

A cross-sectional diagram of Earth showing its internal layers. The outermost layer is the blue and white crust. Below it is the thick red layer representing the mantle. The innermost part is the yellow and white core, which is divided into a solid inner core and a liquid outer core.

[illegible]

• Which is a reverse / thrust fault?

A **Normal**



Tension

B **Reverse**



Compression

There is also climate change

-

D. pelean

[illegible]

6 Parts, 60 Lessons

Hundreds of Amazing and Interactive Slides

- Mantle: Composed of Magnesium Silicates, Iron, Calcium, Oxygen, Aluminum.
- - Outer Mantle (asthenosphere)



- Convergent Boundaries $\rightarrow \leftarrow$: Crust is destroyed and recycled back into the interior of the earth. (subduction zone)
- One plate dives under another.



- Mud volcanoes are built by a mixture of hot water and fine sediment (mud and clay) that is forced to the surface.



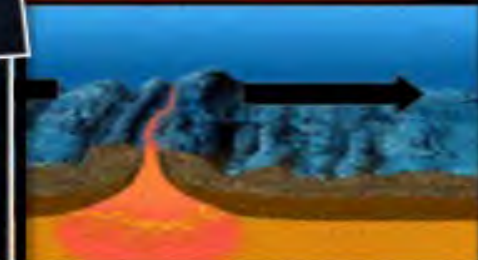
- Colorful mineral in light. Well known and prized for its glassy luster and rich variety of colors.



- tectonic plates are divided into three types:
- (or primary) plates
- (or secondary) plates
- (or tertiary plates).



- boundaries $\leftarrow \rightarrow$: Crust is created as the plates pull away from each other.



- Which is a normal fault?

A

B

- Strength and Stiffness: Strength is a property of a material to resist and bear applied forces within a safe limit.
- When we build, toothpicks and gumdrops have more strength than spaghetti and marshmallows.



6 Bundles, 100 Pages

Assessments, Activities, Keys, Games and More

• Name either this volcano or the city that it destroyed in 79 A.D.

Mt.
Vesuvius

Pompeii

5

• This is the general name for how one rock changes into another?



Which letter is a fault, and which letter is a fold based on the pictures below.

A

Fault

B

Fold

1

This is a fast-moving avalanche of hot lava fragments?

Pyroclastic Flow

12

Please name A, B, C, D, E in the picture below.

D= Subduction Zone

Continental Crust A

Ocean Crust B

Trench E

Lithosphere

17

• What sedimentary rock is shown below?

Shale

15

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.

CLUSTER	HARD- NESS	CLASH FRAC- TURE	COMMON OCCUR- ENCE	DIAGNOSTIC CHARACTERIS- TICS	PHYSICAL PROPERTIES	COMPOSITION	MINERAL NAME
1	7	1	Common in igneous, sedimentary, and metamorphic rocks.	Hardness: 7 Streak: white Luster: vitreous Cleavage: none Fracture: conchoidal	SiO ₂	Quartz	Quartzite
2	3	2	Common in sedimentary and metamorphic rocks.	Hardness: 3 Streak: white Luster: vitreous Cleavage: rhombohedral Fracture: conchoidal	CaCO ₃	Calcite	Marble
3	2.5	3	Common in sedimentary rocks.	Hardness: 2.5 Streak: white Luster: vitreous Cleavage: cubic Fracture: conchoidal	NaCl	Halite	Rock salt
4	6	4	Common in igneous and metamorphic rocks.	Hardness: 6 Streak: black Luster: metallic Cleavage: none Fracture: conchoidal	FeS ₂	Pyrite	Pyrite
5	1-2	5	Common in metamorphic rocks.	Hardness: 1-2 Streak: black Luster: metallic Cleavage: perfect in one direction Fracture: conchoidal	C	Graphite	Graphite
6	10	6	Common in metamorphic rocks.	Hardness: 10 Streak: none Luster: adamantine Cleavage: none Fracture: conchoidal	C	Diamond	Diamond

1. Rust

2. Calcite

3. Halite

4. Pyrite

5. Graphite

6. Diamond

What is the chemical composition of the mineral **Hematite**?

Fe₂O₃

- Epicenter: The point on the earth's surface that is directly above the hypocenter or focus.
- Just above the earthquake / focus / hypocenter



- Note: All mineral properties are determined from the arrangement of atoms.

Carbon



Graphite

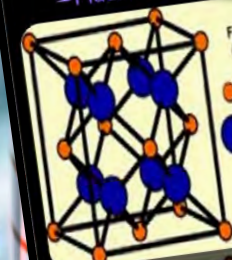


Diamond

- Convergent Boundaries → ←: Crust is destroyed and recycled back into the interior of the earth. (subduction zone)
- One plate dives under another.



- Mineral for Fluorite

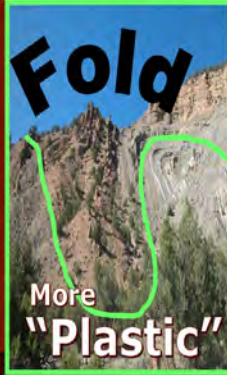


Fluorite (CaF₂)

Fluorite
CaF₂



- Movement of tectonic plates against each other cause the plates to **fault** and **fold**.



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Part 3 Earthquakes

Name: _____

Part 3 Lesson 1: Faults and Folds
Deformation: When a _____ gets bent, twisted, or breaks.

Movement of tectonic plates against each other cause the plates to _____ and _____.

Which picture is a fault? And which is a fold?



Answer:

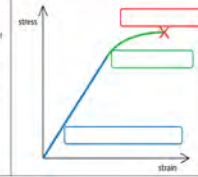
Answer:

What are the three types of deformation in rocks. Word Bank: Elastic Deformation, Ductile, Brittle Deformation, Fracture Deformation (plastic)

A temporary shape change that is self-reversing after the force is removed, so that the object returns to its original shape.

This refers to the breaking of rock that creates fractures and faults. The rock is brittle.

The permanent deformation that occurs when a material is subjected to tensile, compressive, bending or torsion stresses that exceed its yield strength and cause it to elongate, compress, buckle, bend, or twist. Irreversible.

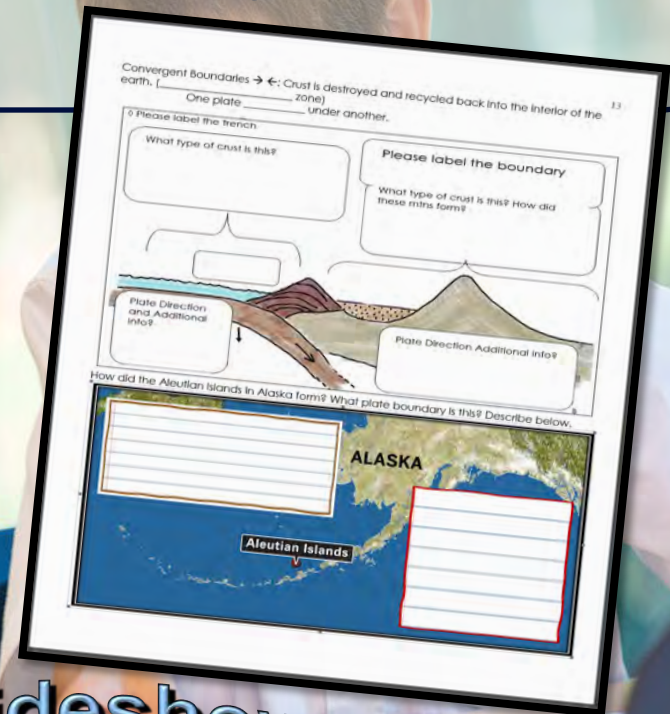


Red Slide Notes: Help students record important information in a fun and easy-to-understand way. Designed red-colored slides contain a few pieces of crucial information that students must record into their work bundle to complete the notes. Students will use these important notes throughout the work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

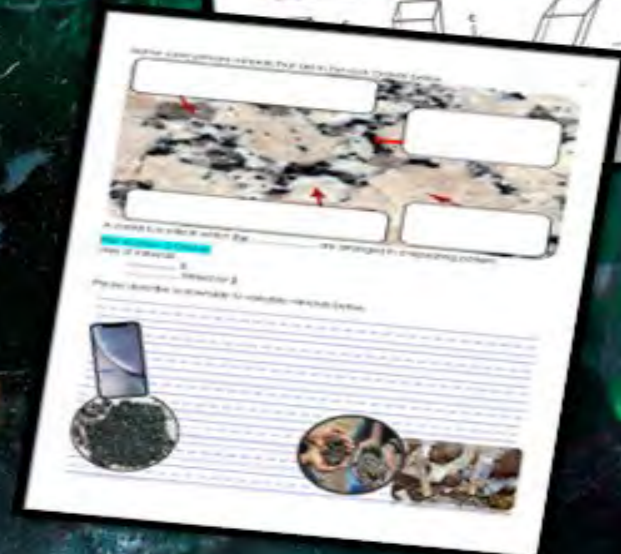


One clear, organized bundle guides students through notes, review, and assessments with ease.

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 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.

Part 4 Minerals



 <p> 1 Halite 2 Composition: NaCl 3 Hardness: 4 Streak: White to light 5 Cleavage: {100} and {010} 6 Fracture: Conchoidal 7 Luster: Glassy to pearly 8 Uses: </p>	 <p> 1 Magnetite 2 Composition: Fe₃O₄ 3 Hardness: 4 Streak: Black to dark 5 Cleavage: {111} and {112} 6 Fracture: Conchoidal 7 Luster: Metallic 8 Uses: </p>	 <p> 1 Pyrite 2 Composition: FeS₂ 3 Hardness: 4 Streak: Black to dark 5 Cleavage: {111} and {112} 6 Fracture: Conchoidal 7 Luster: Metallic 8 Uses: </p>
 <p> 1 Halite 2 Composition: NaCl 3 Hardness: 4 Streak: White to light 5 Cleavage: {100} and {010} 6 Fracture: Conchoidal 7 Luster: Glassy to pearly 8 Uses: </p>	 <p> 1 Halite 2 Composition: NaCl 3 Hardness: 4 Streak: White to light 5 Cleavage: {100} and {010} 6 Fracture: Conchoidal 7 Luster: Glassy to pearly 8 Uses: </p>	 <p> 1 Pyrite 2 Composition: FeS₂ 3 Hardness: 4 Streak: Black to dark 5 Cleavage: {111} and {112} 6 Fracture: Conchoidal 7 Luster: Metallic 8 Uses: </p>

Arrange the following minerals according to their Mohs hardness scale. (in 2020/2021) 1 = softest

Apophite	Gypsum	Quartz	Shamrock	Calcite	Flint	Tungsten	Comminator	Twinkling	Rhodium
9.5	2.5	7.0	6.0	3.0	6.5	8.5	4.0	5.0	10.0

3. Properties of Mineral Identification Guide

1	2	3	4
5	6	7	8
9	10	11	Grade

Properties of Mineral Identification Guide - Act 3 of Minerals Teacher's Copy, not to distribute

1	2	3	4
5	6	7	8
9	10	11	Grade

Use the pictures to describe some physical properties of minerals. Be specific and try and name the minerals.

The collage shows various mineral samples and a student's identification guide. The guide lists properties like color, luster, streak, and hardness, and includes a student's handwritten notes and drawings of minerals like pyrite, hematite, and malachite.

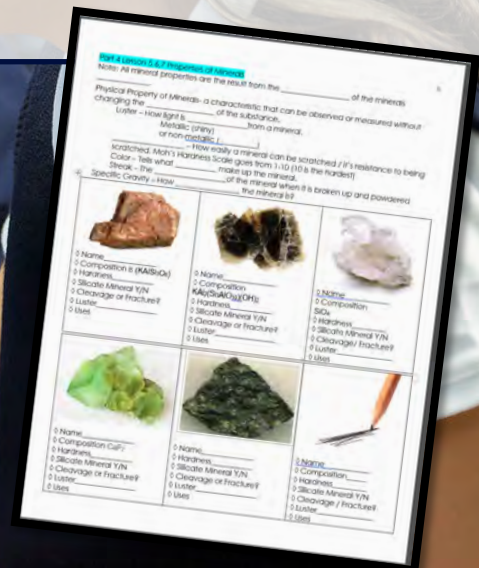
Part 4: Microsoft Windows (Game 10/11)

Microsoft Word

1. What is the name of the operating system?	2. What is the name of the operating system?	3. What is the name of the operating system?	4. What is the name of the operating system?	5. What is the name of the operating system?
6. What is the name of the operating system?	7. What is the name of the operating system?	8. What is the name of the operating system?	9. What is the name of the operating system?	10. What is the name of the operating system?
11. What is the name of the operating system?	12. What is the name of the operating system?	13. What is the name of the operating system?	14. What is the name of the operating system?	15. What is the name of the operating system?
16. What is the name of the operating system?	17. What is the name of the operating system?	18. What is the name of the operating system?	19. What is the name of the operating system?	20. What is the name of the operating system?
21. What is the name of the operating system?	22. What is the name of the operating system?	23. What is the name of the operating system?	24. What is the name of the operating system?	25. What is the name of the operating system?
26. What is the name of the operating system?	27. What is the name of the operating system?	28. What is the name of the operating system?	29. What is the name of the operating system?	30. What is the name of the operating system?
31. What is the name of the operating system?	32. What is the name of the operating system?	33. What is the name of the operating system?	34. What is the name of the operating system?	35. What is the name of the operating system?
36. What is the name of the operating system?	37. What is the name of the operating system?	38. What is the name of the operating system?	39. What is the name of the operating system?	40. What is the name of the operating system?
41. What is the name of the operating system?	42. What is the name of the operating system?	43. What is the name of the operating system?	44. What is the name of the operating system?	45. What is the name of the operating system?
46. What is the name of the operating system?	47. What is the name of the operating system?	48. What is the name of the operating system?	49. What is the name of the operating system?	50. What is the name of the operating system?

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.



Part 3 Lesson 11 Earthquakes

Name: _____ Score: _____

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

IT'S NOT YOUR FAULT	KNOW WHEN TO FOLD 'EM	WAVY GRAVY	IT BURNS
1) A-Fault a-fold	6) Lateral Fault Oblique Lateral Fault	11) S-Waves P-Waves	16) Epicenter Hypocenter
2) REVERSE/THRUST FAULT	7) B	12) P-Wave is faster	17) Seismic Salinity
3) NORMAL FAULT TENSION	8) Compression Fold Sink Syncline Anticline	13) Energy	18) B
4) Lateral/Strike Slip Fault (Shearing Force)	9) Body Waves Surface Waves	14) B	19) B
5) Confining Uniform	10) Longitudinal transverse	15) Liquefaction	20) B

Final Question Wager _____ /5 Answer LETTER E is the

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Earthquakes

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

Name: _____ Score: _____ / 100

IT'S NOT YOUR FAULT	KNOW WHEN TO FOLD 'EM	WAVY GRAVY	IT BURNS	ON FIRE Bonus round 1 pt each
1)	6)	11)	16)	*21)
2)	7)	12)	17)	*22)
3)	8)	13)	18)	*23)
4)	9)	14)	19)	*24)
5)	10)	15)	20)	*25)

Final Question Wager _____ /5 Answer

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Earthquakes

Quiz Game

- Which letter represents the **epicenter** of an earthquake based on the distance (S and P wave gap) measured at the three seismic stations?



- Which wave is faster? S or P.
- S-Wave
- Secondary arrive
- Or
- Body
- arrive first
- Both can travel through a medium

- What type of fold can be seen below (3 pts)
- Name and A and B for 1 point each?

compression



- Waves in an earthquake propagate like rock.
- They can be **Longitudinal**

P waves are longitudinal waves



S waves are transverse waves



- What two types of waves can be seen below? Which is which?

11

Both Body Waves

A Powerful but Slow
S-Wave

Secondary Wave

Side to Side

Transverse

B Fast but Less Powerful
P-Wave

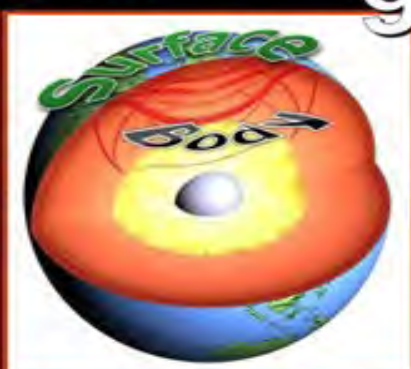
Primary Wave

Lateral

Longitudinal

quake, **body** waves move through part of the earth, while **surface** waves travel over and near the surface.

9



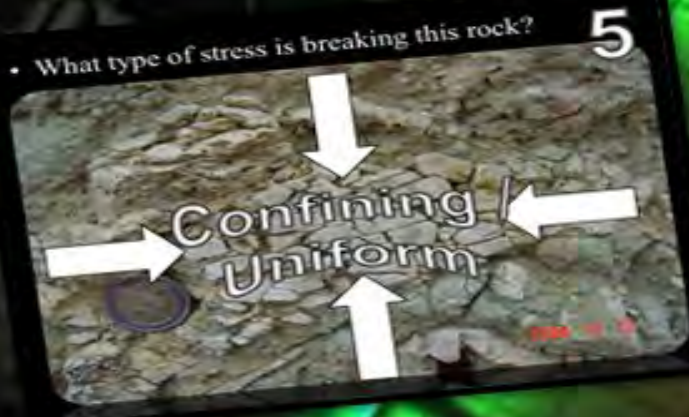
- Name this type of fault and stress?



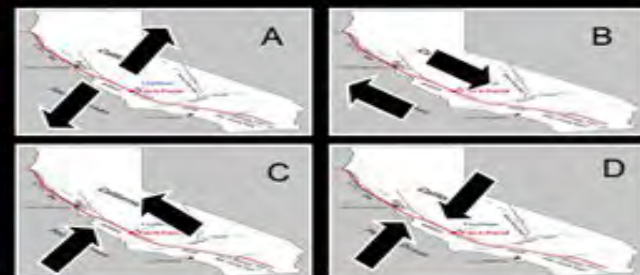
- What is this a picture of? – Be specific!
– This is a picture of a lateral or strike-slip fault.
The surfaces are moving past each other.



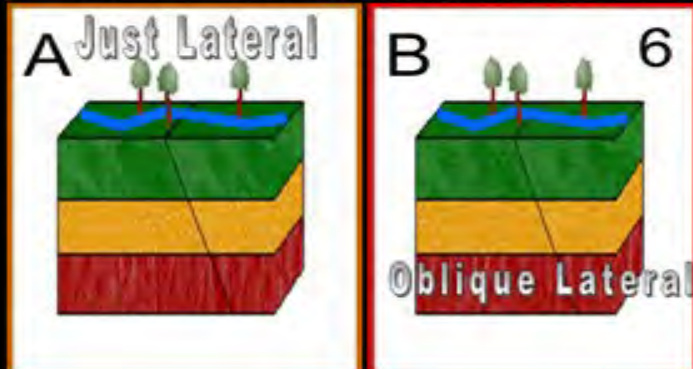
- What type of stress is breaking this rock?



- Which picture is the correct movement of the plates along the San Andreas Fault?



- Which is an oblique lateral fault? **Answer B**



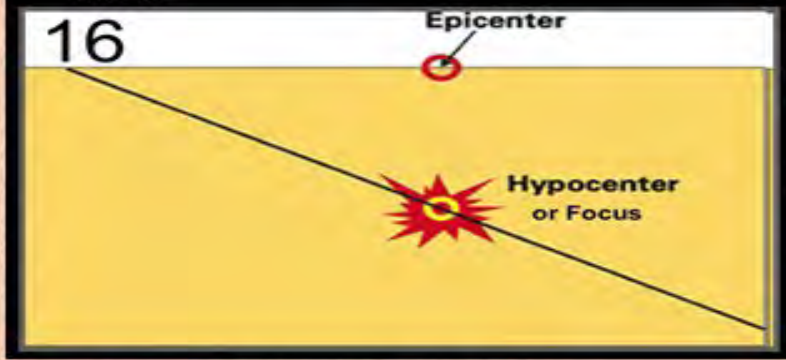
- Which letter is a fault, and which letter is a fold based on the pictures below.



- This is an ocean wave generated by a submarine earthquake, volcano, or landslide.



- Please name the two terms beneath the boxes below.

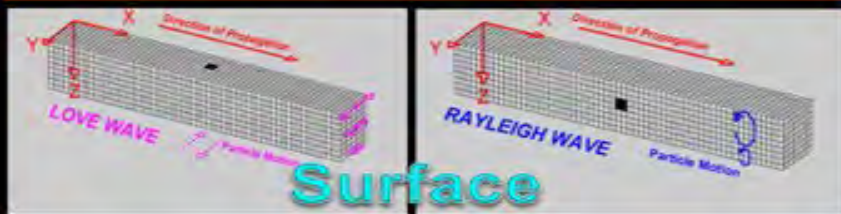


- Which grouping below is correct?

14



B Body Waves: Secondary and Primary
Surface Waves: Love and Rayleigh



This device measures the intensity of an earthquake?



20 Questions

- This is the name for a twelve-point scale for expressing the local intensity of an earthquake
 - 1= Virtually Unnoticed to a 12= Total Destruction!

20

Modified Mercalli Intensity Scale

I	Instrumental: detected only by instruments	VII	Very strong: noticed by people in autos Damage to poor construction
II	Very feeble: felt by a few people	VIII	Destructive: chimneys fall, damage in substantial buildings, some failure of structure
III	Slight: felt by people at rest Like passing of a truck	IX	Severe: damage to substantial structures Ground cracked, pipes broken
IV	Moderate: generally perceptible	X	Very severe: some structures fail
V	Hatmer: strong dishes broken, bells rung, pendulum clocks stopped People awakened	XI	Very disastrous: few structures remain
VI	Strong: felt by all, some people frightened Damage slight, some plaster cracked	XII	Catastrophic: total destruction

The Mercalli Intensity Scale

- This is a process where sand or landfill will often change from a wet solid into a dense liquid, which further amplifies shaking.

#15



Liquefaction

- An earthquake is the shaking of the earth's crust from a sudden release of energy.

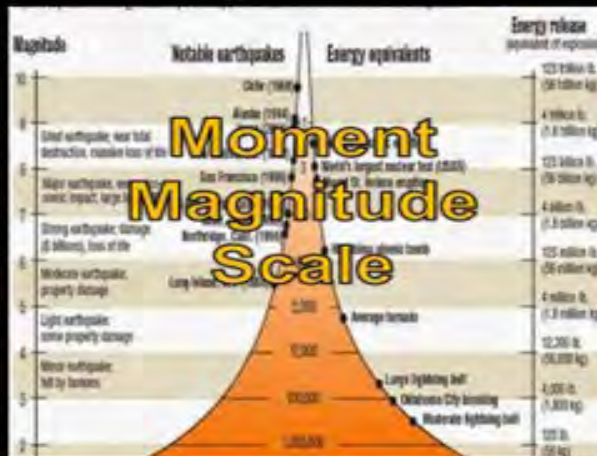
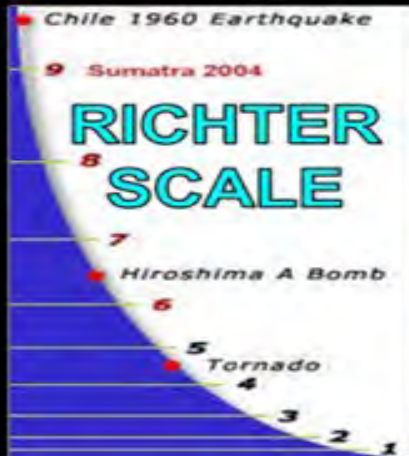
13

ENERGY



Name either of these scales for measuring earthquake magnitude?

18



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.

MINERAL NAME	OBSERVATIONS	HARDNESS	COLOR	STREAK	TESTS	SOLUBILITY	DENSITY
Quartz							
Calcite							
Pyrite							
Hematite							
Sulfur							
Fluorapatite							
Halite							
Mica							

Teacher will give you a bag of minerals

Try and place the mineral in the correct

Specific Gravity / Density

$$\text{Density} = \frac{\text{Mass}}{\text{Volume}}$$

Weight each mineral (grams). Your group can use water displacement to find volume of each mineral. You will need containers to collect displaced water and scales.

← Filled to very top
← Measure displaced water ml

Streak Plate

Scratch each mineral in one nice line across the ceramic streak plate.

- What color is the streak?
- Does the streak differ from its color?

Our golden cube leaves a greenish streak.

white gold leaves a golden streak.

Made of Heavier Elements

FeS₂

Fe

Fe₂O₃

26 Fe Iron 55.845

MINERAL NAME	OBSERVATIONS	HARDNESS	COLOR	STREAK	TESTS	SOLUBILITY	DENSITY
Quartz	No Luster	5.5 - 7	Between steel knife and quartz	Whitish Pink	colorless	None	2.65
Calcite	Translucent to Double Refraction	3 - Can be scratched by fingernail	White / Clear	Colorless white	None	Insoluble	2.71
Pyrite	High Luster	5 - Cannot scratch quartz	Gold / Yellow Brass	Green to Black	None	Insoluble	4.95
Hematite	Sometimes Opaque	5.5 - 6	Dark Red / Black Rust	Red to Black	None	Insoluble	5.3
Sulfur	No Luster	2 - Very Soft	Bright Yellow	Yellow to White	Rotten Eggs	Insoluble	2.07
Feldspar	Typically Opaque	6 - 8	Steel knife and quartz	Whitish Pink	Colorless	None	2.6
Halite	Slight gloss	2.5 - Very Soft	Fingernail	Colorless to white	None	Soluble	2.17
Mica	Glossy Luster	2.5	Clear Brown	Colorless	None	Insoluble	2.8

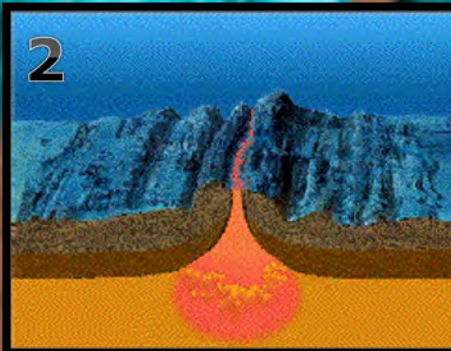
Built-in Assessment

This unit contains built-in assessments 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 Wiz 1-10 Name the boundary.

- Word Bank
- Divergent Boundaries
 - Oceanic Oceanic
 - Ex.) Mid-Ocean Ridge
 - Continental Continental
 - Ex.) Great Rift Valley
- Convergent Boundaries
 - Oceanic Continental
 - Ex.) Subduction Zone
 - Oceanic Oceanic
 - Ex.) Archipelago
 - Continental Continental
 - Ex.) Mtn Building
- Transform Fault Boundary

QUIZ WIZ



Quiz Wiz 1-10 Name the Plate Boundary

Word Bank

Divergent Boundaries

- Oceanic Oceanic
 - Ex.) Mid-Ocean Ridge
- Continental Continental
 - Ex.) Great Rift Valley

Convergent Boundaries

- Oceanic Continental
 - Ex.) Subduction Zone
- Oceanic Oceanic
 - Ex.) Archipelago
- Continental Continental
 - Ex.) Mtn Building

Transform Fault Boundary

1) 2) 3)

4) 5) 6)

7) 8) 9)

10) 11)

Name the boundary below: Subduction zone boundary, Divergent zone boundary, convergent continental collision boundary, transform fault boundary

1) 2) 3) 4)

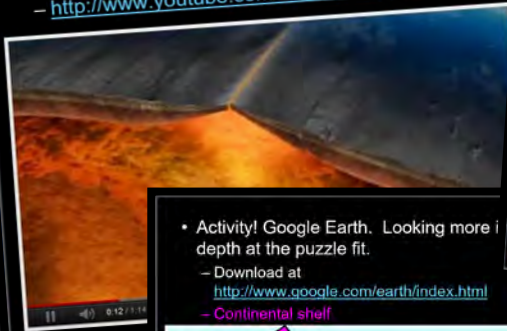
Quiz in Work Bundle

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.

- Video! Plate Tectonics.

- <http://www.youtube.com/watch?v=rYrXAGY1dmE>

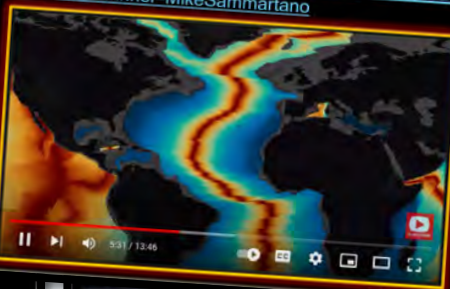


- Activity! Google Earth. Looking more in depth at the puzzle fit.
 - Download at <http://www.google.com/earth/index.html>
 - Continental shelf



- Optional Video. Sea-Floor Spreading

- https://www.youtube.com/watch?v=G4nDcczMoBw&ab_channel=MikeSammartano



- Review, Iceland, and the birth of a called Surtsey.

- <https://www.youtube.com/watch?v=J>



- Video: Suswa Rift

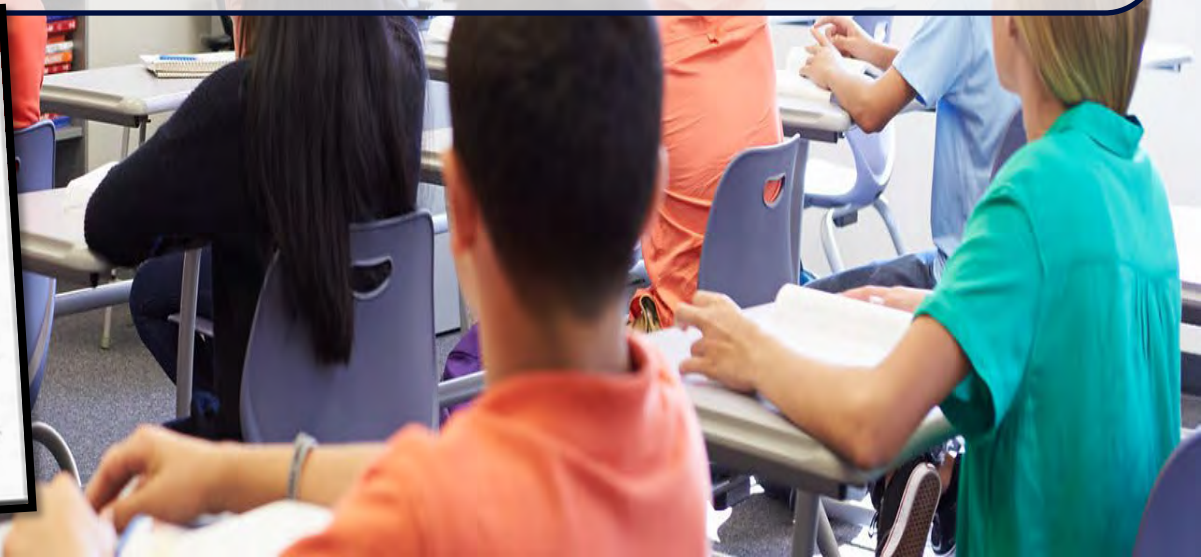
- <https://www.youtube.com/watch?v=vX6k>



- Video! (Optional) The Great African Rift Valley – Great African Rift Valley



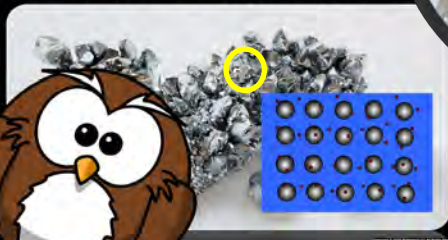
Games are a fantastic way for students to learn scientific concepts while having fun. We incorporate a variety of games into our curriculum, including interactive quizzes and puzzles that challenge students to think critically about the material. Our Hidden Box Games are a particularly popular feature, 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.



- Metallic Crystals: Individual metal atoms of metallic crystals sit on lattice sites.
 - Many free electrons. High melting points.



- Metallic Crystals: Individual metal atom
metallic crystals sit on lattice sites.
 - Many free electrons. High melting points.



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 2 Continental ...
Google Slides



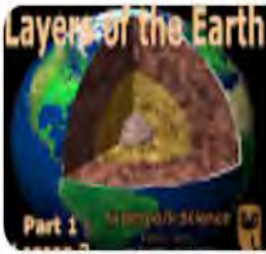
Part 1 Lesson 8 Plate Bound...
Google Slides



Part 1 Lesson 1 Plate Tectoni...
Google Slides



Part 1 Lesson 6 Heat Transf...
Google Slides



Part 1 Lesson 3 Layers of th...
Google Slides



Part 1 Lesson 9 Plate Bound...
Google Slides



Part 1 Lesson 11 Review Game
Google Slides



Part 1 Lesson 10 Plate Boun...
Google Slides



Part 1 Lesson 4 EM Layers c...
Google Slides

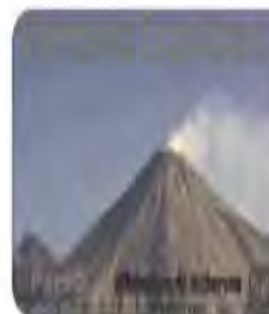


Part 1 Lesson 5 Heat Transfer
Google Slides



[Part 2 Lesson 8 Types of La...](#)

Google Slides



[Part 2 Lesson 2 Eruptions M...](#)

Google Slides



[Part 2 Lesson 6 Magma and ...](#)

Google Slides



[Part 2 Lesson 9 Review Game](#)

Google Slides



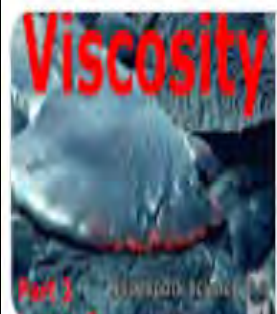
[Part 2 Lesson 5 Hazards of ...](#)

Google Slides



[Part 2 Lesson 4 Types of Vol...](#)

Google Slides



[Part 2 Lesson 7 Viscosity](#)

Google Slides



[Part 2 Lesson 3 Impacts of V...](#)

Google Slides



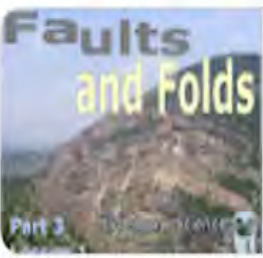
Part 3 Lesson 7 Epicenter

Google Slides



Part 3 Lesson 10 Earthquak...

Google Slides



Part 3 Lesson 1 Faults and F...

Google Slides



Part 3 Lesson 6 Seismograph

Google Slides



Part 3 Lesson 9 Tsunami

Google Slides



Part 3 Lesson 4 Compressio...

Google Slides



Part 3 Lesson 8 Design Chal...

Google Slides



Part 3 Lesson 5 Mechanical ...

Google Slides



Part 3 Lesson 3 Lateral Faults

Google Slides



Part 3 Lesson 2 Types of Fa...

Google Slides



[Part 4 Lesson 8 Properties L...](#)

Google Slides



[Part 4 Lesson 3 Crystal Quiz...](#)

Google Slides



[Part 4 Lesson 1 Minerals](#)

Google Slides



[Part 4 Lesson 10 Review Ga...](#)

Google Slides



[Part 4 Lesson 2 Crystals](#)

Google Slides



[Part 4 Lesson 5 Mineral Iden...](#)

Google Slides



[Part 4 Lesson 4 Primary Min...](#)

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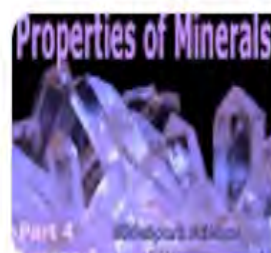
[Part 4 Lesson 9 Properties ...](#)

Google Slides



[Part 4 Lesson 7 Mineral Pro...](#)

Google Slides



[Part 4 Lesson 6 Mineral Ans...](#)

Google Slides



Part 5 Lesson 5 Sedimentar...

Google Slides



Part 5 Lesson 3 Igneous Roc...

Google Slides



Part 5 Lesson 6 Common Se...

Google Slides



Part 5 Lesson 1 Start Rock C...

Google Slides



Part 5 Lesson 8 Common M...

Google Slides



Part 5 Lesson 4 Rocks Flow ...

Google Slides



Part 5 Lesson 7 Metamorphi...

Google Slides



Part 5 Lesson 10 Review Ga...

Google Slides



Part 5 Lesson 9 Quiz and Wr...

Google Slides



Part 5 Lesson 2 Igneous Roc...

Google Slides

GEOLOGY

Mega Bundle

• Volcano: An opening in the earth's crust through which molten magma and gases erupt.

Minerals also have a fixed chemical formula made of elements.
Fluorite: Calcium = Ca, Fluorine = F₂

Fluorite: CaF2

• Which is a reverse / thrust fault?
A Normal
B Reverse

• Name the type of volcano depicted?
A Strombolian
B Shield

6 Parts, 60 Lessons

Hundreds of Amazing and Interactive Slides

Mantle: Composed of Magnesium Silicates, Iron, Calcium, Oxygen, Aluminum.
Outer Mantle (asthenosphere)

Tectonic plates are divided into three types:
(or primary) plates
(or secondary) plates
(or tertiary) plates

Convergent Boundaries → ←: Crust is destroyed and recycled back into the interior of the earth. (subduction zone)
One plate dives under another.

Erosion
Islands get smaller

Which is a normal fault?
A
B Normal

Strength and Stiffness: Strength is a property of a material to resist and bear applied forces within a safe limit.
When we build, toothpicks and gumdrops have more strength than spaghetti and marshmallows.

6 Parts, 60 Lessons

Follow Along Bundles

Volcano: An opening in the earth's crust through which molten magma and gases erupt.

Minerals also have a fixed chemical formula made of elements.
Fluorite: Calcium = Ca, Fluorine = F₂

Fluorite: CaF2

6 Bundles, 100 Pages

Assessments, Activities, Keys, Games and More

Name either this volcano or the city that it destroyed in 79 A.D.
Mt. Vesuvius
Pompeii

This is the general name for how one rock changes into another?
The Rock Cycle

Which letter is a fault, and which letter is a fold based on the pictures below?
A Fault
B Fold

This is a fast-moving avalanche of hot lava fragments?
Pyroclastic Flow

Please name A, B, C, D, E in the picture below.
O = Subduction Zone
Continental Crust A
Ocean Crust B
Trench C
Lithosphere D

What sedimentary rock is shown below?
Shale

6 Bundles, 100 Pages

Geology Topics Unit

Geology Unit

60 Lessons, (6th-8th Medium Difficulty) Part 1 Dynamic Earth, is 11 Lessons and 15 Page Work Bundle, Part 2 Volcanoes is 8 Lessons and 18 Page Work Bundle, Part 3 Earthquakes is 11 Lessons and 16 Page Work Bundle, Part 4 is Minerals 9 Lessons and 15 Page Work Bundle, Part 6 Rocks is 10 Lessons and 14 Page Work Bundle, Part 7 Earth System History is 8 Lessons and 9 Page Work Bundle

Part 1: Geology Unit: Plate Tectonics, Uniformitarianism, Continental Drift, Evidence for Continental Drift, Pangea, Rodinia, Heat and Convection, Energy Waves, Layers of the Earth, The EM Field, Heat Transfer, Types of Crust, Plate Boundaries, Subduction Zones, Converging and Diverging Boundaries, Ring of Fire, Archipelagos, Transform Boundaries, Visual Quiz of Plate Boundaries with Answers, Box Game Review, Crossword Puzzle, End Unit Assessment with Answers so Students Can Self-Assess

Part 2: Volcanoes: Hot Spots, Volcanoes, Super volcanoes, Yellowstone, Sidoarjo "Lusi" Mud Volcano Case Study, Pompeii, Positives and Negatives of Volcanoes, Types of Volcanoes, Parts of a Volcano, Hazards of Volcanoes, Lahar, Pyroclastic Flows, VEI Index, Magma, Types of Lava, Viscosity of Lava / Silica Content, Box Game Review, Crossword Puzzle, End Unit Assessment with Answers so Students Can Self-Assess

Part 3: Earthquakes: Deformation, Types of Deformation, Faults, Folds, Types of Stress on Rock, Types of Faults, Lateral Faults, Types of Folds, Anticlines, Synclines, Energy Waves, Mechanical Waves, Body Waves, Surface Waves, Earthquakes, Moment Magnitude Scale, Richter Scale, Earthquake Case Study, Mercalli Scale, Epicenter, Finding an Epicenter, Earthquake Design, Design Challenge with a shake table, Tsunami, Tsunami Case Studies, Causes of Tsunami, Tsunami Warning Signs, Box Game Review, Crossword Puzzle, End Unit Assessment with Answers so Students Can Self-Assess

Part 4: Minerals: Minerals, Crystals, Uses of Minerals, Types of Crystals, Atomic Bonding, Physical Properties of Minerals, Primary Minerals, Mineral Properties Lab, Common Mineral Identification, Box Game Review, Crossword Puzzle, End Unit Assessment with Answers so Students Can Self-Assess

Part 5: Rocks and the Rock Cycle: Rocks, Scheme for Igneous Rock Identification, Intrusive, Extrusive Igneous Rocks, Classification for Igneous Rocks, Rocks Flow Chart, Common Igneous Rocks, Common Sedimentary Rocks, Common Metamorphic Rocks, Scheme for Metamorphic Rocks, Regional and Contact Metamorphism, Rock Identification Quiz, Rock Auction Project, Box Game Review, Crossword Puzzle, End Unit Assessment with Answers so Students Can Self-Assess

Part 6: Earth System History: 8 Lessons of 50 Minutes and 8 Page Follow Along Work Bundle, Earth Broken down into a 12 Hour Day and emergence of Humans, Age of the Earth, Uniformitarianism, Review of the Five Fingers of Evolution, Principle of Superposition, Card Activity with the Principle of Superposition, Earth System History, Units of Time, Understanding the Units of Time, Fragility of the System, Mass Extinction Events, Build a timeline project where students work in groups and create a 4.65 meter long timeline of Earth System History, Protoplanet, Precambrian Supereon, Hadean Eon, Crust Formation, Formation of the Moon, Importance of the Moon Formation, Earth's EM Field, Major Events of the Hadean, Events of the Archean, First Prokaryotic Cells, Tectonic Activity, Stromatolites, Proterozoic Eon, Cyanobacteria, Oxygen Catastrophe, Banded Iron Formations, Snowball Earth, Multi-cellular Life, Major Events of the Proterozoic Eon, Paleozoic Era, Major Events of the Cambrian, Ediacaran fauna, Burgess Shale, Make Burgess Shale Activity, Ordovician, Tetrapod Evolution, Tiktaalik, Ichthyostega, Silurian, Devonian, Carboniferous, Fossil Fuels, and Permian Periods, End Permian Mass Extinction, Major Events of the Mesozoic Era, Pangea, Bird Hipped and Lizard Hipped Dinosaurs, Dinosaur Challenge Activity, How Modern Birds and Dinosaurs are Similar, K-Pg Mass Extinction Event, Cenozoic Era, Paleogene, and Neogene Periods, Epochs and Ages, Presentation of Student Timelines, Box Game Review, Crossword Puzzle, End Unit Assessment where Students Use their Timeline, Answers to Assessment so Students Can Self Assess.

Geology Topics Unit Part 1: Plate Tectonics, Uniformitarianism, Continental Drift, Evidence for Continental Drift, Pangea, Rodinia, Heat and Convection, Energy Waves, Layers of the Earth, The EM Field, Heat Transfer, Types of Crust, Plate Boundaries, Subduction Zones, Converging and Diverging Boundaries, Ring of Fire, Archipelagos, Transform Boundaries,

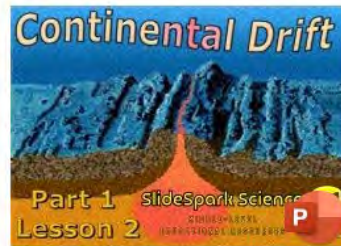
Part 1: Geology Unit



Additional and Printables



Part 1 Lesson 1 Plate Tectonics



Part 1 Lesson 2 Continental Drift



Part 1 Lesson 3 Layers of the Earth I



Part 1 Lesson 4 EM Layers cont.



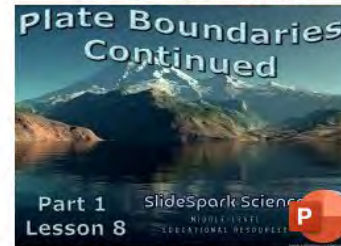
Part 1 Lesson 5 Heat Transfer



Part 1 Lesson 6 Heat Transfer II



Part 1 Lesson 7 Plate Boundaries



Part 1 Lesson 8 Plate Boundaries II



Part 1 Lesson 9 Plate Boundaries III



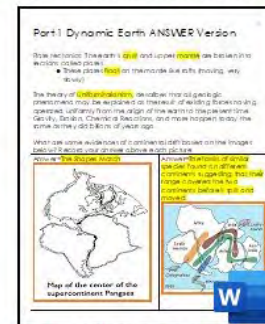
Part 1 Lesson 10 Plate Boundaries IV



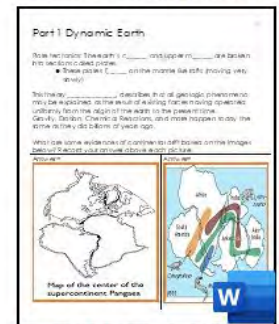
Part 1 Lesson 11 Review Game



Part 1 Lesson 12 Review Game Answers



Part 1 Work Bundle Answers



Part 1 Work Bundle Digital

DYNAMIC EARTH

- African Plate, Antarctic Plate, Australian Plate, Eurasian Plate, Indian Plate, North American Plate, Pacific Plate, South American Plate.



- Archipelago: Group of volcanic islands formed from ocean crust convergence.



- What type of plate boundary is shown below.

- A.) Subduction Zone answer is...
- B.) Divergent Ocean Boundary
- C.) Convergent Continental Boundary
- D.) Divergent Continental Boundary

16

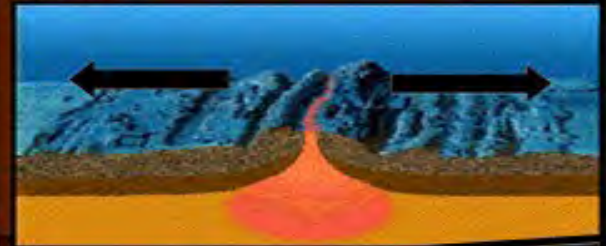
- Mantle: Composed of Magnesium Silicates, Iron, Calcium, Oxygen, Aluminum.
- - Outer Mantle (asthenosphere)



Read article that suggests that the mantle holds enormous quantities of mineral water.
<http://www.sciencemag.com/article/earth-mantle-holds-an-ocean-worth-of-water>

12 Lessons

- Divergent Boundaries $\leftarrow \rightarrow$: Crust is created as two or more plates pull **away** from each other.



- Plate tectonics: The earth's crust and upper mantle are broken into sections called plates.
- These plates float on the mantle like rafts (moving very slowly)



Boundary on earth?

18



Interactive Slideshows

- Optional. Get a full graham cracker.
- Draw roadways, roads of trees, **Mountains** on it with a sharp marker.



This is created because of the Earth's dense metal core?

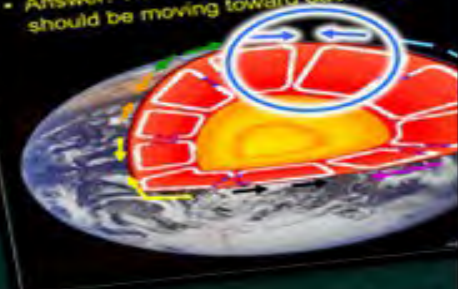


- The Swiss Alps is an example of mountains that form when continents collide.
- The African Plate is colliding with the Eurasian

emonstration.
large graham crackers on wax paper
little bit of water so they get soft
in toward each other and watch the
building.



- Answer! The blue arrows. The plates should be moving toward each other.



- Convergent Boundaries → ←: destroyed and recycled back into the interior of the earth. (subduction zone)
- One plate dives under another.



This scientist was the first to propose that the continents were once together?
Alfred Wegener



Follow Along Bundles

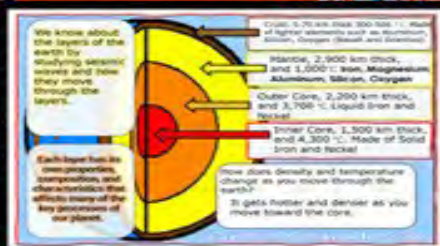
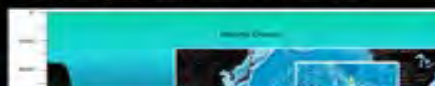
The collage displays 21 pages of educational worksheets. The pages include:

- Page 1:** "Earth is Dynamic Earth" with a map of the United States and a section titled "Can you say these with me: The Earth is..."
- Page 2:** A portrait of a man and a diagram of a plate boundary.
- Page 3:** A diagram of a plate boundary with arrows indicating movement.
- Page 4:** A world map with colored regions and a section titled "The Earth is..."
- Page 5:** A diagram of a plate boundary with arrows indicating movement.
- Page 6:** A diagram of a plate boundary with arrows indicating movement.
- Page 7:** A diagram of a plate boundary with arrows indicating movement.
- Page 8:** A diagram of a plate boundary with arrows indicating movement.
- Page 9:** A diagram of a plate boundary with arrows indicating movement.
- Page 10:** A diagram of a plate boundary with arrows indicating movement.
- Page 11:** A diagram of a plate boundary with arrows indicating movement.
- Page 12:** A diagram of a plate boundary with arrows indicating movement.
- Page 13:** A diagram of a plate boundary with arrows indicating movement.
- Page 14:** A diagram of a plate boundary with arrows indicating movement.
- Page 15:** A diagram of a plate boundary with arrows indicating movement.
- Page 16:** A diagram of a plate boundary with arrows indicating movement.
- Page 17:** A diagram of a plate boundary with arrows indicating movement.
- Page 18:** A diagram of a plate boundary with arrows indicating movement.
- Page 19:** A diagram of a plate boundary with arrows indicating movement.
- Page 20:** A diagram of a plate boundary with arrows indicating movement.
- Page 21:** A diagram of a plate boundary with arrows indicating movement.

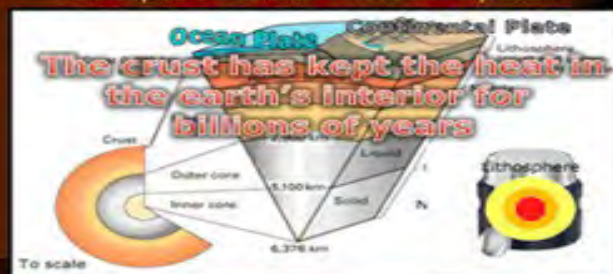
21 Pages w/ Answer Version

Activities, Links, Keys, Assessments, All Built in

- Trench: Deep, elongated cavity bordering a continent or an island arc; it forms when one tectonic plate slides beneath another.



- Lithosphere: The outer part of the earth, consisting of the crust and upper mantle.
- Lithosphere is broken into tectonic plates.



- Continental Crust: Less Dense so it floats higher (Granites)
- Oceanic Crust: More dense so it sinks lower (Basalts)

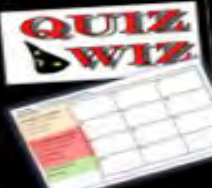


- Pangea: The "Supercontinent"
- All of the plates were once together.



- Quiz Wiz 1-10 Name the boundary.

- Word Bank
- Divergent Boundaries
 - Oceanic Dorsal
 - Ex.) Mid-Ocean Ridge
 - Continental Continental
 - Ex.) Great Rift Valley
- Convergent Boundaries
 - Oceanic Continental
 - Ex.) Subduction Zone
 - Oceanic Oceanic
 - Ex.) Antisubduction
 - Continental Continental
 - Ex.) Plate Bumping
- Transform Fault Boundary



- This is and ch
- Dana



- The San Andreas Fault in California, the North Anatolian Fault in Turkey, and the Dolores-Guayaquil Megafault in the northern Andes are all examples of transform faults.



Geology Topics Unit Part 2: Hot Spots, Hawaii, Volcanoes, Supervolcano, Yellowstone, Sidoarjo "Lusi" Mud Volcano Case Study, Pompeii Case Study, Positives and Negatives of Volcanoes, Types of Volcanoes, Parts of a Volcano, Hazards of Volcanoes, Lahar, Pyroclastic Flows, VEI Index, Magma, Types of Lava, Viscosity of Lava / Silica Content

Part 2: Volcanoes



Additional and Printables



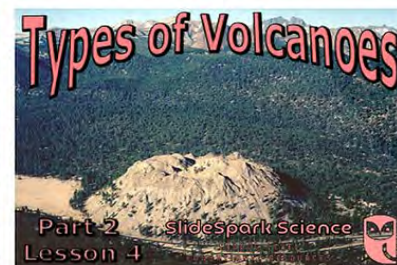
Part 2 Lesson 1 Volcanoes Hawaii Yellowstone



Part 2 Lesson 2 Eruptions Mud Read



Part 2 Lesson 3 Impacts of Volcanoes



Part 2 Lesson 4 Types of Volcanoes



Part 2 Lesson 5 Hazards of Volcanoes



Part 2 Lesson 6 Magma and Lava



Part 2 Lesson 7 Viscosity



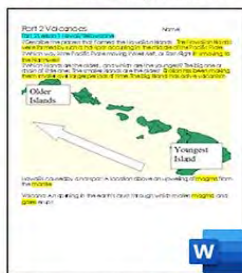
Part 2 Lesson 8 Types of Lava and Wrap Up



Part 2 Lesson 9 Review Game



Part 2 Lesson 10 Review Game Answers



Part 2 Volcanoes Work Bundle Answers



Part 2 Volcanoes Work Bundle Digital



Part 2 Volcanoes Work Bundle Print

Volcanoes Unit

- Hawaii is caused by a hot spot: A location above an upwelling of magma from the mantle.

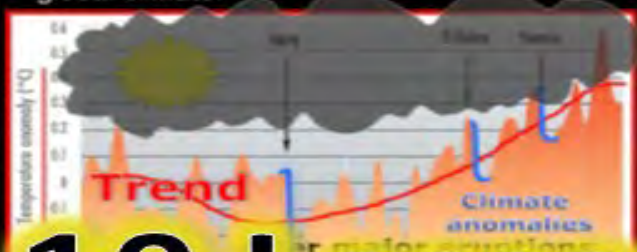
Let's Make Hawaii!

Hawaii's Hot Spot.
Learn more at:
<http://www.marinescience.net/marinescience/020001an/hwgeo.htm>

- Volcano: An opening in the earth's crust through which molten magma and gases erupt.



- Eruptions can have a tremendous impact on global climate.



Yellowstone's Burning Question?

- Please read article and answer questions
- Are we in danger?

Mt. Vesuvius

- The eruption claimed many lives. Casks were made of the inhabitants under the debris.



Shield.

The lava has a relatively low viscosity (low resistance to flow) the lava can travel far from the vent creating shield.

Magma has low silica content (low Viscosity)

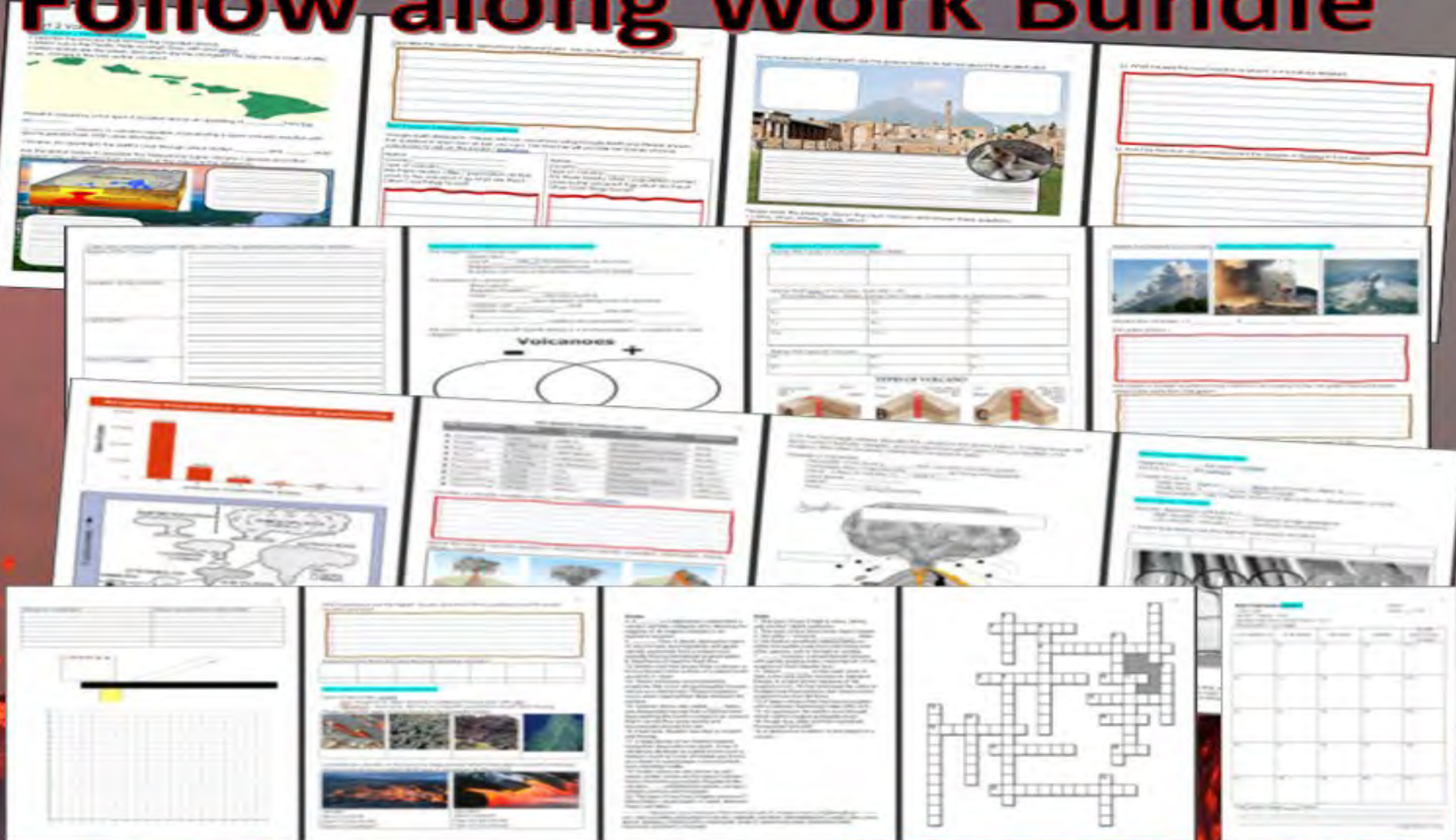


- Volcanic Explosivity Index (VEI) is a numeric scale that measures the relative explosivity of historic eruptions.



10 Lessons

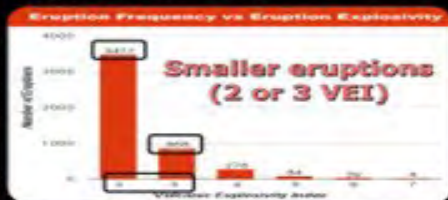
Partnered with a detailed Follow along Work Bundle



17 Pages

Activities, Assessments, games, and much more all built-in

- Are large eruptions or small eruptions more frequent on the VEI scale?



- There are three basic types of magma.
 - Each of which has a different mineral composition. All types of magma have a significant percentage of silicon dioxide.



- Name the type of volcanic eruption?

17

A Strombolian

B Icelandic

C Vulcanian

D Pelean

Possible Word Bank: Icelandic, Hawaiian, Strombolian, Pelean, Plinian, Vulcanian

- Which one is the mafic lava?

A Mafic (High Basalt) (flows)

B Felsic (High Silicon) (Sticky) (Explosive)

Shield, Dome, Ash Cinder, Stratovolcano, Caldera

QUIZ WIZ

Optional Music: Volcano for visual Quiz
<https://www.youtube.com/watch?v=10C7m2K7r8s>
 Copyright 2017

Part 3: Deformation, Types of Deformation, Faults, Folds, Types of Stress on Rock, Types of Faults, Types of Folds, Energy Waves, Mechanical Waves, Body Waves, Surface Waves, Earthquakes, Moment Magnitude Scale, Richter Scale, Earthquake Case Study, Mercalli Scale, Epicenter, Finding an Epicenter, Earthquake Design, Design Challenge with a shake table, Tsunami, Tsunami Case Studies, Causes of Tsunami, Tsunami warning signs

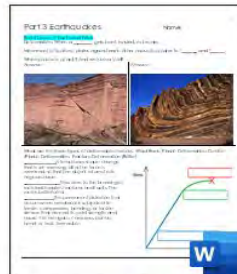
Part 3: Earthquakes



Additional and Printables



Part 3 Earthquakes Work Bundle Answers



Part 3 Earthquakes Work Bundle Print

Faults and Folds

Part 3 Lesson 1

Part 3 Lesson 1 Faults and Folds

Types of Faults

Part 3 Lesson 2

Part 3 Lesson 2 Types of Faults

Lateral Faults

Part 3 Lesson 3

Part 3 Lesson 3 Lateral Faults

Compression Folds

Part 3 Lesson 4

Part 3 Lesson 4 Compression Folds

Mechanical Waves

Part 3 Lesson 5

Part 3 Lesson 5 Mechanical Waves

Seismographs and Seismometers

Part 3 Lesson 6

Part 3 Lesson 6 Seismograph

Epicenter

Part 3 Lesson 7

Part 3 Lesson 7 Epicenter

Design Challenge

Part 3 Lesson 8

Part 3 Lesson 8 Design Challenge

Tsunami

Part 3 Lesson 9

Part 3 Lesson 9 Tsunami

Review Game

Part 3 Lesson 10

Part 3 Lesson 10 Earthquakes Review Game

Review Game

Part 3 Lesson 11

Part 3 Lesson 11 Review Game Answers



Earthquake Unit

Seismograph

This is an instrument that makes a record of seismic waves caused by an earthquake, explosion, or other Earth-shaking phenomenon.



Modern Seismometer


Answers in the spaces below:

1. What is the name of this device?
2. What does it measure?
3. How does it work?
4. Can you point out when the earthquake occurred below?

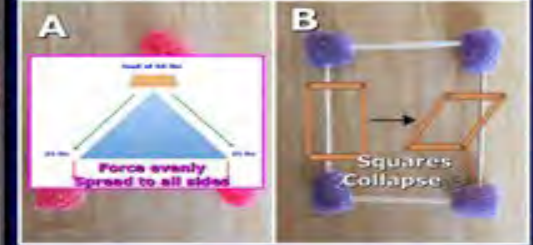
- An earthquake is plate movement that happens very quickly instead of slowly.

Tremendous Energy!

Difficult to predict



• Which is a stronger design?



• Mechanical Waves are waves which propagate through a material like rock.
- They can be **Longitudinal** and **Transverse**

P waves are longitudinal waves



- **Damping:** Buildings in general dissipate vibration by absorbing it.
- Damping is a rate at which natural vibration is absorbed.



• This is a process where sand or landfill will often change from a wet solid into a dense liquid, which further amplifies shaking.



- **Fault:** Break / crack where occurs.



- **P Wave:** Primary wave. Moves lateral

Called a..

Longitudinal Wave

Also a body wave

Record in journal

11 Lessons

Follow Along Work Bundle

This bundle contains 16 pages of educational materials for earthquakes, including:

- Earth & Seismology**: Overview of earthquakes and seismic waves.
- Seismic Waves**: Diagrams and graphs showing P, S, and surface waves.
- Plate Tectonics**: Diagrams of plate boundaries and their effects on earthquakes.
- Earthquake Hazards**: Information on tsunamis, liquefaction, and ground shaking.
- Seismicity**: Maps and graphs showing global and local seismic activity.
- Smart Labs Earthquake Design Challenge Presentation**: A project-based learning activity.
- Seismology**: A detailed overview of seismic waves and their measurement.
- 16 Pages**: A large crossword puzzle.

The bundle is designed to be used as a follow-along work for students, providing a comprehensive understanding of earthquakes and their impact on the world.

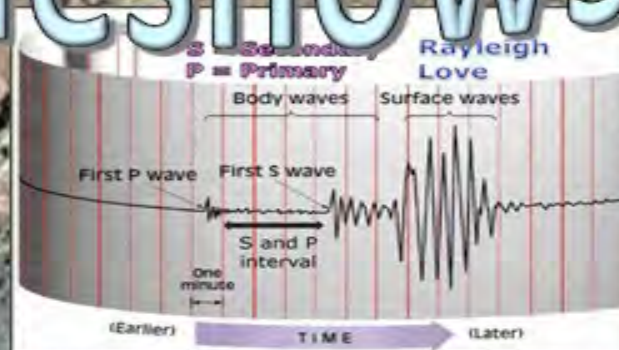
Interactive Slideshows

- **Anticline:** ⊗ Oldest layer at core.

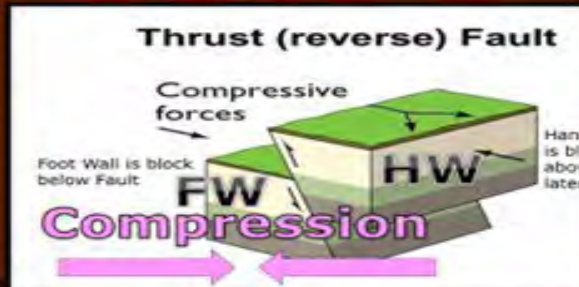


- This is the name for a twelve-point scale for expressing the local intensity of an earthquake
– 1 = Virtually Unnoticed to a 12 = Total Destruction!

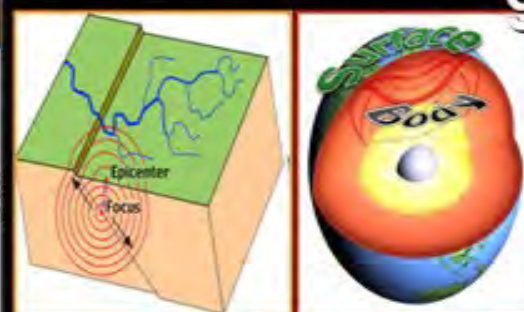
Modified Mercalli Intensity Scale			
I	Instrumental: detected only by instruments	VII	Very strong: noticed by people in autos. Damage to poor construction.
II	Very light: felt by a few people at rest	VIII	Strong: damage to some structures. Damage to poor construction.
III	Slight: felt by many people at rest. Like passing of a truck	IX	Very strong: damage to some structures. Ground cracked, pipes broken.
IV	Light: felt by all. Some windows broken, bells rung, pendulum clocks stopped. People awakened.	X	Very disastrous: few structures left standing.
V	Noticeable: felt by all. Some windows broken, bells rung, pendulum clocks stopped. People awakened.	XI	Catastrophic: total destruction.
VI	Strong: felt by all, some people frightened. Damage slight, some plaster cracked.		



- **Reverse Fault:** Compression forces cause crust to move up.



- In an earthquake, **body** waves move through the inner part of the earth, while **surface** waves travel over and near the surface.

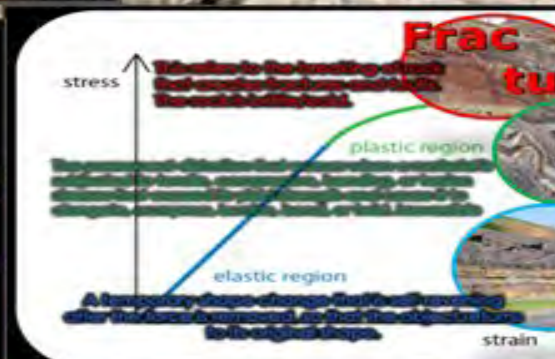
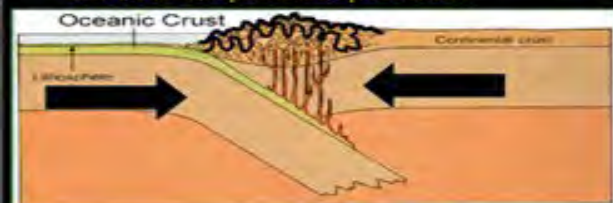


- Which is a **reverse / thrust** fault?



- **Orogeny:** The formation of mountain ranges by intense upward displacement of the earth's crust.

– Usually associated with folding, thrust faulting, and other compressional processes.



- **Earth Quake Drill:** "Drop, Cover, and Hold on."
– <http://www.youtube.com/watch?v=LP57C0LITrc>



Assessments, Projects, Games, Keys, and much more

• Activity! Making folds.

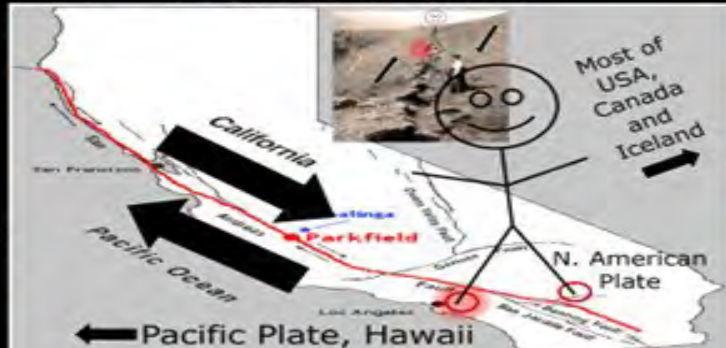
- Flatten out layers of different colored clay and lay them on top of each other.
- Compress clay together from either end.
- Draw your compression fold in your journal.



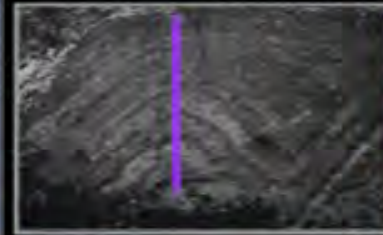
• Name the type of fault or stress.



San Andreas Fault in California.



• Which type of fold?



- Movement of tectonic plates against each other cause the plates to **fault** and **fold**.



ical

- This is an ocean wave generated by a submarine earthquake, volcano, or landslide.



Minerals, Crystals, Uses of Minerals, Types of Crystals, Atomic Bonding, Physical Properties of Minerals, Primary Minerals, Mineral Properties Lab, Common Mineral Identification

Part 4: Minerals



Additional and Printables



Part 4 Lesson 1 Minerals



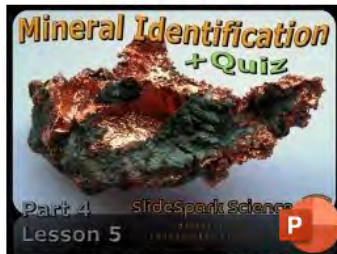
Part 4 Lesson 2 Crystals



Part 4 Lesson 3 Crystal Quiz Bonds



Part 4 Lesson 4 Primary Minerals



Part 4 Lesson 5 Mineral Identification



Part 4 Lesson 6 Mineral Answers Properties



Part 4 Lesson 7 Mineral Properties II



Part 4 Lesson 8 Properties Lab



Part 4 Lesson 9 Properties Quiz Wrap Up



Part 4 Lesson 10 Review Game



Part 4 Lesson 11 Answers to Review Game



Part 4 Minerals Work Bundle Digital

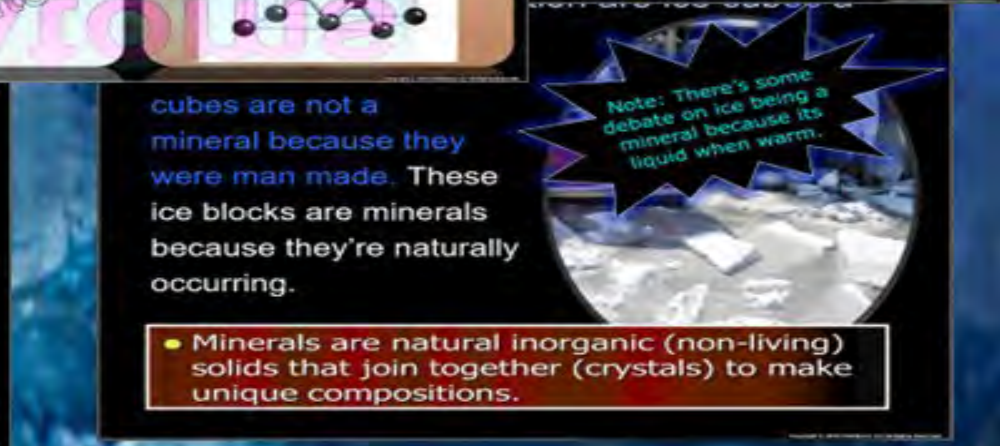
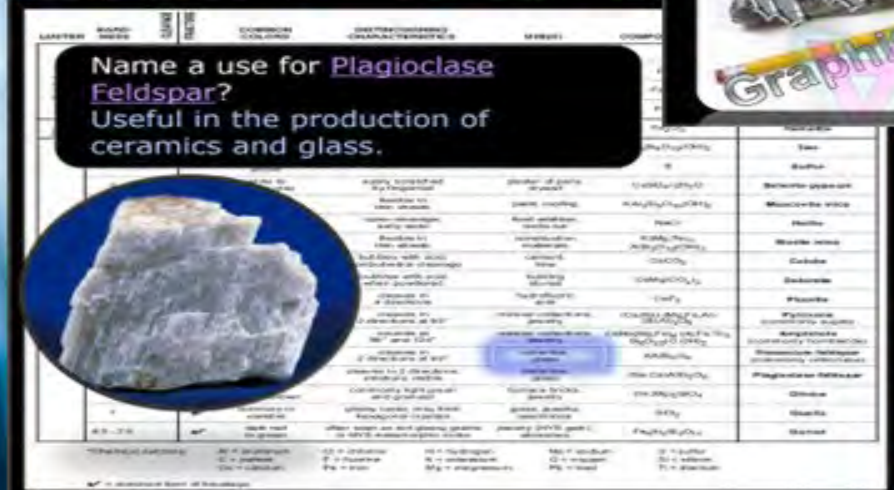
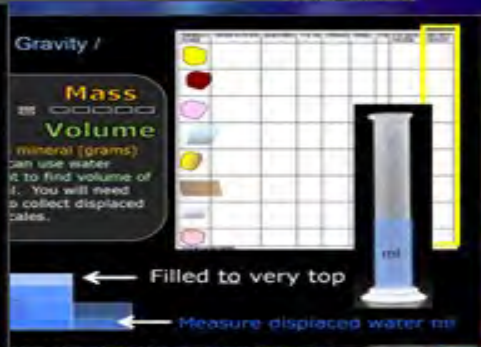
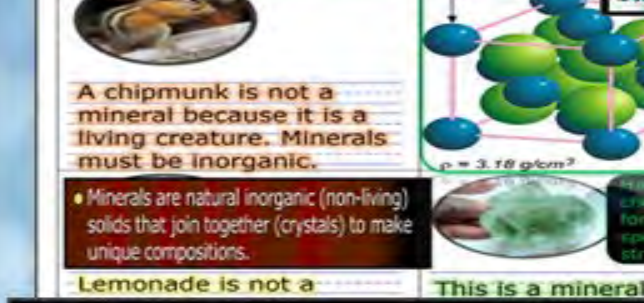


Part 4 Minerals Work Bundle Print Answers



Part 4 Minerals Work Bundle Print

Preview is a compressed file



Interactive Slideshows

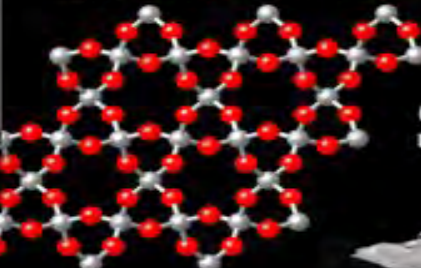
- Processed and used as prefabricated wallboard or an industrial or building plaster.



1
Gypsum

- Minerals also have a fixed chemical formula made of elements.

– Quartz = SiO_2 (S=Silicon O=Oxygen)



Quartz
 SiO_2

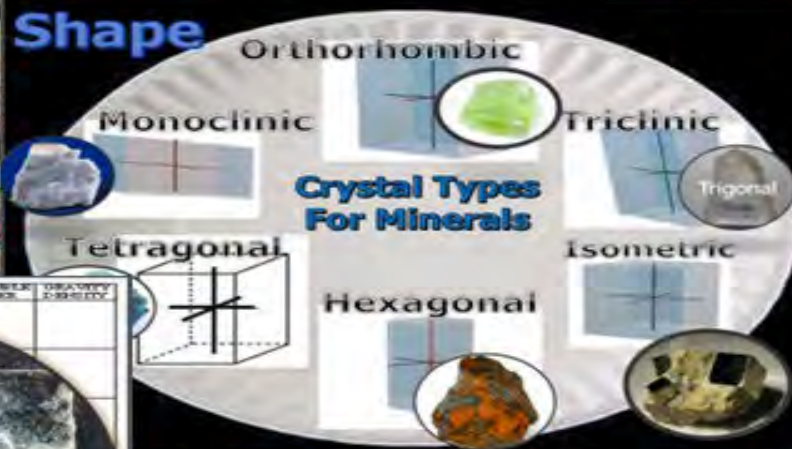
Note: Not always the same color as the mineral



Atoms
 SiO_2



What are min made of?



MINERAL SAMPLE	ORIGIN/VEIN	SHAPES/FORM	COLOR	STREAK	SMELL	TOUCH	OTHER	IDENTIFY
Quartz		No Luster						
Calcite		No Luster	glassy					
Pyrite		High Luster						
Hematite		Sometimes						
Sulfur		No Luster						
Feldspar		No Luster	glassy					
Halite		Slight gloss	glassy					
Mica		Glossy Luster	glassy					



Rust

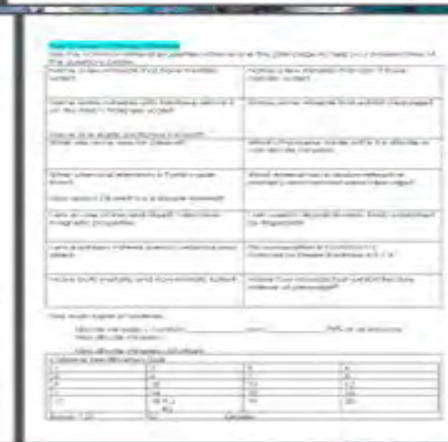
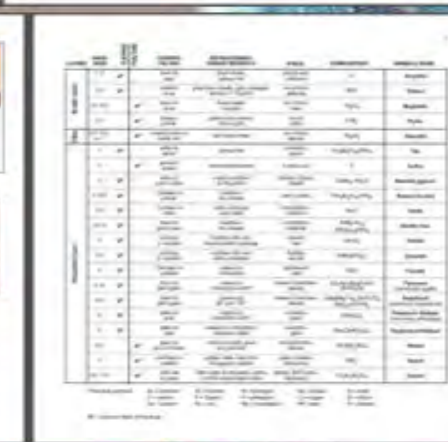
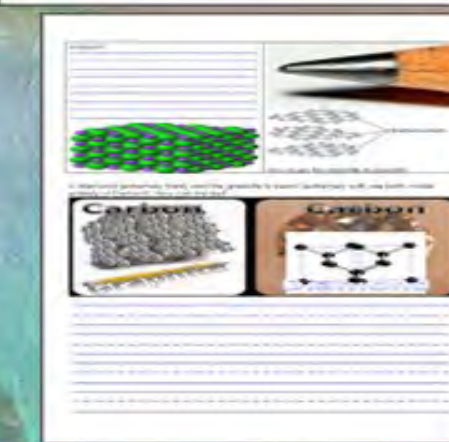
What is the chemical composition of the mineral?

Fe_2O_3 Iron Oxide

predict which might silicate mineral. Look composition, and find Si... missing it is probably a mineral n, O = Oxygen

MINERAL	COMPOSITION	IDENTIFY
Quartz	SiO_2	
Calcite	CaCO_3	
Pyrite	FeS_2	
Hematite	Fe_2O_3	
Sulfur	S	
Halite	NaCl	
Mica	$\text{KAl}_2(\text{Si}_2\text{Al})_6\text{O}_{20}(\text{OH})_2$	
Feldspar	KAlSi_3O_8	
Quartz	SiO_2	
Calcite	CaCO_3	
Pyrite	FeS_2	
Hematite	Fe_2O_3	
Sulfur	S	
Halite	NaCl	
Mica	$\text{KAl}_2(\text{Si}_2\text{Al})_6\text{O}_{20}(\text{OH})_2$	
Feldspar	KAlSi_3O_8	

Follow Along Bundle



15 Pages

Activities, Assessments, Review, Games, and more all built-in

• Activity! Create a human crystal.

- Teacher assigns students one at a time to create some form of atomic structure by laying on the floor and using your arms and legs to form a crystal.

Graphite

• Silicate Minerals: Contains silica and oxygen. 75% of all minerals.

Some Silicate Minerals Which are the big 3?

Silicate is a chemical term for the group of a single atom of silicon surrounded by four atoms of oxygen, or SiO_4

• Name these two minerals?

	This mineral is a magnesium iron silicate. Common mineral in the earth's surface.	Olivine
	An important rock forming mineral. A major mineral in the rock basalt.	Pyroxene

...e grouped together by

molecular crystals, molecules are joined together by weak Van der Waal forces. These substances have low melting point and boiling point.

• Which minerals are **Felsic** and which are characterized **Mafic**?

1 Feldspar	2 Amphibole High in heavier elements
3 Pyroxene High in heavier elements	4 Quartz

20

Halite

This mineral has many unique properties. Name the mineral and at least one property.

MINERAL SAMPLE	OBSERVATIONS	TESTS	CONCLUSIONS
	No Luster Translucent Translucent to Transparent Double Refraction	Hardness: 3 Streak: White Cleavage: Rhombohedral	Calcite
	High Luster Opaque Sometimes metallic	Hardness: 6-7 Streak: Black Cleavage: None	Pyrite
	Opaque Metallic luster	Hardness: 5-6 Streak: Reddish-brown Cleavage: None	Hematite
	No Luster Translucent	Hardness: 2 Streak: Yellow Cleavage: None	Sulfur
	No Luster Typically Opaque	Hardness: 6-7 Streak: White Cleavage: Two directions at 90 degrees	Feldspar
	Slight gloss Transparent	Hardness: 2.5 Streak: White Cleavage: Cubic	Halite
	Glossy Luster Translucent	Hardness: 2-3 Streak: White Cleavage: Perfect in one direction	Mica

Fracture

equal in length and at 90° other.)

"The harder mineral is harder than that which has been scratched."

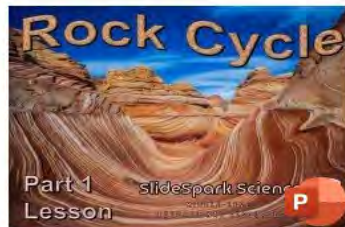
Soft - Mineral shows scratch
Hard - Mineral does not show scratch

Rocks, Scheme for Igneous Rock Identification, Intrusive, Extrusive Igneous Rocks, Classification for Igneous Rocks, Rocks Flow Chart, Common Igneous Rocks, Common Sedimentary Rocks, Common Metamorphic Rocks, Scheme for Metamorphic Rocks, Regional and Contact Metamorphism, Rock Identification Quiz

Part 5: Rocks and the Rock Cycle



Additional and Printables



Part 5 Lesson 1 Start Rock Cycle



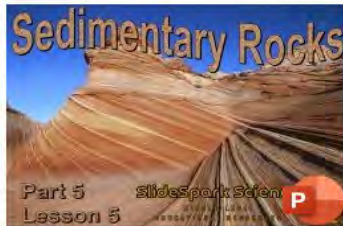
Part 5 Lesson 2 Igneous Rocks



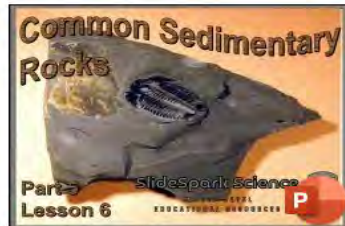
Part 5 Lesson 3 Igneous Rocks cont



Part 5 Lesson 4 Rocks Flow Chart



Part 5 Lesson 5 Sedimentary Rocks



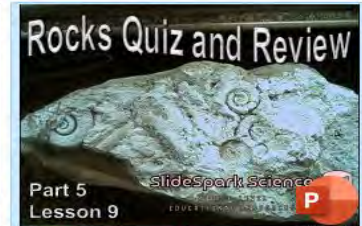
Part 5 Lesson 6 Common Sedimentary



Part 5 Lesson 7 Metamorphic Rocks



Part 5 Lesson 8 Common Metamorphic



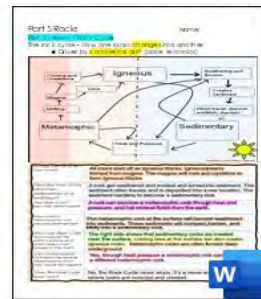
Part 5 Lesson 9 Quiz and Wrap Up



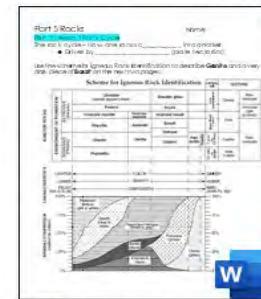
Part 5 Lesson 10 Review Game



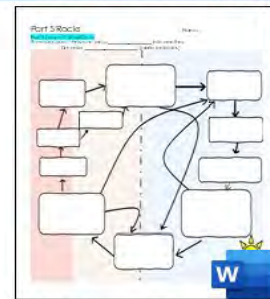
Part 5 Lesson 11 Review Game Answers



Part 5 Rocks Work Bundle Answers



Part 5 Rocks Work Bundle Digital



Part 5 Rocks Work Bundle Print

[illegible]

Remember to move the cards around to match them up. Make sure to read the supporting text.



- 
- Obsidian
Felsic



Granite
Felsic

Granite
Felsic

Pumice
Mafic/
Felsic

-
- Grains
- Granite
- Cooled
Intrusive
- Potassium feldspar (35%) gives many granites a distinctive pink color.

Grains
Rhyolite
Cooled
More Extrusive

- 
- Sandstone**
- Sandstone is a type of sedimentary rock composed mostly of sand-sized silicate grains. It is formed by the accumulation and lithification of loose sand.

Limestone is a sedimentary rock that is composed of the calcium-bearing carbonate minerals calcite and dolomite. It's origin can be from cemented shell fragments

Limestone

c: Small pieces of rock are "lithified" or cemented together.



basaltic: Dark, heavy (dense)

lunar maria
is basalt



Ocean Floor

Lava flows

Olympus Mons on Mars is made of Basalt

- A sedimentary rock like a conglomerate can be pressed into a metamorphic rock such as metaconglomerate.

Follow Along Bundle

Part 5: Rocks

Common Sedimentary Rocks

Common Metamorphic Rocks

14 Pages

The bundle consists of 14 pages of educational material on rocks, organized into four main sections:

- Part 5: Rocks (Page 1):** A flowchart showing the rock cycle, with boxes for igneous, sedimentary, and metamorphic rocks, and arrows indicating the processes of formation and transformation.
- Common Sedimentary Rocks (Page 2):** A diagram showing the formation of sedimentary rocks from sediments, with labels for compaction and cementation.
- Common Metamorphic Rocks (Page 3):** A diagram showing the formation of metamorphic rocks from igneous or sedimentary rocks, with labels for heat and pressure.
- Part 6: Rocks (Page 4):** A flowchart showing the rock cycle, with boxes for igneous, sedimentary, and metamorphic rocks, and arrows indicating the processes of formation and transformation.
- Common Sedimentary Rocks (Page 5):** A diagram showing the formation of sedimentary rocks from sediments, with labels for compaction and cementation.
- Common Metamorphic Rocks (Page 6):** A diagram showing the formation of metamorphic rocks from igneous or sedimentary rocks, with labels for heat and pressure.
- Part 7: Rocks (Page 7):** A flowchart showing the rock cycle, with boxes for igneous, sedimentary, and metamorphic rocks, and arrows indicating the processes of formation and transformation.
- Common Sedimentary Rocks (Page 8):** A diagram showing the formation of sedimentary rocks from sediments, with labels for compaction and cementation.
- Common Metamorphic Rocks (Page 9):** A diagram showing the formation of metamorphic rocks from igneous or sedimentary rocks, with labels for heat and pressure.
- Part 8: Rocks (Page 10):** A flowchart showing the rock cycle, with boxes for igneous, sedimentary, and metamorphic rocks, and arrows indicating the processes of formation and transformation.
- Common Sedimentary Rocks (Page 11):** A diagram showing the formation of sedimentary rocks from sediments, with labels for compaction and cementation.
- Common Metamorphic Rocks (Page 12):** A diagram showing the formation of metamorphic rocks from igneous or sedimentary rocks, with labels for heat and pressure.
- Part 9: Rocks (Page 13):** A flowchart showing the rock cycle, with boxes for igneous, sedimentary, and metamorphic rocks, and arrows indicating the processes of formation and transformation.
- Common Sedimentary Rocks (Page 14):** A diagram showing the formation of sedimentary rocks from sediments, with labels for compaction and cementation.
- Common Metamorphic Rocks (Page 15):** A diagram showing the formation of metamorphic rocks from igneous or sedimentary rocks, with labels for heat and pressure.

Activities, Projects, Assessments, and more

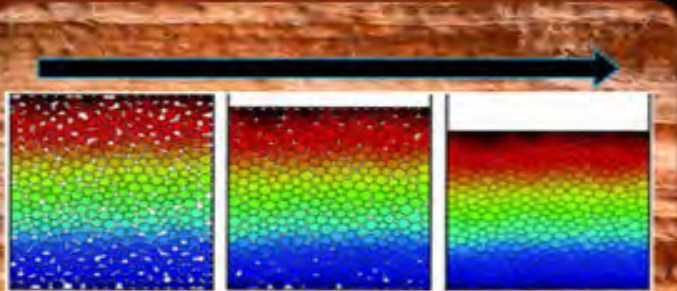
- There are 8 primary plates and several more secondary plates that make up the earth's landmass.



- Which of the rocks below cooled quickly (Extrusive) and which cooled slowly (Intrusive)? Which one has large crystals?



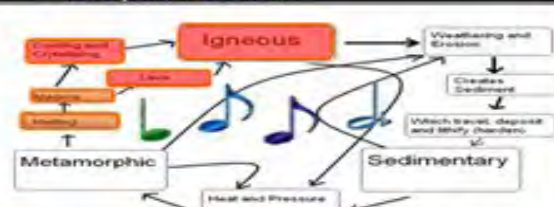
- The sediment eventually gets buried, gets compacted and cemented together.



- Clastic sedimentary rocks have particles ranging in size from microscopic clay to large boulders.



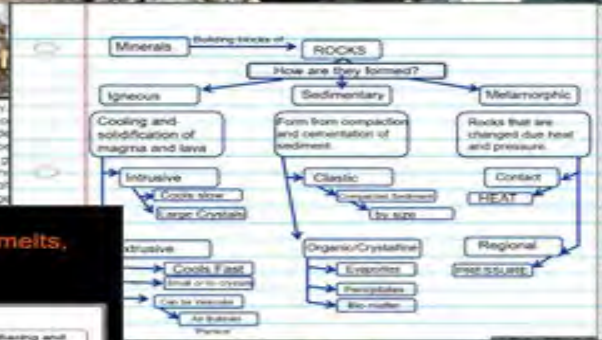
- If a metamorphic rock gets hot and melts, it becomes igneous.
– The cycle starts over.



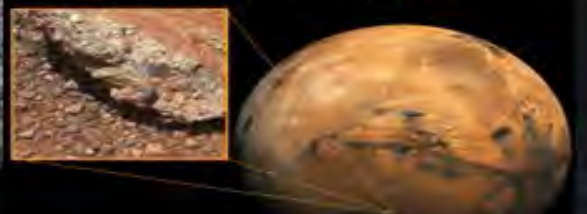
- Igneous Rocks: Molten Earth cooled.
 - Intrusive – Cooled below crust (slow)
 - Larger crystals
 - Extrusive – Cooled on Earth's surface (faster).
 - Fine grain crystals or no crystals



- Review: Rock: A mixture of Minerals
Granite



- Picture of Conglomerate from Mars.
– Evidence of water / stream beds / mud.



Part 6: Earth System History: 8 Lessons of 50 Minutes and 8 Page Follow Along Work Bundle, Earth Broken down into a 12 Hour Day and emergence of Humans, Age of the Earth, Uniformitarianism, Review of the Five Fingers of Evolution, Principle of Superposition, Card Activity with the Principle of Superposition, Earth System History, Units of Time, Understanding the Units of Time, Fragility of the System, Mass Extinction Events, Build a timeline project where students work in groups and create a 4.65 meter long timeline of Earth System History, Protoplanet, Precambrian Supereon, Hadean Eon, Crust Formation, Formation of the Moon, Importance of the Moon Formation, Earth's EM Field, Major Events of the Hadean, Events of the Archean, First Prokaryotic Cells, Tectonic Activity, Stromatolites, Proterozoic Eon, Cyanobacteria, Oxygen Catastrophe, Banded Iron Formations, Snowball Earth, Multi-cellular Life, Major Events of the Proterozoic Eon, Paleozoic Era, Major Events of the Cambrian, Ediacaran fauna, Burgess Shale, Make Burgess Shale Activity, Ordovician, Tetrapod Evolution, Tiktaalik, Ichthyostega, Silurian, Devonian, Carboniferous, Fossil Fuels, and Permian Periods, End Permian Mass Extinction, Major Events of the Mesozoic Era, Pangea, Bird Hipped and Lizard Hipped Dinosaurs, Dinosaur Challenge Activity, How Modern Birds and Dinosaurs are Similar, K-Pg Mass Extinction Event, Cenozoic Era, Paleogene, and Neogene Periods, Epochs and Ages, Presentation of Student Timelines, Box Game Review, Crossword Puzzle, End Unit Assessment where Students Use their Timeline, Answers to Assessment so Students Can Self Assess.

Part 6: Earth System History



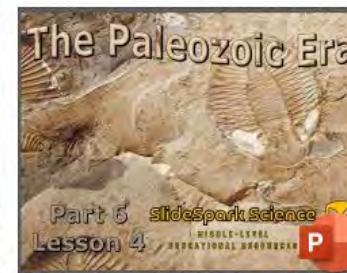
Part 6 Lesson 1 Age of the Earth



Part 6 Lesson 2 Units of Time



Part 6 Lesson 3 Precambrian Super Eon



Part 6 Lesson 4 Paleozoic



Part 6 Lesson 5 Mesozoic



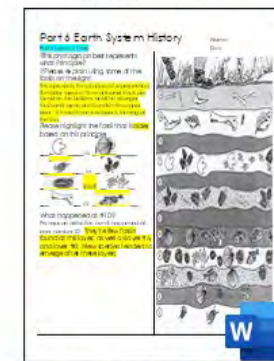
Part 6 Lesson 6 Cenozoic



Part 6 Lesson 7 Review Game



Part 6 Lesson 8 Review Game Answers



Part 6 Work Bundle Answers



Part 6 Work Bundle Digital

Earth System History Unit

• REVIEW! Major Events of the Archean



• Stromatolites: A calcareous mound built up of layers of lime-secreting cyanobacteria and trapped sediment, found in Archean rocks as the earliest known fossils.



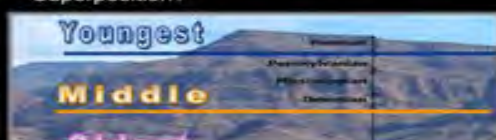
• Earth system history has **physical**, **chemical**, and **biological** components.



• Major Events of the Hadean Eon



• Which time period is the oldest, middle, and youngest based on the Principle of Superposition?



Final Question?

What is the name of the organism seen below that dominated in the early Paleozoic long before life moved to land?

Trilobite

• 99.5% of all things that have ever lived have become extinct.



• Which is older, Fish or Snails?



8 Lessons and Project




Interactive Slideshows

Tiktaalik

Tiktaalik is from the Devonian Period, having many features akin to those of four limbed tetrapods. **380-385 mya**

Ichthyostega is an early genus of tetrapodomorphs that lived at the end of the Late Devonian Period (370 million years ago)

It was one of the first four-limbed vertebrates in the fossil record. Ichthyostega possessed lungs and limbs that helped it navigate through shallow water in swamps



• **Ediacara fauna:** Soft-bodied organism thrive in the oceans.




Geological Time Scale

Period	Epoch	Approximate Age (mya)	Characteristics of Fauna and Animals
Paleozoic	Permian	252-251.9	Reptiles, amphibians, early dinosaurs
	Carboniferous	359-252	Reptiles, amphibians, early dinosaurs
	Devonian	359-252	Reptiles, amphibians, early dinosaurs
Mesozoic	Triassic	252-201.3	Reptiles, amphibians, early dinosaurs
	Jurassic	201.3-145.5	Reptiles, amphibians, early dinosaurs
	Cretaceous	145.5-66	Reptiles, amphibians, early dinosaurs
Cenozoic	Quaternary	66-0	Reptiles, amphibians, early dinosaurs
	Tertiary	66-2.58	Reptiles, amphibians, early dinosaurs
	Quaternary	2.58-0	Reptiles, amphibians, early dinosaurs

Describe all of the units of time that the **Cambrian** is part of?
Answer:
 Cambrian Period
 Paleozoic Era
 Phanerozoic Eon

• A layer of Iridium can be found across the globe in rock layers around 65 million years ago. **K-T Mass Extinction Event**

– Iridium is found

Sometimes called the **Cretaceous Paleogene Extinction Event**

Impact event



Periods of mass extinction. Please highlight the fossil that is most abundant in this period.

Which rock layer has the oldest fossils? Which rock layer has the youngest fossils? Which rock layer contains the most fossils? When did you find the first vertebrates? Are there older than fossilized bones?

Extinction Event?



• **Principle of superposition.** The rock layers on the bottom are older.

– More primitive creatures are seen in the older rock layers.



Project, Assessments, Games And more all built-in

- Video Link! Animation of Paleozoic Sea Life at Field Museum in Chicago. (Cambrian)
– <http://www.youtube.com/watch?v=LbhGWDjOkP0>



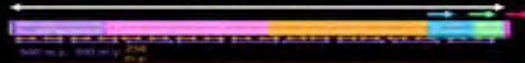
- Meteorites bombard the planet.
– The earth **increases** in size.



Hadean Eon Archean Eon Proterozoic Eon

Paleozoic Era Mesozoic Era Cenozoic Era

4.56 meters



1 b.y. 2 b.y. 3 b.y. 4 b.y. 5 b.y.

Can you color code the edges as a group before we begin.

- Earth's Timeline is divided into various units of time.
– Eon (Longest amount of time)
– Hadean, Archean, Proterozoic



1 b.y. 2 b.y. 3 b.y. 4 b.y. 5 b.y.

Final Product will look like this...










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



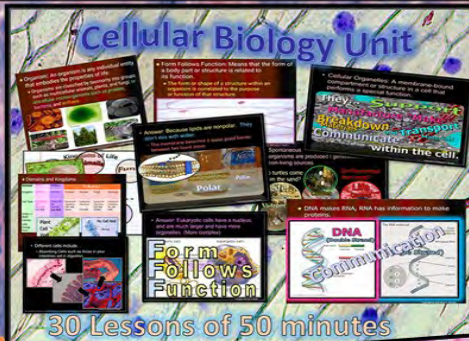
Botany Unit



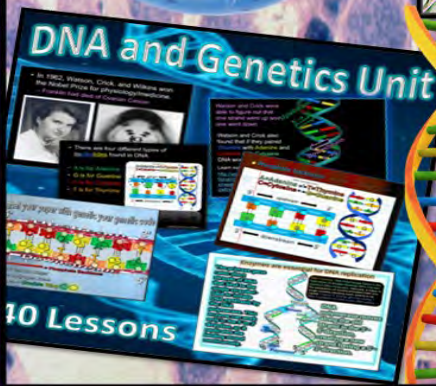
Human Body Systems Unit



Cellular Biology Unit



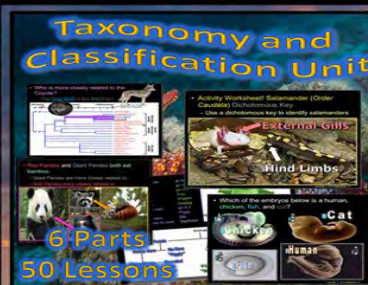
DNA and Genetics Unit



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](#)

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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
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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,
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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

Interactive
Slideshows

With Follow Along
Work Bundles

63 Pages

Assessments, Activities,
Projects, and so much more

Atoms and Periodic Table Unit

6 Parts, 44 Lessons

Thousands of Interactive Slides

Follow Along Work Bundle

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

Exciting Activities, Questions,
Videos, All built-in

Matter and Energy and the Environment Unit

58 Lessons

Interactive Slideshows

with Follow Along Work Bundles

125 Pages

Activities, Assessments,
and more, all built-in

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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.

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