

Atmosphere Unit

• Particulate Matter Smoke

- Teacher will light candle and then blow out so you can collect smoke

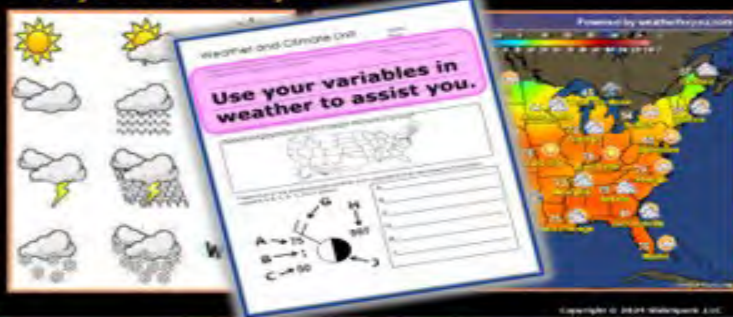


• All other gases 1%

- *Argon
- *Carbon Dioxide
- Neon
- Helium
- Methane
- Krypton
- Hydrogen
- Xenon



- Let's go outside! Please provide at least a twenty-five word forecast for today's weather in your science journal.



- Thermosphere: The 100,000 miles of the atmosphere above the mesosphere.
- Aurora borealis



Diatom Nitrogen



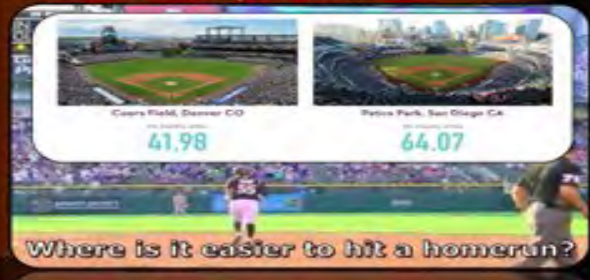
Strong Triple Bond

Inert
Non-reactive



• Air Density

- The mass of air per unit volume

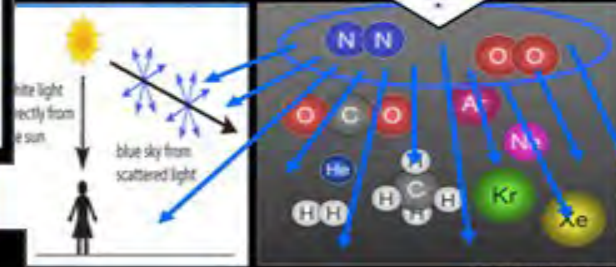


Interactive Slideshows

Most of the other 21% of our atmosphere consists of this gas? **Oxygen**



The sky is blue because Nitrogen gas N_2 and Oxygen Gas O_2 are almost the same size (small). This scatters the light.



Air Pollution Wrap Up

– <https://www.youtube.com/watch?v=e6rq1sLy1Ys>



Carbon dioxide and carbon monoxide are emitted from combustion



Activity! (Optional)

— Light candle directly behind tube / round container of about equal thickness (non-flammable material) and try and blow out c



The atmosphere is made of

78% Nitrogen Gas

21% Oxygen

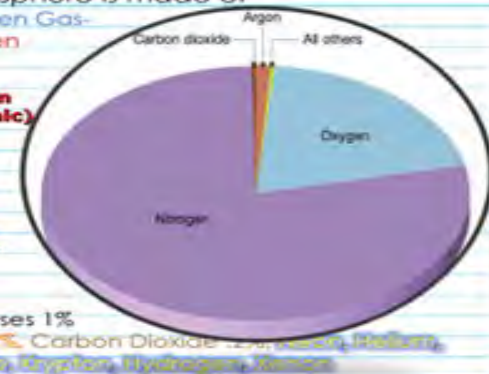
O2 Oxygen Gas (Diatomic)

O=O

N2 Nitrogen Gas (Diatomic) N≡N

All other gases 1%

Argon .7% Carbon Dioxide .05% Neon .0018% Helium .0005% Methane .0001% Hydrogen .000005% Sulfur Dioxide .000001%



Can you say this with me...

The Atmosphere...
Driven by the Sun
Sustains Life
Circulates Matter and Energy
Changes over time
 And understanding it holds the key to the past, present, and future

Weather Station Model of Variables.



Particulate matter (PM), measured as smoke and dust.

- PM 10 is the fraction of suspended particles 10 micrometers in diameter and smaller that will enter the nasal cavity.
- PM 2.5 has a maximum particle size of 2.5 μm and will enter the bronchus and lungs.



Follow Along Bundle

Fig 1 The Atmosphere

Describe the layers of the atmosphere and their approximate boundaries.

Atmosphere: The layer of gases that surrounds the Earth.

Layers of the atmosphere:

- Troposphere: The layer closest to the Earth's surface. It is where most weather occurs.
- Stratosphere: The layer above the troposphere. It contains the ozone layer.
- Mesosphere: The layer above the stratosphere.
- Thermosphere: The layer above the mesosphere. It contains the aurora borealis.
- Exosphere: The outermost layer of the atmosphere.

Diagram showing the layers of the atmosphere with their approximate boundaries in kilometers (km) and miles (mi).

Approximate boundaries (km):

- Troposphere: 0 to 12
- Stratosphere: 12 to 50
- Mesosphere: 50 to 85
- Thermosphere: 85 to 500
- Exosphere: 500 to 1000

Approximate boundaries (mi):

- Troposphere: 0 to 7.5
- Stratosphere: 7.5 to 31
- Mesosphere: 31 to 53
- Thermosphere: 53 to 311
- Exosphere: 311 to 621

Weather and Climate

Weather: The state of the atmosphere at a particular time and place.

Climate: The average weather conditions over a long period of time.

Factors that affect weather and climate:

- Latitude: The distance from the equator to the poles.
- Altitude: The height above sea level.
- Proximity to water: The influence of large bodies of water.
- Wind patterns: The direction and speed of the wind.
- Cloud cover: The amount of clouds in the sky.
- Precipitation: The amount of rain or snow that falls.

Diagram showing the relationship between weather and climate.

Layers of the Atmosphere

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ACID RAIN

Diagram showing the process of acid rain formation.

Acid rain is formed when sulfur dioxide (SO₂) and nitrogen dioxide (NO₂) are released into the atmosphere by factories and power plants. These gases react with water vapor to form sulfuric acid (H₂SO₄) and nitric acid (HNO₃), which then fall as acid rain.

Effects of acid rain:

- Damage to buildings and infrastructure.
- Acidification of lakes and rivers, harming aquatic life.
- Damage to forests and crops.
- Respiratory problems in humans.

What's dangerous about PM?

Particulate Matter (PM) is a mixture of solid particles and liquid droplets in the air. It can be harmful to human health and the environment.

Types of PM:

- PM₁₀: Particles with a diameter of 10 micrometers or less.
- PM_{2.5}: Particles with a diameter of 2.5 micrometers or less.

Health effects of PM:

- Respiratory problems: Cough, wheezing, and asthma.
- Cardiovascular problems: Heart disease and stroke.
- Eye irritation: Red, itchy, and watery eyes.
- Neurological problems: Headaches and dizziness.

Diagram showing the health effects of PM.

Particulate Matter around the school

Control Tape: Follen / Dandelion

Dusty Closet: Smoke / Blown out candle

Curtain Fibers: Sweep walk / Dusty Outside

Diagram showing the sources of particulate matter around a school.

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Part 1 Review Game

Diagram showing the review game interface.

Questions and answers:

- Q: What is the atmosphere?
- A: The layer of gases that surrounds the Earth.
- Q: What are the layers of the atmosphere?
- A: Troposphere, Stratosphere, Mesosphere, Thermosphere, and Exosphere.
- Q: What is weather?
- A: The state of the atmosphere at a particular time and place.
- Q: What is climate?
- A: The average weather conditions over a long period of time.

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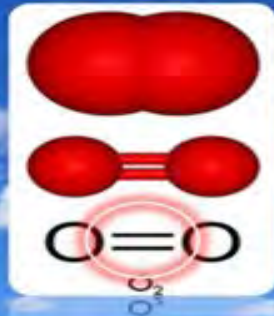
17 Pages

Activities, Assessments, Games, Keys, All Built-In

- 21% Oxygen (O_2 gas)

Diatomic Oxygen

More reactive
(Double Bond)

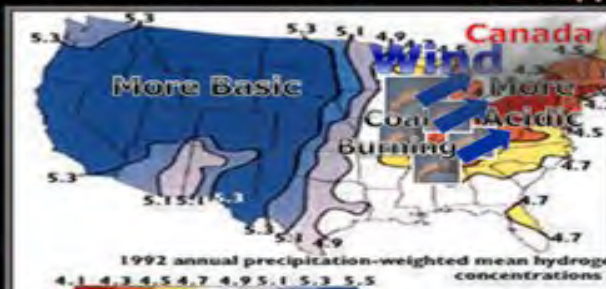


- Climate: The average weather of a particular part of the world at different times of the year. (Longer periods of time)

Hot and dry 2024 AD

- Map showing greatest acid rain concentrations in the U.S.

Not happy



- Name some weather variables?
– 1 point each up to 5 points.

18

Temperature
Air Density
Precipitation
Air Pressure
Wind Speed / Direction
Humidity
Cloud Cover

- What are these? When all are identified we can move on.



forms of effect.

- Regional
• Ex. Acid Rain, smoke from wildfires



Gas



Liquid



Chlorofluorocarbons, (CFC's) made by
in aerosols destroy ozone.



Weather and Climate Unit Part 1 The Atmosphere: Weather Symbols, What is weather?, Difference between Weather and Climate, Climate, Importance of the Atmosphere, Components of the Atmosphere, Layers of the Atmosphere, Air Quality and Pollution, Carbon Monoxide, Acid Rain, Particulate Matter, Ground Level Ozone Ozone Layer, UV, Ways to Avoid Skin Cancer

Part 1: Weather and Climate Unit



Additional and Printables



Part 1 Lesson 1 Weather vs Climate



Part 1 Lesson 2 Atmosphere



Part 1 Lesson 3 Layers of the Atmosphere



Part 1 Lesson 4 Air Quality



Part 1 Lesson 5 Particulates Ozone



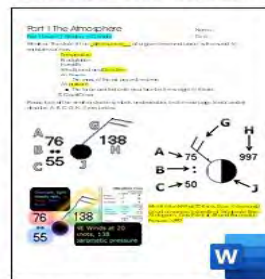
Part 1 Lesson 6 Skin Cancer



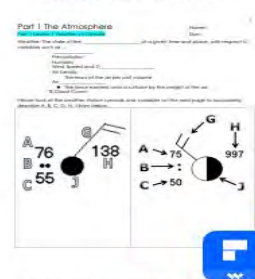
Part 1 Lesson 7 Review Game



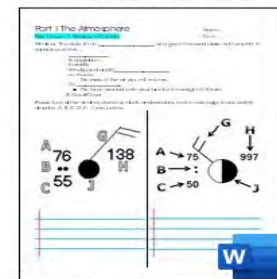
Part 1 Lesson 8 Review Game Answers



Part 1 Work Bundle Answers

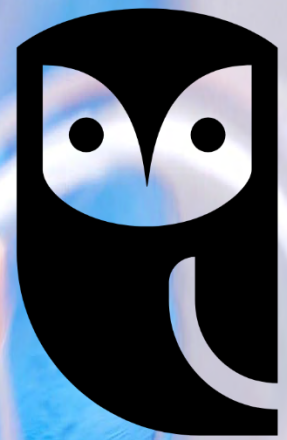


Part 1 Work Bundle pdf Writable



Part 1 Work Bundle Print

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.

- Climate: The average weather of a particular part of the world at different times of the year.



- 78% Nitrogen (N_2 Gas)

Diatomic Nitrogen



Inert
Non-reactive

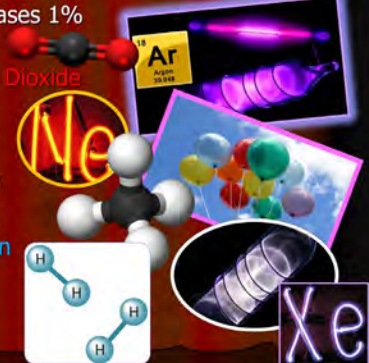


- Thermosphere: The ISS orbits here, Aurora borealis



- All other gases 1%

- *Argon
- *Carbon Dioxide
- Neon
- Helium
- Methane
- Krypton
- Hydrogen
- Xenon



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- Air Density
- The mass of air per unit volume



Coors Field, Denver CO

Petco Park, San Diego CA

Air Density Index
41.98

Air Density Index
64.07

Where is it easier to hit a homerun?

PART 1 THE ATMOSPHERE

Earth's Atmosphere: Weather and Climate

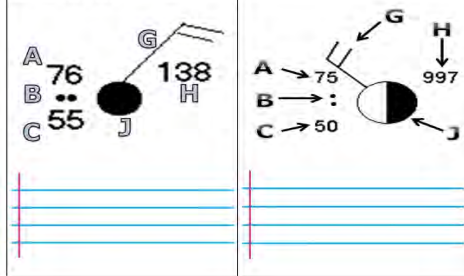
Name: _____

Date: _____

Weather: The state of the _____ at a given time and place, with respect to variables such as...

- Precipitation
- Humidity
- Wind Speed and D
- Air Density
- The mass of the air per unit volume
- Air _____ the force exerted onto the surface by the weight of the air
- % Cloud Cover

Please look at the weather station symbols and variables on the next page to accurately describe A, B, C, G, H, J from below.



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.

- Match the type of camouflage to the correct animal.

- Concealing Coloration
- Disruptive Coloration
- Disguise
- Mimicry



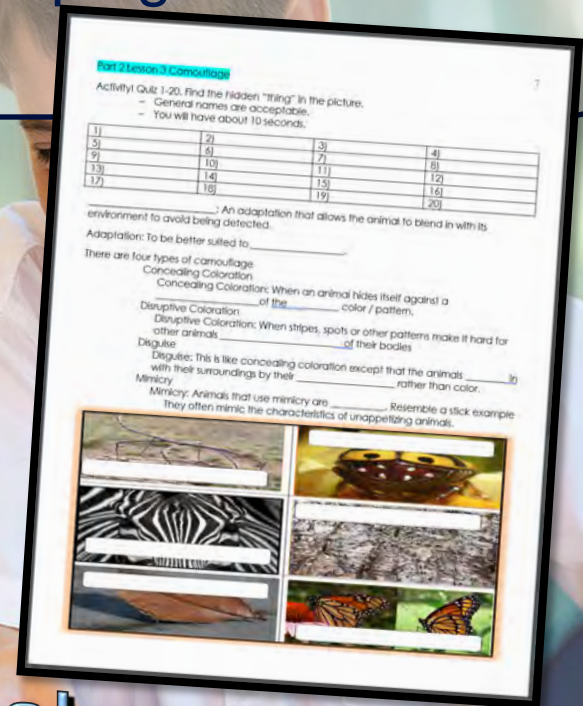
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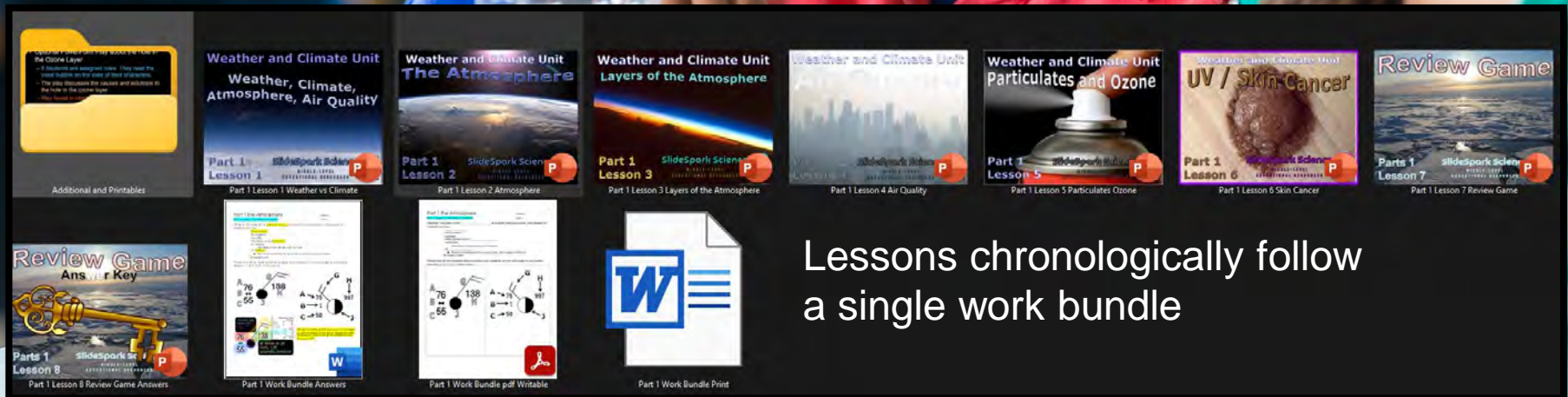
Next Slide

slideshow supports
Work Bundle



Lesson Planning

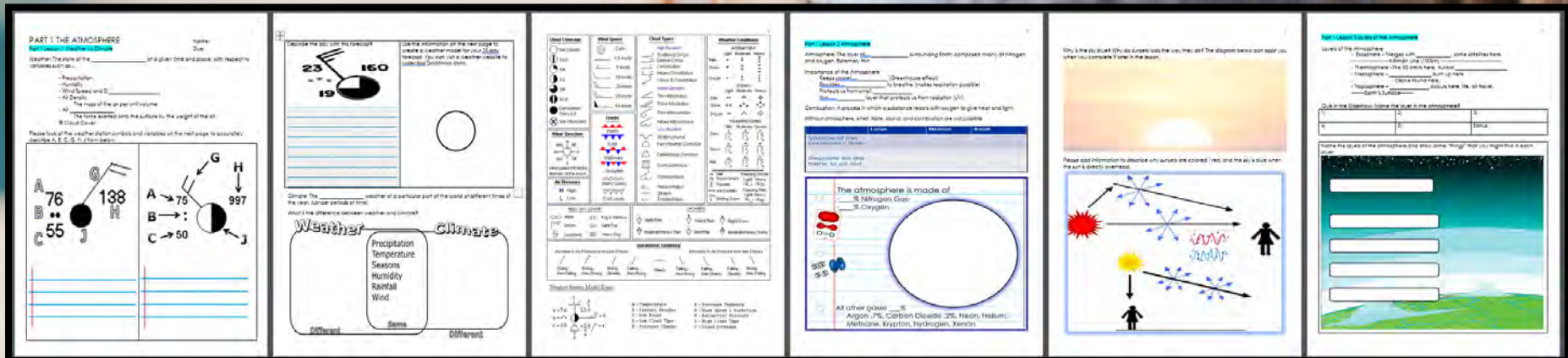
Daily lessons space exciting hands-on activities, red slide notes, video and academic links, projects, simulations, readings, built-in quizzes, and review opportunities throughout the slideshows. A typical day may have many different learning styles being targeted. Daily lesson planning becomes advancing 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.



Lessons chronologically follow a single work bundle

Follow Along Work Bundle

Each science unit includes a single printable work bundle that stays with students from start to finish. Just print and distribute on day one—no daily handouts needed. The bundle follows the unit chronologically and includes everything: fill-in notes, diagrams, quizzes, lab activities, with follow up questions and much more. It's used daily, supports the end-of-unit quiz game, and is handed in for an additional assessment. Answer keys, some writable .pdf versions, and digital versions are also included for flexible classroom use..



PART 1 THE ATMOSPHERE
Name: _____ Date: _____

Weather the area of the _____ at a given time and place. Will respond to weather and place.

• Precipitation
• Wind Speed and Direction
• Air Pressure
• Cloud Cover

The three elements are the weather of the area at the time of the weather.

Please take the weather station map and variables on the next page to answer questions A, B, C, D, E, F, G, H, I, J.

Weather
Precipitation
Temperature
Seasons
Humidity
Rainfall
Wind

Climate
Precipitation
Temperature
Seasons
Humidity
Rainfall
Wind

Weather
Precipitation
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Describe the day with the weather.

Use the information on the next page to create a weather map for the day.

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Clouds
Cumulus
Stratus
Cirrus
Nimbus

Wind
Direction
Speed

Clouds
Cumulus
Stratus
Cirrus
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Atmosphere
The atmosphere is the layer of gases that surrounds the Earth.

The atmosphere is made of:
• Nitrogen Gas
• Oxygen
• All other gases

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Layers of the Atmosphere
Cold Hot

Thermosphere
Mesosphere
Stratosphere
Troposphere

Thermosphere
Mesosphere
Stratosphere
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Thermosphere
Mesosphere
Stratosphere
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Particulate Matter around the school
Control Tape
Dusty Closet
Curtain Fibers
Car Exhaust
Other?

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Layers of the Atmosphere
Cold Hot

Thermosphere
Mesosphere
Stratosphere
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Stratosphere
Troposphere

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Mesosphere
Stratosphere
Troposphere

Crossword
Across
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4. The atmosphere is made of _____.
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Part 1 Review Game
Name: _____ Date: _____

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Self-Assessment Atmosphere
Name: _____ Date: _____

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17. The atmosphere is made of _____.
18. The atmosphere is made of _____.
19. The atmosphere is made of _____.
20. The atmosphere is made of _____.

Self-Assessment Atmosphere
Name: _____ Date: _____

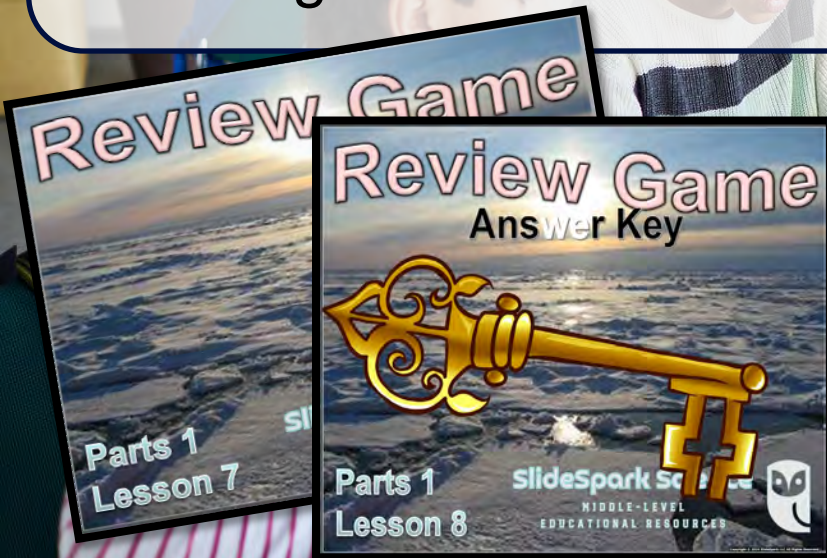
1. The atmosphere is made of _____.
2. The atmosphere is made of _____.
3. The atmosphere is made of _____.
4. The atmosphere is made of _____.
5. The atmosphere is made of _____.
6. The atmosphere is made of _____.
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13. The atmosphere is made of _____.
14. The atmosphere is made of _____.
15. The atmosphere is made of _____.
16. The atmosphere is made of _____.
17. The atmosphere is made of _____.
18. The atmosphere is made of _____.
19. The atmosphere is made of _____.
20. The atmosphere is made of _____.

Self-Assessment Atmosphere
Name: _____ Date: _____

1. The atmosphere is made of _____.
2. The atmosphere is made of _____.
3. The atmosphere is made of _____.
4. The atmosphere is made of _____.
5. The atmosphere is made of _____.
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13. The atmosphere is made of _____.
14. The atmosphere is made of _____.
15. The atmosphere is made of _____.
16. The atmosphere is made of _____.
17. The atmosphere is made of _____.
18. The atmosphere is made of _____.
19. The atmosphere is made of _____.
20. The atmosphere is made of _____.

Review Games / Assessments

The unit wraps up with an interactive Review Quiz Game, complete with slideshow answer version for easy self-assessment. A blank answer sheet is included in the work bundle, allowing students to work individually or in small groups with quiet collaboration. You can choose whether to permit the use of work bundles during the game—either way, it's an excellent review activity and assessment that encourages students to revisit and reference their notes.



Part 1 Review Game

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

Name: _____ Due: Today
Score: ____ / 100

AT MOST	LOTS/LAYERS	SMOOGY SMOG	MY WEATHER: TODAY	WEATHER MOVES (secretly write owl)
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: ____ \$ Answer: _____

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Part 1 Review Game

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

Name: _____ Due: Today
Score: ____ / 100

AT MOST	LOTS/LAYERS	SMOOGY SMOG	MY WEATHER: TODAY	WEATHER MOVES (secretly write owl)
1) FACE	6) MICROPHONE	11) ACID RAIN	16) SUN, SUSTAIN LIFE CYCLES, CHANGES, BUREAU	*21) WATER
2) SOUL, LIQUID, GAS	7) STRATOSPHERE	12) CARBON MONOXIDE	17) SEE ROCKY NEXT PAGE	*22) TWISTER
3) COMBUSTION	8) BIOSPHERE	13) OTHER: MONSOONS	18) DISCUSS: IN ORDER TO SIGHT, GLOBE, TRAIL, MONSOONS, AND OTHER WEATHER	*23) SHAKENAKE
4) HYDROGEN GAS	9) THERMOSPHERE	14) SPIN, CANCELS	19) A-WEATHER-BECLIMAR	*24) THE DAY AFTER TOMORROW
5) OXYGEN GAS	10) EXOSPHERE	15) WATER: Organic Compounds (H₂O)	20) ENVIRONMENTAL MATTER	*25) HOW COULD WE LIVE HERE?

Final Question Wager: ____ \$ Answer: **ARCHAIC MONOKEE, IN METHANE, COCONUTS, DILATION**

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ATMOSPHERE

QUIZ GAME

The Space shuttle orbits in this layer of the atmosphere?

Thermosphere 9

Meteors burn up in this layer of the atmosphere?

Mesosphere 6

Most of the other 21% of our atmosphere consists of this gas? **Oxygen**



5

Part 1 Review Game

Part 1 Review Game

- Final Question.
- Name A, B, C, and D.



The protective ozone layer is found here?

Stratosphere 7



Troposphere

78% of our atmosphere is composed of this gas?

4
Nitrogen Gas

:N::N:

:N≡N:



1 Point Each

16

The Atmosphere...

Driven by the Sun

Sustains Life

Circulates Matter and Energy

over time

And understanding it
holds the key to the past,
present, and

True or False? Weather is the state of the atmosphere at a given time and place?

False

1

Climate refers to the weather conditions prevailing in an area in general or over a long period of time.

This is a rapid chemical combination of a substance with oxygen, involving the production of heat and light.

3

Combustion



Water exists in what three states of matter on the earth? Solid, Liquid, Gas.

Gas

2

Liquid

Solid

20 Questions

This layer of atmosphere merges with space?

Exosphere

10



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What regional weather problem is evident here?

11



Acid Rain

Copyright © 2024 Skatpark LLC

This can occur from too much sun exposure?

Skin Cancer - Melanoma

Skin Cancer

14



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- Name some weather variables?
– 1 point each up to 5 points.

18

Temperature

Air Density

Precipitation

Air Pressure

Wind Speed / Direction

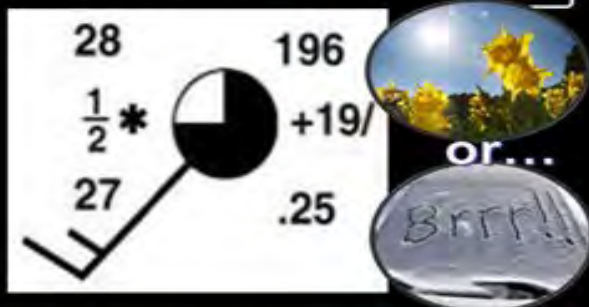
Humidity

**Cloud
Cover**

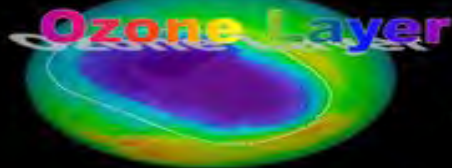


- Please describe the current weather below based on this weather station model.

– (1 point each up to 5 points)



These molecules called **Chlorofluorocarbons** abbreviated (CFCs) escape into the atmosphere from refrigeration and propellant devices and processes. In the lower atmosphere, they are so stable that they persist for years, even decades destroying the Ozone Layer



13

- Which one is weather? And which one is climate?

WEATHER VS. CLIMATE

A	WEATHER	B	CLIMATE
	SHORT-TERM STATE OF THE ATMOSPHERE		LONG-TERM PATTERN OF WEATHER
	CAN VARY FROM TIME TO TIME OR LOCATION TO LOCATION		LONG-TERM = 30 YEARS OR MORE
	ALWAYS INCLUDES TIME AND LOCATION		AVERAGE WEATHER OVER MANY YEARS IN ONE SPECIFIC PLACE

19

- All of the following are ways to avoid this type of poisoning?

- Never run a car in a closed garage.
- Never burn charcoal indoors or in a tent.
- Always run a generator outdoors.
- Never burn anything without ventilation.
- Get a detector and follow the instructions.

12

Signs of Carbon Monoxide Poisoning



- Volatile Organic Compounds (VOC's), such as hydrocarbon fuel vapors and solvents are a form of air pollution and contribute to ground level ozone.



15

- These are the sum of all solid and liquid particles suspended in air many of which are hazardous (smaller than 10 micrometers).
- This complex mixture includes both organic and inorganic particles, such as pollen, soot, smoke, and liquid droplets.

Particulate Matter (PM)



20

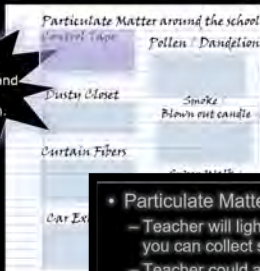
Activities / Labs

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.

• Particulate Matter around the school

- The first piece of clear packing tape should be labeled control. Place it on your paper without touching it much / contaminating the sample.

The rest we will collect on tape and place in journal sticky side down.



Why do we need control tape?

• Particulate Matter Dusty Closet

- Agree on a dusty spot in the school. Place tape down and collect some particulates that would certainly become airborne if stirred. Place in journal.



• Particulate Matter Smoke

- Teacher will light candle and then blow out so you can collect smoke.
- Teacher could also light a cigarette and hold outside so you can collect a gross sample.



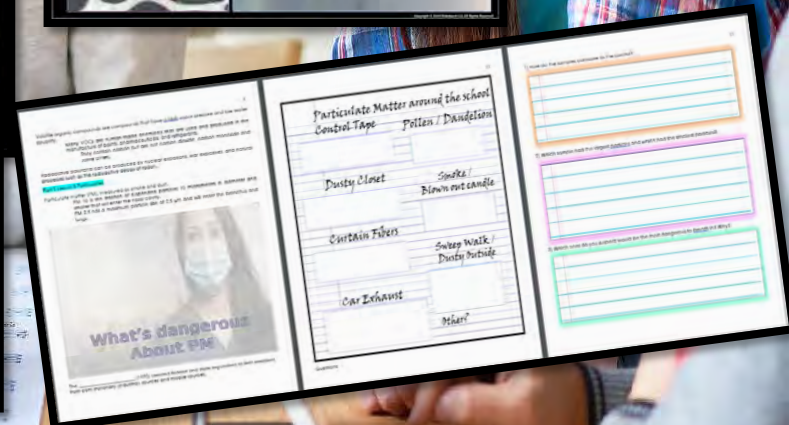
• Particulate Matter Pollen

- Place tape against a dandelion or other flower allowed by your teacher.



• Questions

- 1) How do the samples compare to the control?
- 2) Which sample had the largest particles and which had the smallest particles?
- 3) Which ones do you suspect would be the most dangerous to breathe in? Why?
- 4) Are there other places we should collect from?



Built-in Assessment

Each unit contains several 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 1-5 Name the layer of the atmosphere.
- Word Bank: **Stratosphere**, **Troposphere**, **Mesosphere**, **Thermosphere**, **Exosphere**

**QUIZ
WIZ**

3



3

Upper
Troposphere



Some aircraft can
Fly in lower stratosphere

Questions in Work Bundle

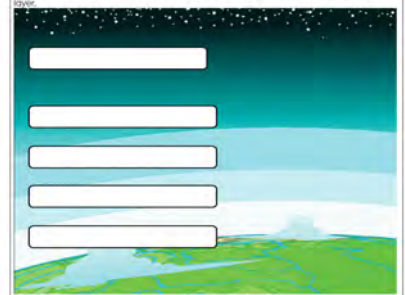
Part 1 Lesson 3 Layers of the Atmosphere

- Layers of the Atmosphere
- Exosphere - Merges with _____ some satellites here.
 - _____ Kármán line (100km)
 - Thermosphere - The ISS orbits here, Aurora _____
 - Mesosphere - _____, burnt up here
 - Troposphere - _____ occurs here, life, air travel.
 - Earth's Surface - _____

Quiz in the Slideshow: Name the layer in the atmosphere!

1)	2)	3)
		Bonus

Name the layers of the atmosphere and draw some "things" that you might find in each.

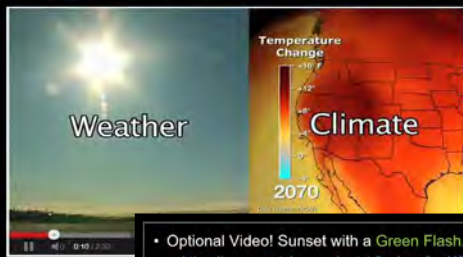


Built-in Video Links

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 Link! Difference between weather and climate.

– <https://www.youtube.com/watch?v=1s8eGd7THoo>



- Optional Video! Sunset with a Green Flash.

– <https://www.youtube.com/watch?v=Iwus2nqU0SY>



- Video Link! (Optional) Reality. 9 minutes for a single maneuver of Space Shuttle Atlantis preparing for docking with ISS.

We can watch a minute or two.

<http://www.youtube.com/watch?v=4RSnOiMVfHk>



- Video Link. (Optional) Carbon Monoxide Poisoning.

– <https://www.youtube.com/watch?v=KmqIqVwytwA>



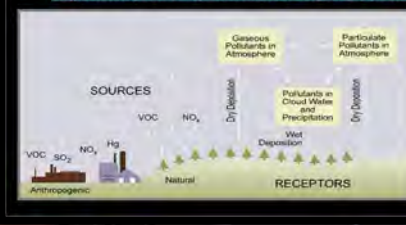
- Air Pollution Wrap Up

– <https://www.youtube.com/watch?v=e6rglSLy1Ys>



– Pay attention to where you might place your card during the video.

– <http://www.youtube.com/watch?v=HE6Y0iEuXMQ>



- Video Link! (Optional) Felix Baumgartner's supersonic freefall from 128k' - Mission

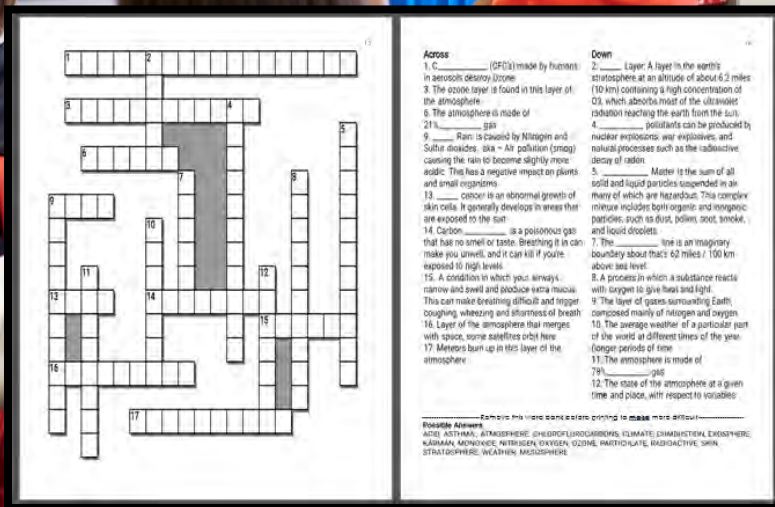
Highlights / Red Bull Ad.

– <https://www.youtube.com/watch?v=2RR-tzGOvi0>



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.



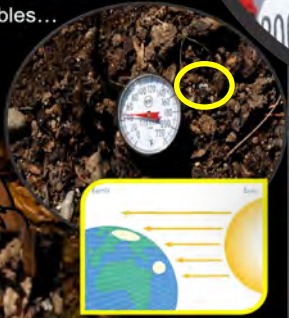
- Some other variables...

- Soil moisture
- Soil temperature
- Leaf wetness
- Solar radiation



- Some other variables...

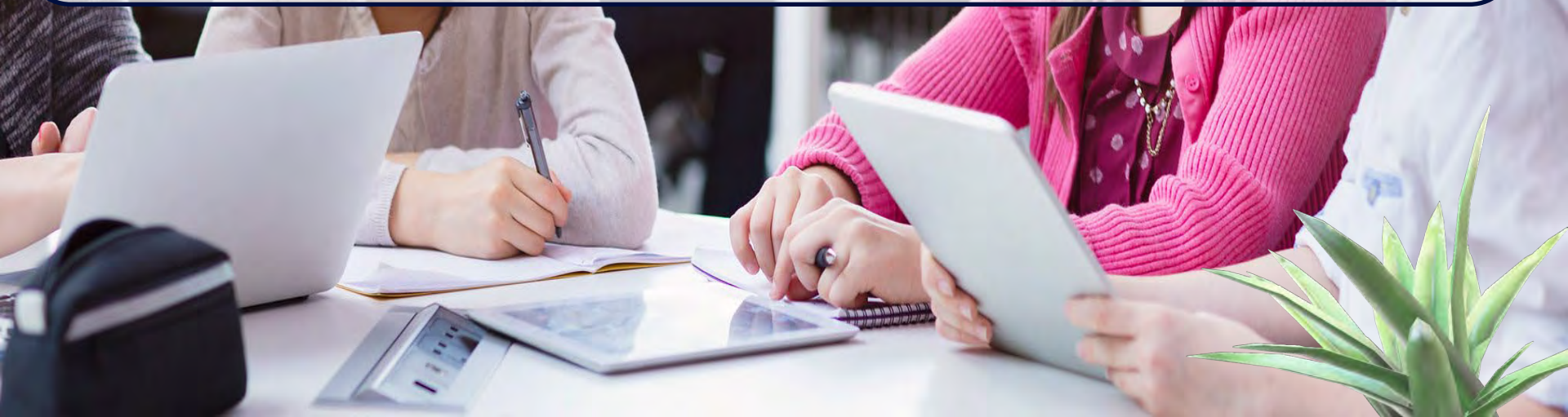
- Soil moisture
- Soil temperature
- Leaf wetness
- Solar radiation



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 Atmosphere](#)

Google Slides



[Part 1 Lesson 6 Skin Cancer](#)

Google Slides



[Part 1 Lesson 3 Layers of th...](#)

Google Slides



[Part 1 Lesson 8 Review Gam...](#)

Google Slides



[Part 1 Work Bundle Answers](#)

Google Docs



[Part 1 Lesson 5 Particulates ...](#)

Google Slides



[Part 1 Work Bundle Print](#)

Google Docs



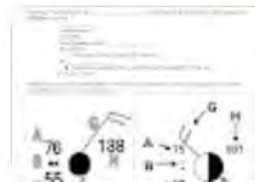
[Part 1 Lesson 7 Review Game](#)

Google Slides



[Part 1 Lesson 1 Weather vs ...](#)

Google Slides



[Part 1 Work Bundle pdf Writ...](#)

PDF



[Part 1 Lesson 4 Air Quality](#)

Google Slides

Weather and Climate Unit

Weather and Climate Unit

40 Lessons (6th-8th Grade Medium Difficulty). Part 1 is 7 Lessons and 17 Page Work Bundle, Part 2 is 5 Lessons and 14 Page Work Bundle, Part 3 is 8 Lessons and 18 Page Work Bundle, Part 4 is 5 Lessons and 13 Page Work Bundle, Part 5 is 4 Lessons and 12 Page Work Bundle , Part 6 is 6 Lessons and 17 Page Work Bundle, Part 7 is 4 Lessons and 9 Page Work Bundle

[Part 1: Weather and Climate Unit](#): Weather Symbols, What is weather?, Difference between Weather and Climate, Climate, Importance of the Atmosphere, Components of the Atmosphere, Layers of the Atmosphere, Air Quality and Pollution, Carbon Monoxide, Acid Rain, Particulate Matter, Ground Level Ozone, Ozone Layer, Ways to Avoid Skin Cancer, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so students can Self-Assess

[Part 2: Weather and Climate Unit](#): Weather and Climate Unit Part 2: Air Pressure, Air Pressure and Elevation, Barometers, Isobars, Cyclonic and Anticyclonic Systems, Air Pressure and Wind, Fronts, Type of Fronts, Pressure Systems on Global Winds, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so students can Self-Assess

[Part 3: Weather and Climate Unit](#): Wind, Global Wind, Coriolis Force, Jet Stream, Sea Breeze / Land Breeze, Mountain Winds, Mountain Rain Shadow, Wind Chill, Flight, Dangerous Weather Systems, Light, Albedo, Temperature, Thermometers, Seasons, Solstice, Equinox, Axial tilt, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so students can Self-Assess

[Part 4: Weather and Climate](#): Water % on Earth, High Specific Heat of Water, States of Water, Importance of the Oceans on Earth's Weather, The Gulf Stream, Ocean Currents, El Nino, La Nina, Water Cycle, Terms of the Water Cycle, Condensation, Precipitation, Evaporation, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so students can Self-Assess

[Part 5: Weather and Climate Unit](#): Weather Forecasting, Weather Symbols, Reading and Weather Model, Weather Tools, Thermometer, Weathervane, Anemometer, Beaufort Scale, Barometer, Hygrometer, Sling Psychrometer, Rain Gauge, Dew, Dew Point, Heat Index, Satellites, Radar, Isobars, Isotherms, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so students can Self-Assess

[Part 6: Weather and Climate Unit](#) : Climate Change: Climate Change, AGW Anthropogenic Global Warming, Difference between Weather and Climate, Understanding the Carbon Atom, Natural Emitters of Carbon, Greenhouse Effect, Interpreting Graphs associated with Climate Change, Impacts of Climate Change, Solutions to Climate Change, Movie Ice on Fire Sheet, Box Game Review, Crossword Puzzle, End Unit Assessment with Answer Version so students can Self-Assess

[Part 7: Biomes](#): Biomes: Biomes, Biome Characteristics, Comparing two different Biomes, Biomes on Earth, Case Study on a Biome, Biome Skit Activity Crossword Puzzle, End Unit Quiz that Names the Biome based on a Picture

7 Parts, 40 Lessons

7 Parts, 40 Lessons

Hundreds of Amazing and Interactive Slides

- Climate Change

The collage features several overlapping presentation slides:

- Slide 1 (Top Left):** A landscape photo of a desert with cacti.
- Slide 2 (Top Center):** Titled "Driven by the Sun". It includes a diagram showing solar radiation hitting Earth's surface and being reflected back as infrared radiation, which is absorbed by greenhouse gases.
- Slide 3 (Top Right):** Titled "Cool Winds Sink". It shows a diagram of air sinking and creating wind patterns over water and land.
- Slide 4 (Middle Left):** Titled "Unequal heating". It shows a map of Massachusetts with different colored regions representing temperature variations.
- Slide 5 (Middle Center):** A video player interface showing a sunset scene with the title "Weather". Below it, a graph titled "Climate Change" shows a rising trend line from 2070 onwards.
- Slide 6 (Middle Right):** Titled "Some other greenhouse gases are Nitrogen Oxides and Fluorinated Gases". It displays chemical structures for nitrogen dioxide (NO_2) and perfluoromethane (CF_4). Text explains that fluorinated gases (F-gases) are man-made and contribute to the greenhouse effect.
- Slide 7 (Bottom Left):** Titled "Demonstration: Air Pressure from directions". It shows a hand holding a plastic cup half-filled with water, demonstrating air pressure.
- Slide 8 (Bottom Center):** Titled "The wind is caused by the differences in temperatures (and their differences) around a place". It includes a diagram of a globe with temperature zones and a bar chart showing temperature ranges.
- Slide 9 (Bottom Right):** Titled "New Area of Focus: Anthropogenic Global / Human Induced Climate Change". It features the acronym "AGW" in large red letters above a photograph of industrial smokestacks emitting thick black smoke.

• **Demonstration: Air Pressure from directions.**

- Fill a small clear plastic cup halfway w
- Place a plastic plate or large notecard
- Flip upside down supporting from the b
- then let go from the bottom holding fro



Student Question: Is cold

• The wind is caused by the differences in temperatures (and their differences) around a

- This is caused by the S



• New Area of Focus: **Anthropogenic Global / Human Induced Climate Change**

AGW



Hands-on Activities, Assessments, Games

Which colored arrow is the path for many hurricanes that hit the United States?

Evaporation
Condensation
Precipitation
Infiltration
Groundwater
Aquifer Recharge

These are the three main types of clouds that hit the United States.

Cumulus Cirrus Stratus

and warm air currents

Gulf Stream

Atlantic Ocean

Follow Along Work Bundles

Weather and Climate Unit Part 1: Weather Symbols, What is weather?, Difference between Weather and Climate, Climate, Importance of the Atmosphere, Components of the Atmosphere, Layers of the Atmosphere, Air Quality and Pollution, Carbon Monoxide, Acid Rain, Particulate Matter, Ground Level Ozone Ozone Layer, UV, Ways to Avoid Skin Cancer

Part 1: Weather and Climate Unit



Additional and Printables



Part 1 Lesson 1 Weather vs Climate



Part 1 Lesson 2 Atmosphere



Part 1 Lesson 3 Layers of the Atmosphere



Part 1 Lesson 4 Air Quality



Part 1 Lesson 5 Particulates Ozone



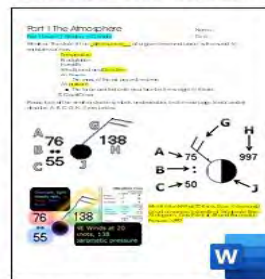
Part 1 Lesson 6 Skin Cancer



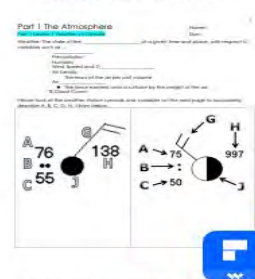
Part 1 Lesson 7 Review Game



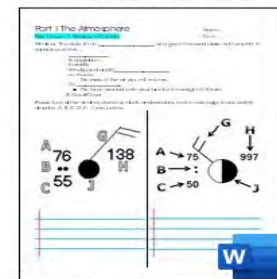
Part 1 Lesson 8 Review Game Answers



Part 1 Work Bundle Answers



Part 1 Work Bundle pdf Writable



Part 1 Work Bundle Print

Weather and Climate Unit Part 2: Air Pressure, Air Pressure and Elevation, Barometers, Isobars, Cyclonic and Anticyclonic Systems, Air Pressure and Wind, Fronts, Type of Fronts, Pressure Systems on Global Wind

Part 2: Weather and Climate Unit



Additional and Printables



Part 2 Lesson 1 Air



Part 2 Lesson 2 Air Pressure Projects



Part 2 Lesson 3 Isobars



Part 2 Lesson 4 Weather Fronts



Part 2 Lesson 5 Review Game



Part 2 Lesson 6 Review Game Answers



Part 2 Work Bundle Answers



Part 2 Work Bundle pdf Writable



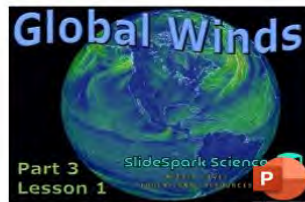
Part 2 Work Bundle Print

Part 3 Wind: Wind, Global Wind, Coriolis Force, Jet Stream, Sea Breeze / Land Breeze, Mountain Winds, Mountain Rain Shadow, Wind Chill, Flight, Dangerous Weather Systems, Light, Albedo, Temperature, Thermometers, Seasons, Solstice, Equinox, Axial tilt,

Part 3: Weather and Climate Unit



Additional and Printables



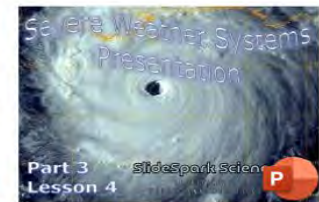
Part 3 Lesson 1 Global Winds



Part 3 Lesson 2 Coriolis Force



Part 3 Lesson 3 Wind Chill and More



Part 3 Lesson 4 Airplane Severe Weather Project



Part 3 Lesson 5 Severe Weather Systems



Part 3 Lesson 6 Light and Temp



Part 3 Lesson 7 Axial Tilt Seasons



Part 3 Lesson 8 Solstice Equinox



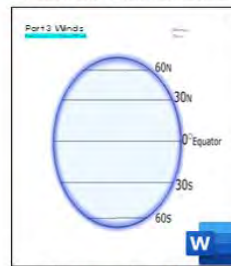
Part 3 Lesson 9 Review Game



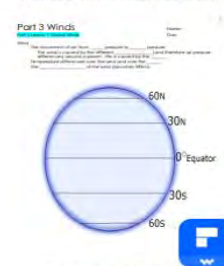
Part 3 Lesson 10 Review Game Answers



Part 3 Work Bundle Answers



Part 3 Work Bundle Print



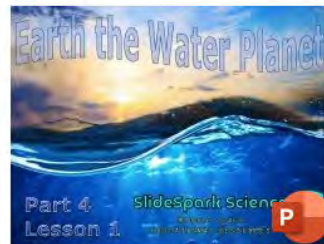
Part 3 Work pdf Writable

Weather and Climate Unit Part 4, Earth the Water Planet: Water % on Earth, High Specific Heat of Water, States of Water, Importance of the Oceans on Earth's Weather, The Gulf Stream, Ocean Currents, El Nino, La Nina, Water Cycle, Terms of the Water Cycle, Condensation, Precipitation, Evaporation

Part 4: Weather and Climate

Additional and Printables

Just the Water Cycle



Part 4 Lesson 1 Water Planet



Part 4 Lesson 2 El Nino Water Molecule



Part 4 Lesson 3 Water Cycle two days



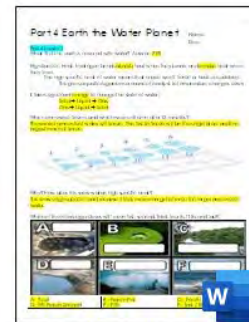
Part 4 Lesson 4 Clouds



Part 4 Lesson 5 Review Game



Part 4 Lesson 6 Review Game Answers



Part 4 Work Bundle Answers



Part 4 Work Bundle pdf Writable

Weather Forecasting, Weather Symbols, Reading and Weather Model, Weather Tools, Thermometer, Weathervane, Anemometer, Beaufort Scale, Barometer, Hygrometer, Sling Psychrometer, Rain Guage, Dew, Dew Point, Heat Index, Satellites, Radar, Isobars, Isotherms,

Part 5: Weather and Climate Unit



Additional and Printables



Part 5 Lesson 1 Weather Variables Wind Vane



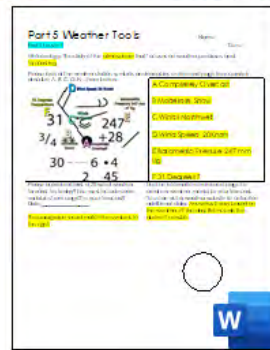
Part 5 Lesson 2 Anemometer Barometer



Part 5 Lesson 3 Measuring Water



Part 5 Lesson 4 Isotherm and Wrap Up Quiz



Part 5 Work Bundle Answers



Part 5 Work Bundle pdf Writable



Part 5 Work Bundle Print

Weather and Climate Unit Part 6: Climate Change: Climate Change, AGW Anthropogenic Global Warming, Difference between Weather and Climate, Understanding the Carbon Atom, Natural Emitters of Carbon, Greenhouse Effect, Interpreting Graphs associated with Climate Change, Impacts of Climate Change, Solutions to Climate Change, Move Ice on Fire Sheet

Part 6: Weather and Climate Unit



Additional and Printables



Part 6 Lesson 1 AGW



Part 6 Lesson 2 Greenhouse



Part 6 Lesson 3 Impacts



Part 6 Lesson 4 Future



Part 6 Lesson 5 Wrap Up



Part 6 Lesson 6 Review Game



Part 6 Lesson 7 Review Game Answers



Part 6 Work Bundle Answers



Part 6 Work Bundle Print

Weather and Climate Unit Part 7: Biomes: Biomes, Biome Characteristics, Comparing two different Biomes, Biomes on Earth, Case Study on a Biome, Biome Skit Activity

Part 7: Biomes



Additional and Printables



Part 7 Lesson 1 Biomes



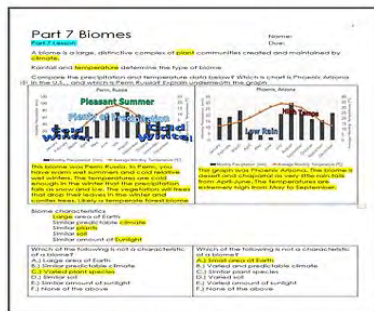
Part 7 Lesson 2 Biome Research



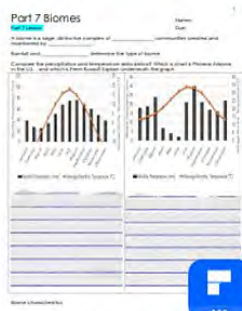
Part 7 Lesson 3 Skit



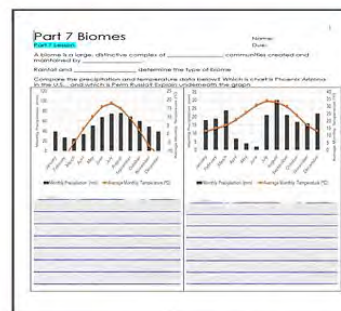
Part 7 Lesson 4 Quiz Wrap Up



Part 7 Work Bundle Answers



Part 7 Work Bundle pdf Writable










Part 7 Work Bundle Print











Curriculum Guide

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





 =Easier,  = More difficult,  =Most difficult

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

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	

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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