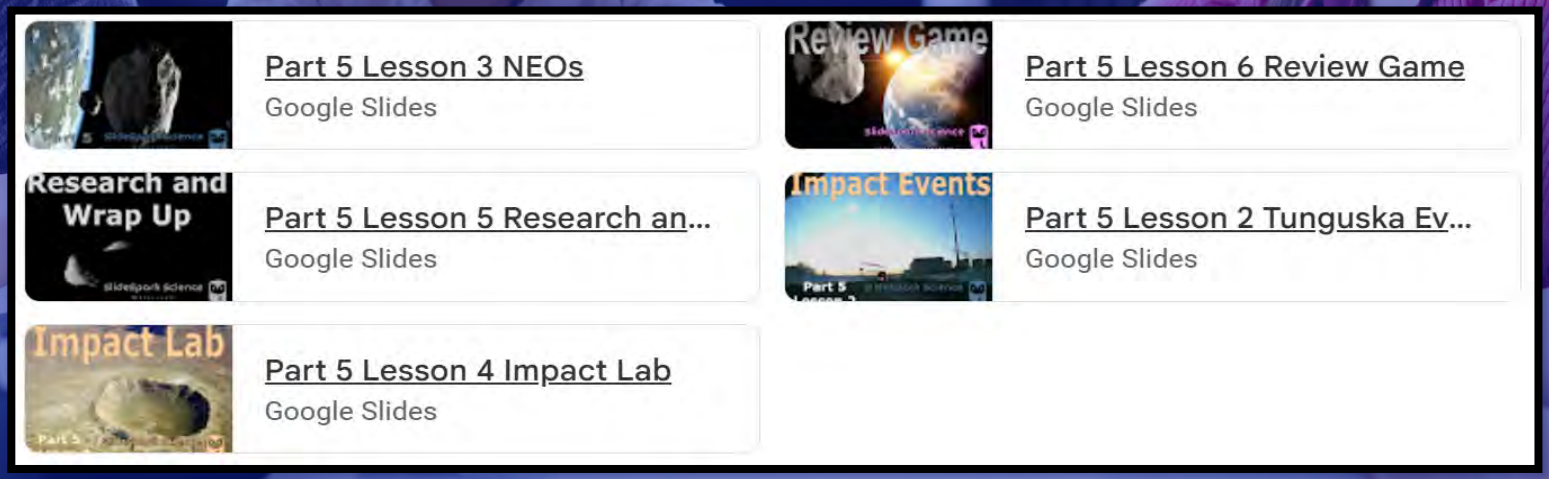




The Owl - Each Part of the slideshow has a small clipart Owl hiding somewhere in a slide. The owl is incredibly small and blended into just the right slide. If a student spots the “Owl” they can raise their hand high into the air. When you call upon the student they can say “Owl" and be the student who 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.



Astronomy Unit

Astronomy Unit

60 Lessons (6^{th} -8^{th} 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

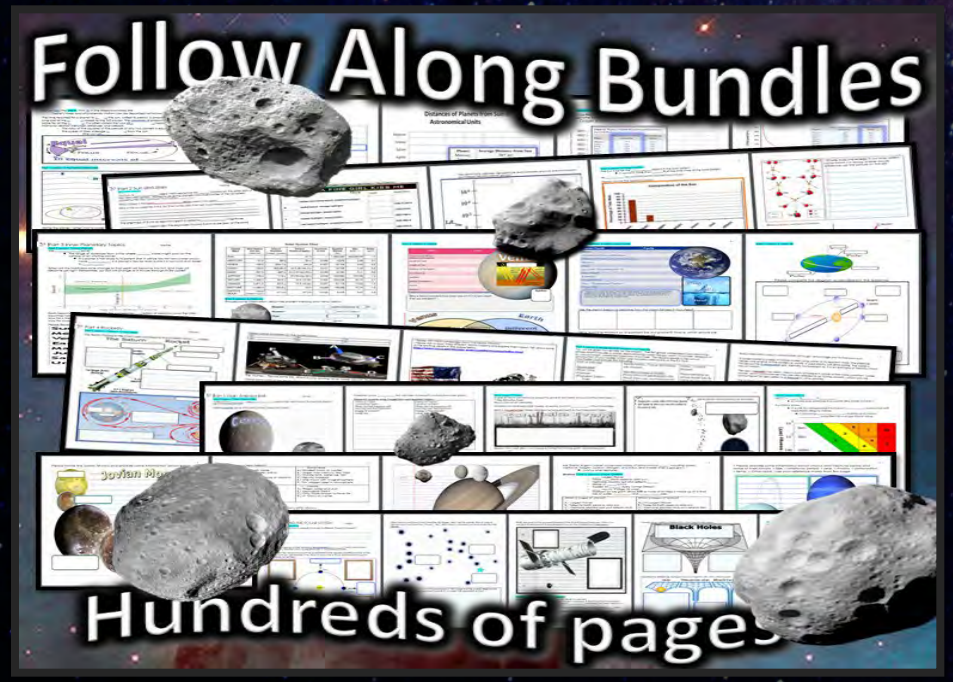
Part 5: Astronomy Unit : Main Asteroid Belt, protoplanet Ceres, Vesta, Meteors, Meteorites, Asteroids, Bolides, Chicxulub Crater, Tunguska Event, Chelyabinsk meteor, Craters, Parts of a Crater, Crater Impact Activity, NEO's, Torino Scale, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer 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
Neutron Star
The Habitable Zone
Penumbra
Cooler
Warmer
Really Hot
7 Units


INTERACTIVE
SLIDESHOWS
Barred
Irregular
Elliptical
Neutron Star
NEBULA
Venus
Earth
Olympus Mons
Name A,B,C,D?
Equinox March 20th
Equinox September 20th
Secure with Duct Tape

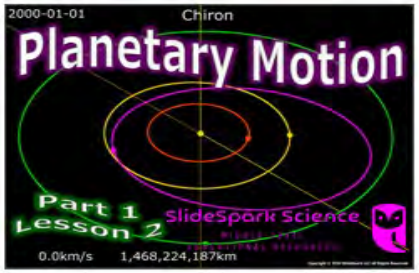

Follow Along Bundles
Hundreds of pages


Activities, Projects,
Assessments, All Built-in
Our Sun
The size and color tell us where the star is in its life cycle.
Johannes Kepler
Galileo Galilei
Nicholaus Copernicus
Eccentricity
Cooler
Warmer
Really Hot

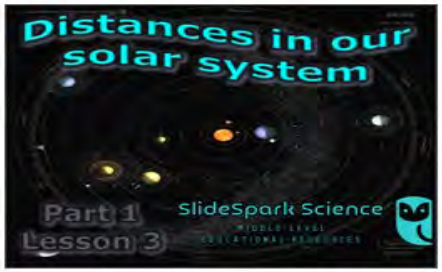
Introduction to Astronomy, Copernicus, Heliocentrism, Galileo, Kepler's Laws of Planetary Motion, Ellipse, Perihelion, Aphelion, Orbits, Orbital Velocities, Eccentricity, Calculating Eccentricity, Astronomical Units, Distances in the Solar System, Graphing Planetary Data, Order of the Planets, Box Game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

Part 1: Astronomy Unit

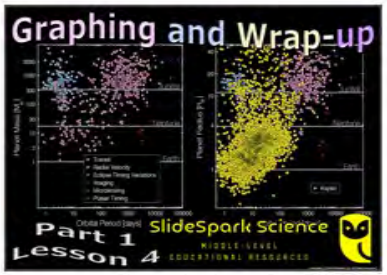
Part 1 Lesson 1 Introduction Kepler



Part 1 Lesson 2 Planetary Motion



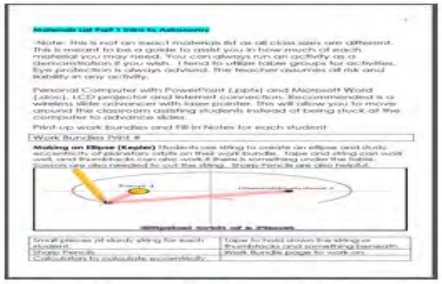
Part 1 Lesson 3 Distances Solar System

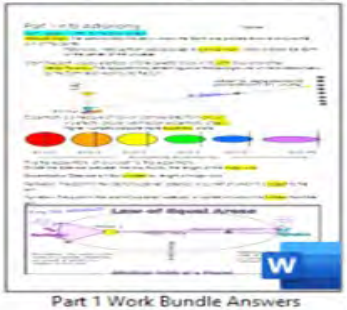


Part 1 Lesson 4 Graphing Wrap Up

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

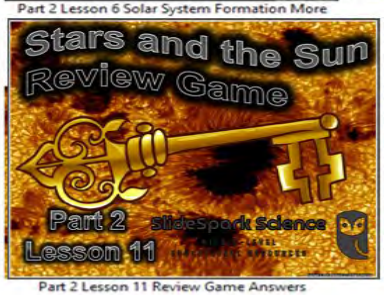
Part 2 Lesson 6 Solar System Formation More

Part 2 Lesson 7 Optional Sun Song

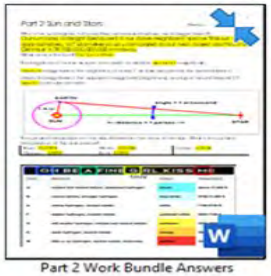
Part 2 Lesson 8 Shadows Sun Dials

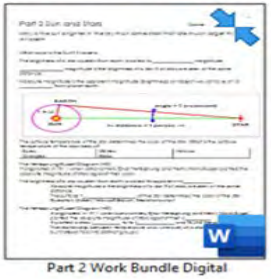
Part 2 Lesson 9 Solar Lunar Eclipse

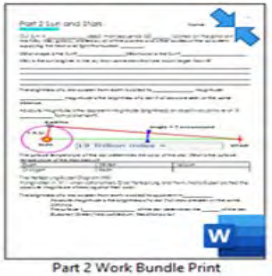
Part 2 Lesson 10 Review Game



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

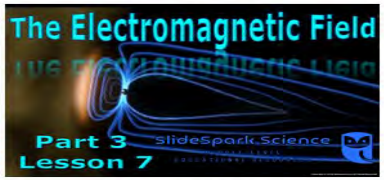
Part 3 Lesson 2 Mercury

Part 3 Lesson 3 Venus

Part 3 Lesson 4 Earth and Moon

Part 3 Lesson 5 Axial Tilt

Part 3 Lesson 6 Solstice Equinox



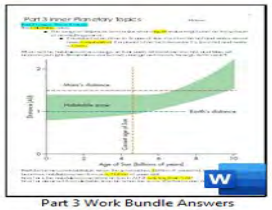
Part 3 Lesson 7 EM Field

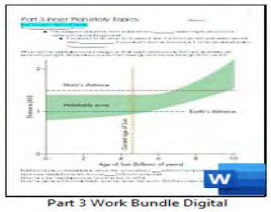
Part 3 Lesson 8 Phases of Moon 1

Part 3 Lesson 9 Phases of Moon 2

Part 3 Lesson 10 Phases Quiz


Part 3 Materials List


Part 3 Work Bundle Answers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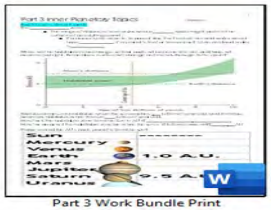

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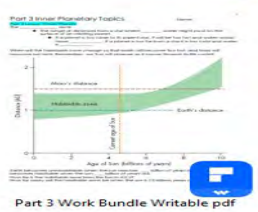

Part 3 Work Bundle Writable pdf

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 Newtons 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

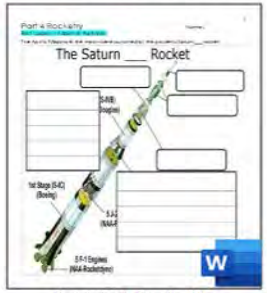
Part 4 Lesson 9 Review Game

Part 4 Lesson 10 Review Game Answers

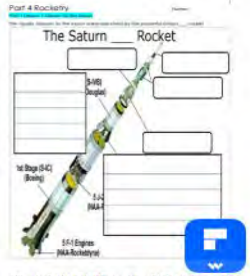

Part 4 Materials List


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 NEOs

Part 5 Lesson 4 Impact Lab

Part 5 Lesson 5 Research and Wrap Up

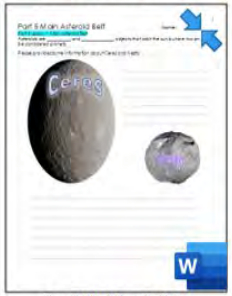
Part 5 Lesson 6 Review Game

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

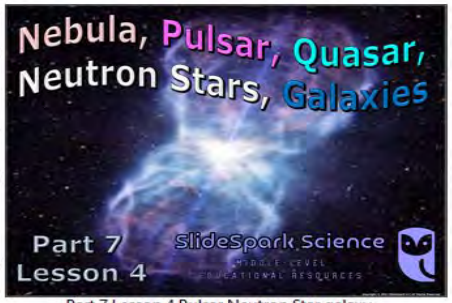
Astronomy Unit Part 7: Constellations, Hubble Space Telescope, Spitzer Space Telescope, Speed of Light, Nebulas, Types of Nebulas, Galaxies , Type of Galaxies, Gravity, The Special Theory of Relativity , Blackholes, Neutron Stars, Spacetime, Pulsars, Quasars, Exoplanets, Hubble Deep Field, Beyond the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

Part 7: Astronomy Unit

Part 7 Lesson 1 Constellations Hubble

Part 7 Lesson 2 Speed of Light More

Part 7 Lesson 3 Spacetime



Part 7 Lesson 4 Pulsar Neutron Star galaxy

Part 7 Lesson 5 Galaxies

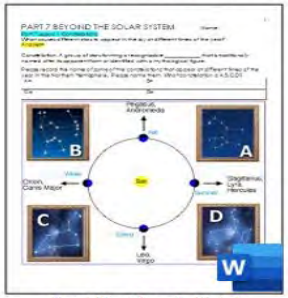
Part 7 Lesson 6 Exoplanets

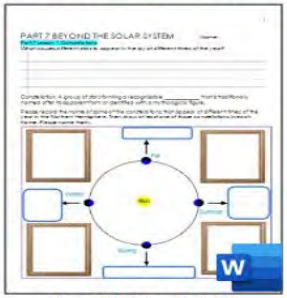
Part 7 Lesson 7 Big Bang

Part 7 Lesson 8 Review Game

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

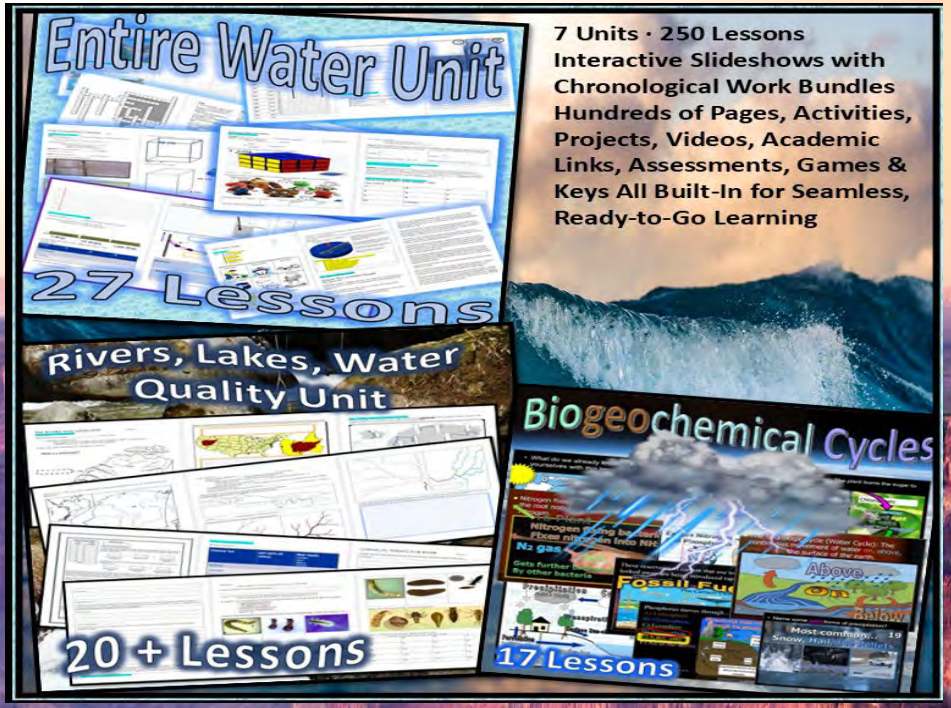
Earth Science Units	Daily Lessons	Intended Grade	
Geology Topics Unit	60 Lessons	6-8 medium difficulty	MORE DIFFICULT
Weather and Climate Unit	40 Lessons	6-8 medium difficulty	MORE DIFFICULT
Astronomy Unit	60 Lessons	6-8 medium difficulty	MORE DIFFICULT
Weathering, Soil Sciences	28 Lessons	5-7 easier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

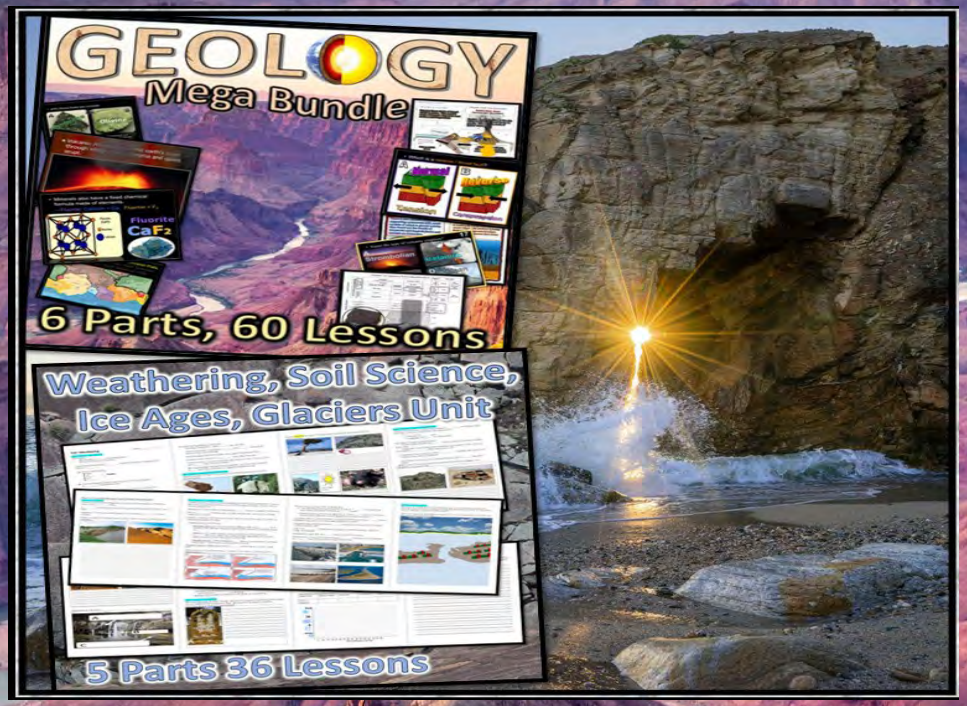
Earth Science Curriculum

Earth Science Curriculum

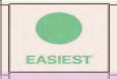
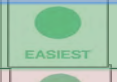
SlideSpark Science

MIDDLE-LEVEL EDUCATIONAL RESOURCES



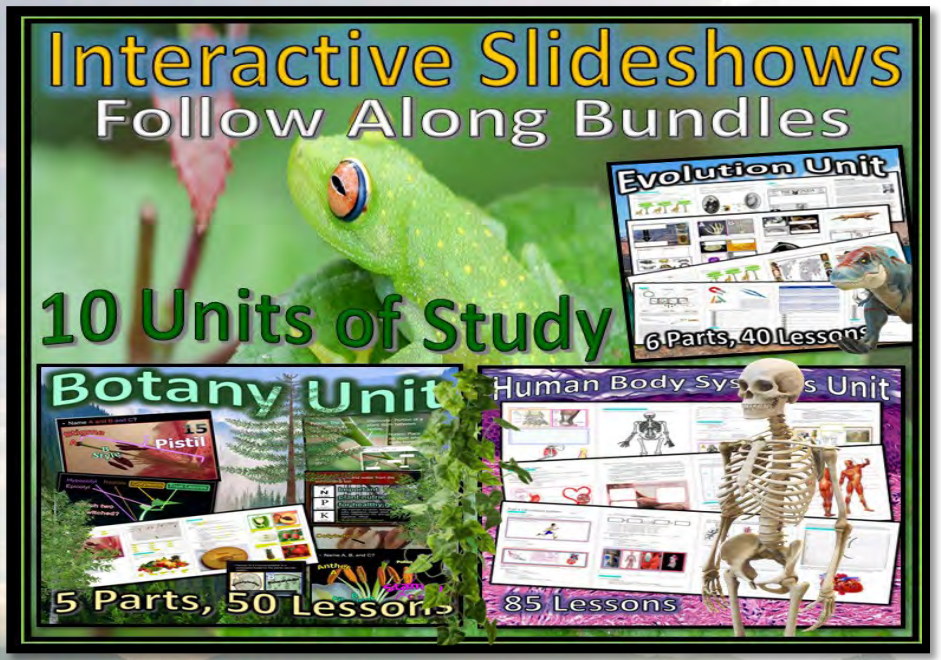


Life Science Units

	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


Life
Science
Curriculum
SlideSpark Science
MIDDLE-LEVEL
EDUCATIONAL RESOURCES


Interactive Slideshows
Follow Along Bundles
10 Units of Study
Evolution Unit
6 Parts, 40 Lessons
Botany Unit
5 Parts, 50 Lessons
Human Body Sys s Unit
85 Lessons


Cellular Biology Unit
Form Follows Function
30 Lessons of 50 minutes
DNA and Genetics Unit
40 Lessons
Infectious Diseases
30 Lessons


Taxonomy and Classification Unit
6 Parts
50 Lessons
Ecology Interactions Unit
30 Lessons
Ecology Feeding Le
Full Unit
Ecology Abiotic Factors Unit
27 Lessons

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

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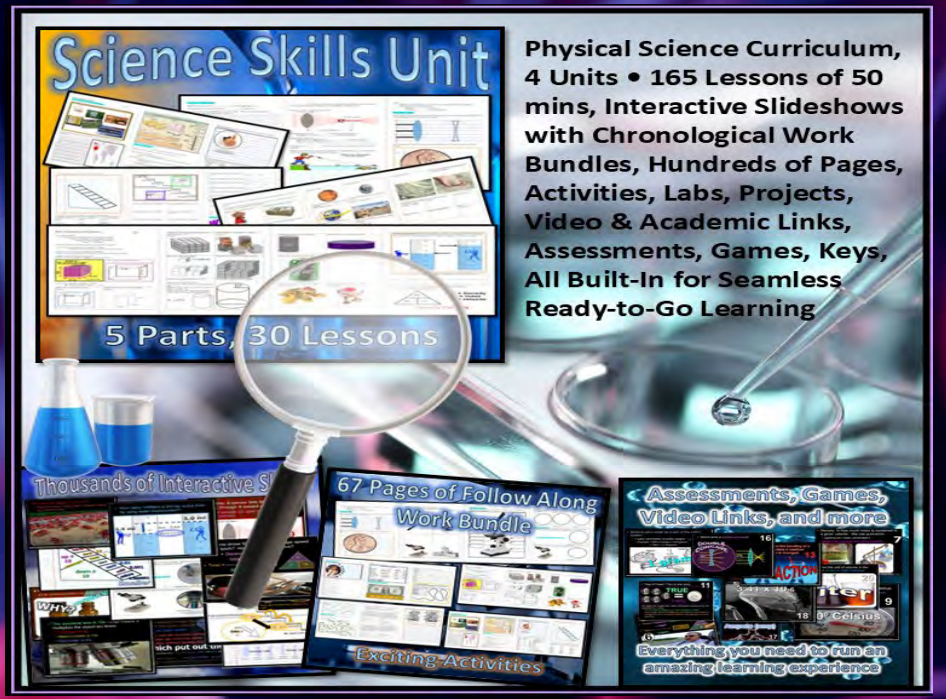

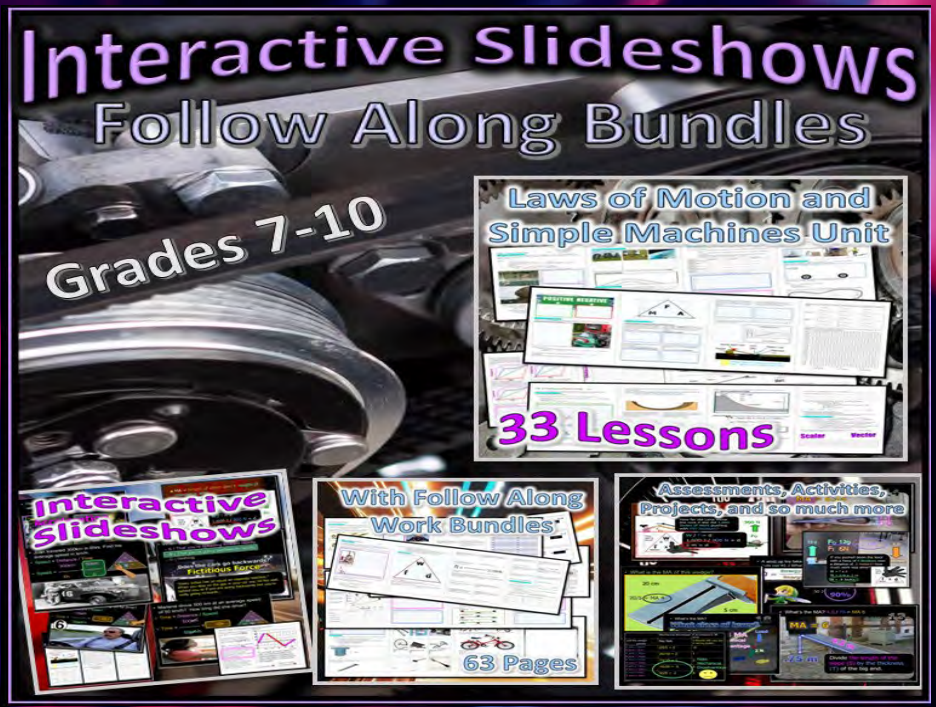

Dear Valued Educator,

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,

Support@SlideSpark.net

Thank you for your time and interest in our Science curriculum. We strive to provide students with engaging and informative lessons that will spark their curiosity and encourage scientific exploration. Should you have any questions or concerns, please do not hesitate to contact us. Thank you again for considering our curriculum, and we wish you all the best in your educational journey.

Sincerely,

Support@slidespark.net

SlideSpark Science

MIDDLE-LEVEL

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[SlideSpark Science on TpT]