

Lesson 1.2: Earth and Space Science – The Atmosphere

Weekly Focus: Compare Contrast with graphic organizer
Weekly Skill: Note taking

Lesson Summary: This week students will learn about the layers of the atmosphere. They will use graphics to compare and contrast with a graphic organizer (Venn Diagram).

Materials Needed:

- Layers of the Sky [Unit 1.2 Handout 1](#) (Spectrum Science, Gr. 6, pages 76-77)
- Video [Unit 1.2 Greenhouse Effect Video Time: 3:28 min.](#)
- Note-taking guide for video [Unit 1.2 Handout 2](#)
- Graphics of Greenhouse Effect and Graphic Organizer [Unit 1.2 Handout 3](#).

Objectives: Students will be able to...

- Understand atmospheric layers and the greenhouse effect
- Compare and contrast with graphic organizers

College and Career Readiness Standards: RI, RST, WHST

ACES Skills Addressed: EC, DFP, LS, AL, CT, SM

Notes: Explain to students the importance of using graphic organizers to help focus on key concepts in reading passages, charts, or graphs. Also, please note that [Routine 2](#) and [Routine 4](#) are used in this lesson.

GED 2014 Science Test Overview – For Teachers and Students

The GED Science Test will be 90 minutes long and include approximately 34 questions with a total score value of 40. The questions will have focus on three content areas: life science (~40%), physical science (~40%), and Earth and space science (~20%). Students may be asked to read, analyze, understand, and extract information from a scientific reading, a news brief, a diagram, graph, table, or other material with scientific data and concepts or ideas.

The online test may consist of multiple choice, drop down menu, and fill-in-the-blank questions. There will also be a short answer portion (suggested 10 minutes) where students may have to summarize, find evidence (supporting details), and reason or make a conclusion from the information (data) presented.

The work students are doing in class will help them with the GED Science Test. They are also learning skills that will help in many other areas of their lives.

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Activities:

Warm-Up:		Time: 15 minutes
<p>As students enter the class, have the following written on the board or overhead: "The greenhouse effect is the warming of the earth and air above it. It is caused by gasses in the air that trap energy from the sun." Have students create a "KWL" chart on a piece of notebook paper (below), and fill out the first two columns: Have students discuss what they know and want to know in partners; then as a class review. After the activity, students can fill in the last column.</p>		
KWL Chart:		
What (else) do I KNOW?	What do I WANT to know?	What did I learn?

Activity 1: Reading lesson w/ questions on the atmosphere and its layers. Unit 1.2- Handout 1	Time: 45 minutes
<p>1) Hand out (Unit 1.2- Handout 1) to students. 2) Ask students to read passage silently and answer questions. 3) Review answers as a whole class 4) Teacher reads passage orally while students highlight new vocabulary 5) teacher reviews vocabulary with whole class 6) students read passage to each other in pairs <i>Note: Classroom routine notes from Routine 2 Handout are used in this activity. Note: this is another excellent opportunity to teach Greek & Latin roots ("stratus" = cloud, "tropo" = turn/change (weather happens here) "meso" = middle "thermo" = heat "sphere" = round, concentric layers of gases)</i></p>	

Break: 10 minutes

Activity 2: Greenhouse effect – video with notetaking - Unit 1.2 Handout 2	Time: 10 minutes
<p>1) Hand out Unit 1.2 Handout 2 to students 2) Explain to students they will watch video and take notes and answer questions from the video, the notes are for their own information and background knowledge on the greenhouse effect 3) ask students to write down questions they may have from the video 4) After watching video, review answers to questions as a whole class.</p>	

Activity 3: Compare and Contrast - Unit 1.2 Handout 3	Time: 30 minutes
<p>1) Hand out (Unit 1.2 Handout 3) to students. 2) Explain how compare and contrast to students and how to use Venn diagram. 3) Explain to students that they should examine the two diagrams and use the Venn diagram to note what is the same and what is different in the diagrams. Students</p>	

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should work individually then share their Venn diagrams with pairs or table groups. **4)** Review answers as a whole class.

Wrap-Up: Summarize

Time: 15 minutes

Have students turn to a partner (or write in their journals) about what they have learned today about the atmosphere and the greenhouse effect. Another option is to have students come up with one question or wondering they still have about the subject that they could research and report back to the class. *Note: Use **Routine 4 Handout***

Extra Work/Homework:

Time: 30 – 40 minutes outside of class

Students can download the PDF on “Layers of the Atmosphere”, the information in the PDF allows students to plot data on a graph on temperatures in the atmosphere. It could be combined with a math lesson. Please note – the PDF mentions “junior high” and so teachers should remove (cut it out, or use a marker on that part) that information.

http://www.geosociety.org/educate/LessonPlans/Layers_of_Atmosphere.pdf

Differentiated Instruction/ELL Accommodation Suggestions

You may need to explicitly instruct on how to use a Venn diagram. One example is to have two students stand at the front of the room. Ask for what is the same (i.e.: students, study for GED, live in MN,) and what is *different* (i.e.: male, from Africa, married, etc.) and put the information in a Venn diagram on the board. Explain how this helps to organize information from passages in order to make a conclusion with evidence.

Activity

Unit 1.2 Handout 3

Online Resources:

<http://www.eia.gov/oiaf/1605/ggccebro/chapter1.html> Energy Information Administration is a government agency. This link has a lot of graphics on various aspects of global warming and the greenhouse effect.

Suggested Teacher Readings:

- GED Testing Service – GED Science Item Sample (to get an idea of what the test may be like)

<http://www.gedtestingservice.com/itemsamplerscience/>

- Assessment Guide for Educators: A guide to the 2014 assessment content from GED Testing Service:

<http://www.riaepdc.org/Documents/ALALBAASSESSMENT%20GUIDE%20CHAPTER%203.pdf>

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- Minnesota is getting ready for the 2014 GED test! – website with updated information on the professional development in Minnesota regarding the 2014 GED.

http://abe.mpls.k12.mn.us/ged_2014_2

- Essential Education's 2014 GED Test Curriculum Blueprint (PDF)

<http://www.passged.com/media/pdf/educators/curriculum-blueprint.pdf>

Unit 1.2 Handout 2

The Greenhouse Effect Video

While watching the video, try to answer some of the following questions. There is also space for you to write your own questions on the subject.

1. What were some of the effects of the changes in weather?
2. What is the “number one offender” greenhouse gas?
3. What is the “number two” greenhouse gas?
4. What is the “number three” greenhouse gas?
5. How does the video explain the greenhouse effect?
6. How much has carbon dioxide increased over the last two centuries?

What are your questions about the greenhouse effect? How can you find answers to these questions?

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Unit 1.2 Handout 2

The Greenhouse Effect Video – ANSWER KEY

While watching the video, try to answer some of the following questions. There is also space for you to write your own questions on the subject.

1. What were some of the effects of the changes in weather? **Floods, heat, drought,**
2. What is the “number one offender” greenhouse gas? **Carbon dioxide**
3. What is the “number two” greenhouse gas? **CFCs (also destroys the ozone)**
4. What is the “number three” greenhouse gas? Methane (**coal mines, and cattle, rice paddies**)
5. How does the video explain the greenhouse effect? (**being in a car with the windows up**)
6. How much has carbon dioxide increased over the last two centuries? **25%**

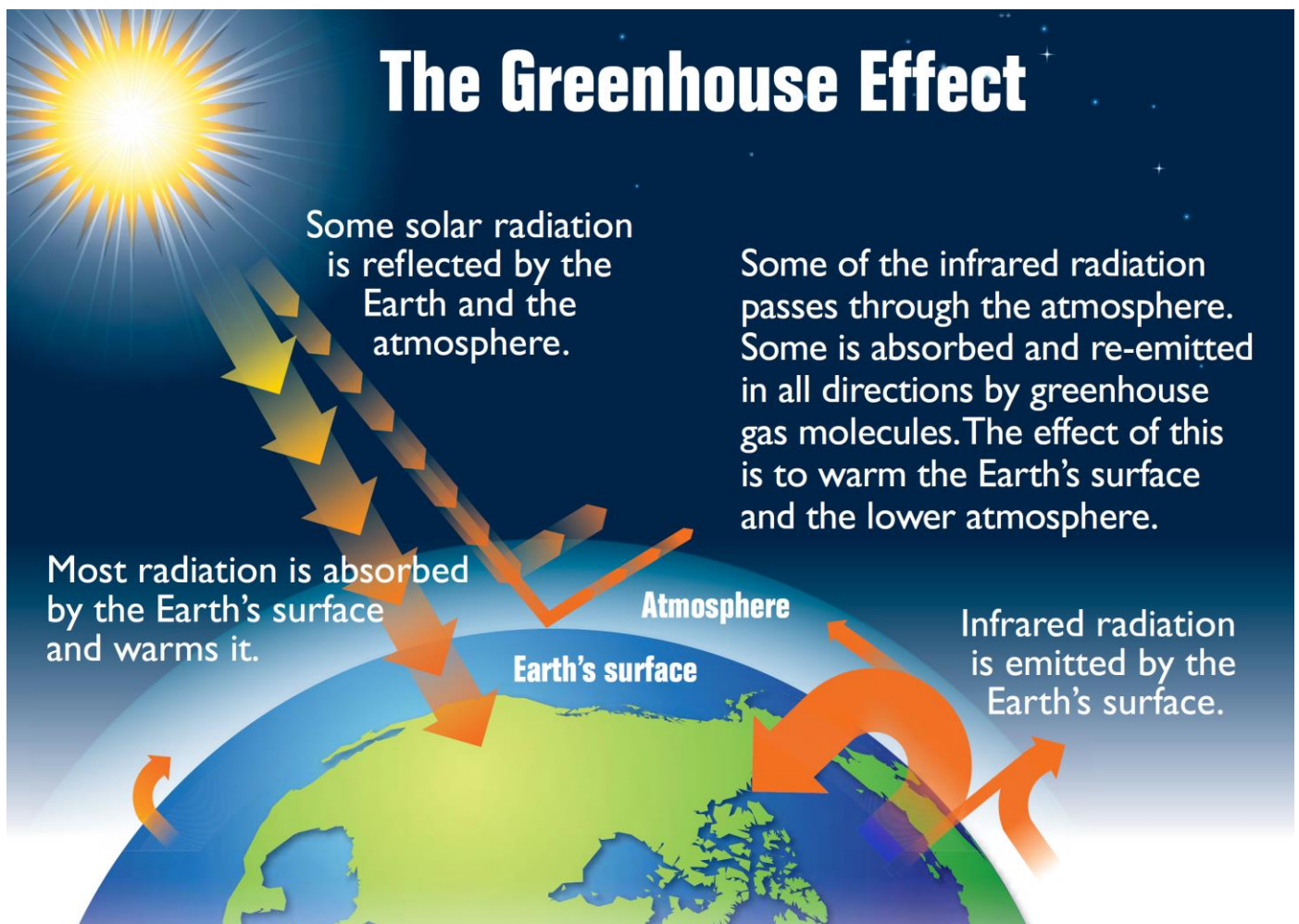
What are your questions about the greenhouse effect? How can you find answers to these questions?

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The Greenhouse Effect

There is a lot of discussion about the greenhouse effect. For this activity, you will look at two different graphic representations of the greenhouse effect. You will then use a Venn diagram to compare and contrast the information presented on the greenhouse effect. You should only use evidence that is presented for your compare and contrast work.

Graphic 1.

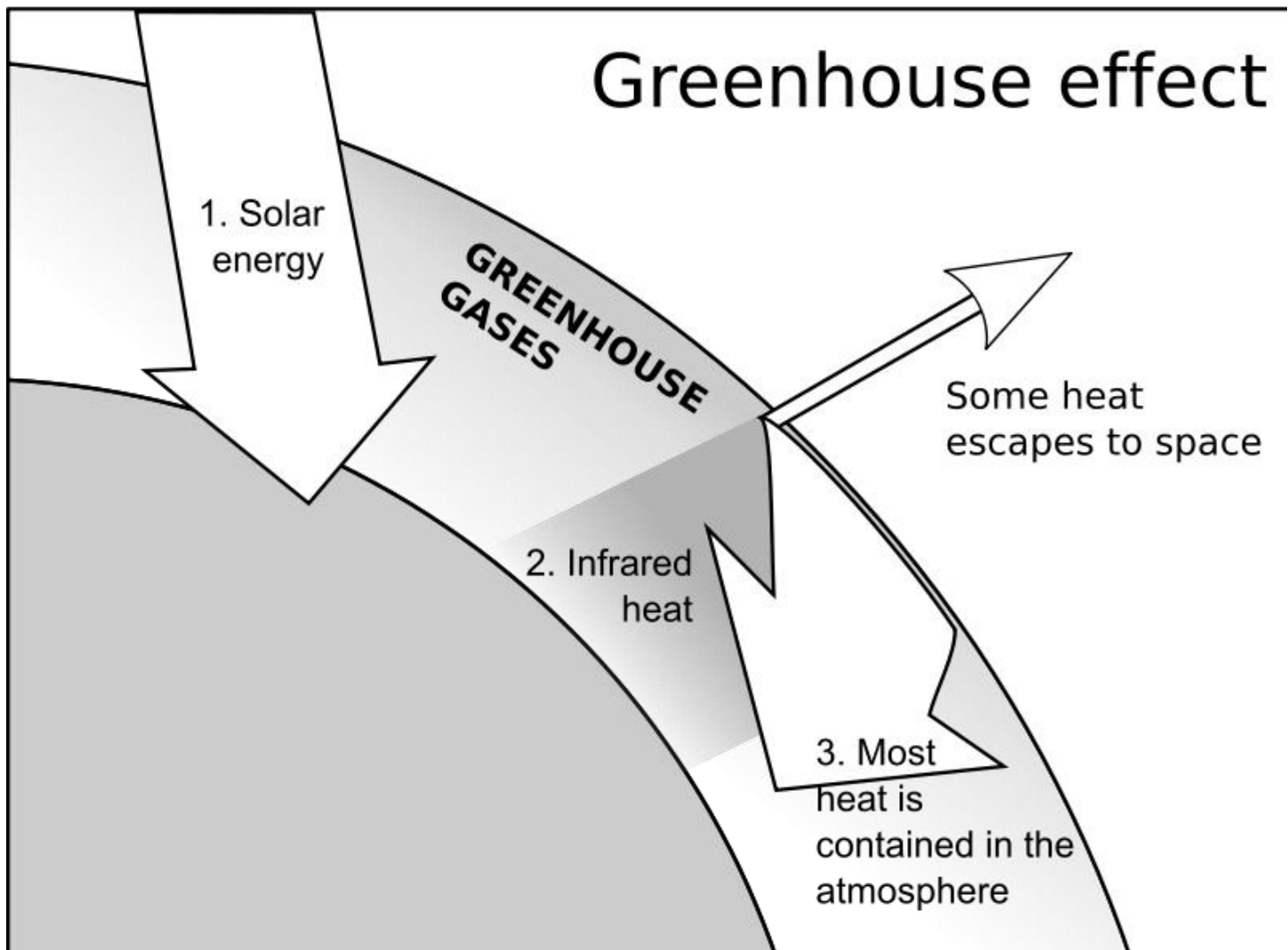


This graphic is from the US Environmental Protection Agency. For more information go to:

<http://www.epa.gov/climatechange/ghgemissions/sources.html>

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Graphic 2.



This image is from a clip art site, for more information:

http://all-free-download.com/free-vector/vector-clip-art/capjerimum_greenhouse_effect_clip_art_12206.html

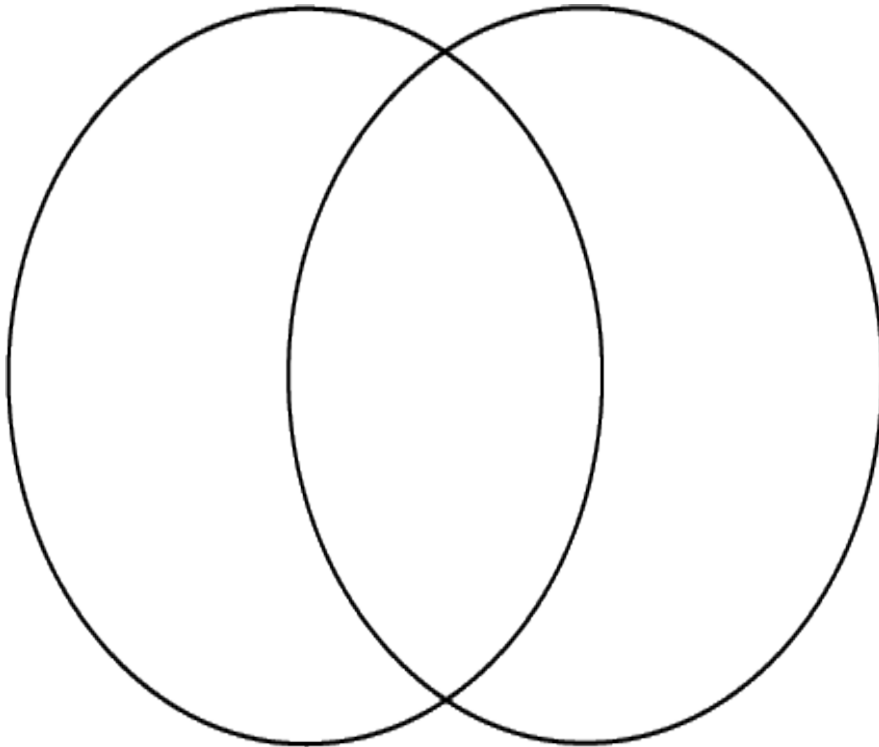
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The **Venn Diagram** is an organizational tool made of two overlapping circles for charting similarities and differences between characters, stories or other elements.

Directions:

1. Write the characteristics of graphic 1 in the first space on the left.
2. Write the characteristics of graphic 2 in the last space on the right.
3. Write the characteristics that both graphics have in common in the space in the center.
5. Analyze the data you have entered.
6. Write your conclusion in the space below.



Conclusion:

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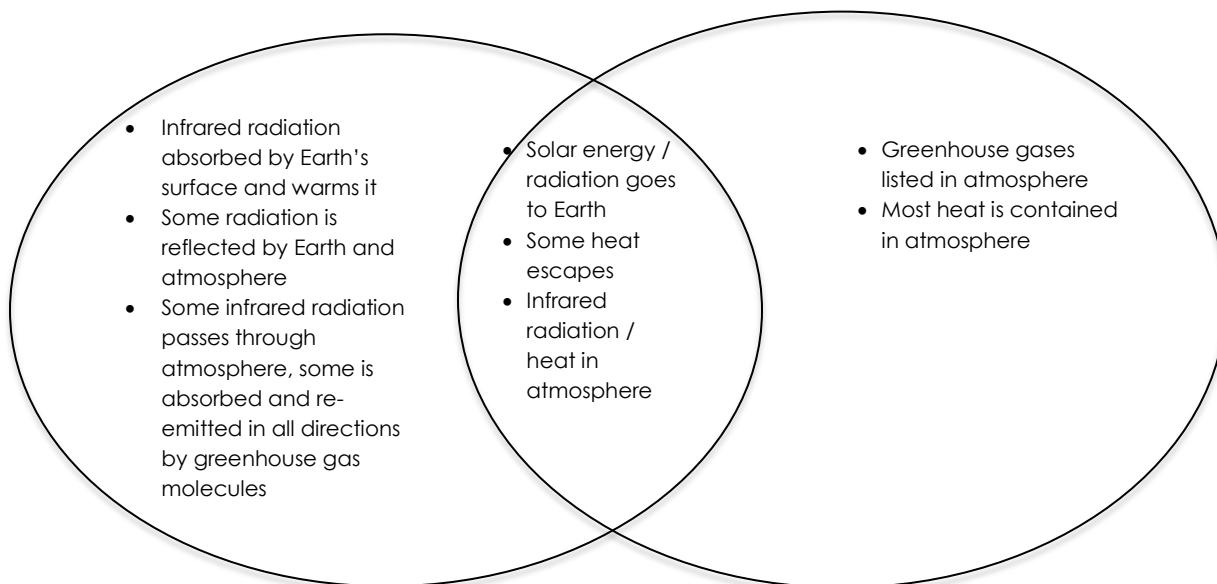
Unit 1.2 Handout 3

TEACHER ANSWER KEY (Students' answers may vary)

The **Venn Diagram** is an organizational tool made of two overlapping circles for charting similarities and differences between characters, stories or other elements.

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2. Write the characteristics of graphic 2 in the last space on the right.
3. Write the characteristics that both graphics have in common in the space in the center.
5. Analyze the data you have entered.
6. Write your conclusion in the space below.



Conclusion:

(Students' answers may vary, this is a possible conclusion.)

According to both Greenhouse Effect diagrams, solar energy comes into the atmosphere and stays, either by being absorbed or contained, and warms the Earth's surface.