

Name:  
Earth Science

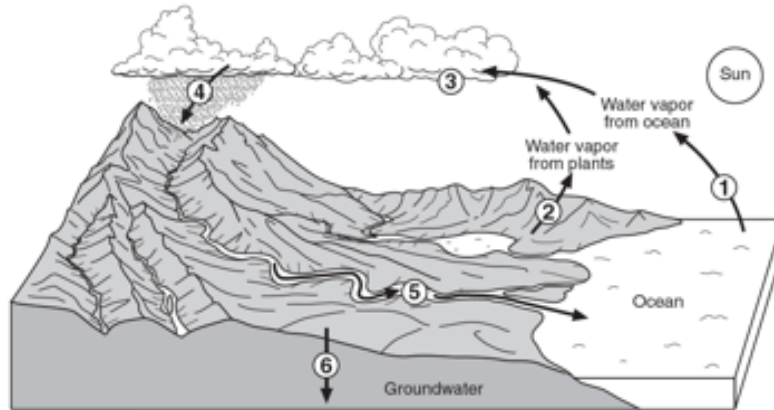
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# **Earth Science Regents Review Workbook**

## **Part 3: Energy, Water, Climate**

### Part 3: Energy, Water, Climate

#### The Water Cycle



1. Label the processes from the diagram above.

- 1) \_\_\_\_\_
- 2) \_\_\_\_\_
- 3) \_\_\_\_\_
- 4) \_\_\_\_\_
- 5) \_\_\_\_\_
- 6) \_\_\_\_\_

2. Define the term saturated. \_\_\_\_\_

3. What are the conditions necessary for water to infiltrate the ground? \_\_\_\_\_

\_\_\_\_\_

4. What are the conditions necessary for water to runoff? \_\_\_\_\_

\_\_\_\_\_

5. What is the process of cloud formation called? \_\_\_\_\_

6. What are the two ways water enters the atmosphere?

\_\_\_\_\_ & \_\_\_\_\_

7. What are the names of the two groundwater zones?

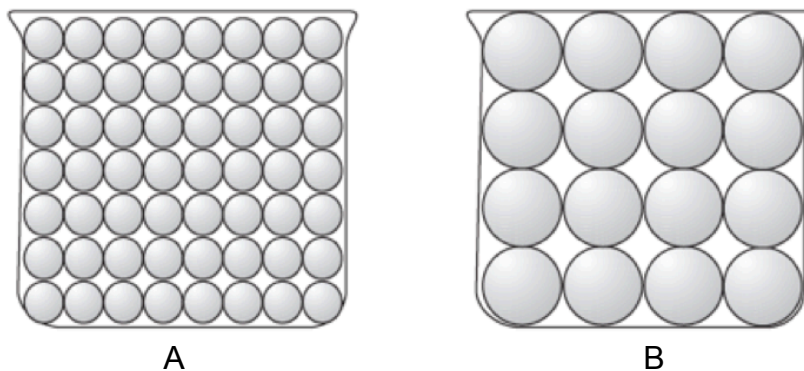
\_\_\_\_\_ & \_\_\_\_\_

8. Why does pavement cause runoff? \_\_\_\_\_

9. How many Joules of energy are required to freeze 5 grams of water? \_\_\_\_\_

### Part 3: Energy, Water, Climate

#### Porosity, Permeability, Capillarity



1. Which sample has the greatest porosity? \_\_\_\_\_
  2. Which sample has the greatest permeability? \_\_\_\_\_
  3. Which sample has the greatest capillarity? \_\_\_\_\_
  4. Which sample will have the lowest permeability rate? \_\_\_\_\_
  5. Which sample will have the greatest infiltration rate? \_\_\_\_\_
  6. Which sample has the greatest surface area? \_\_\_\_\_
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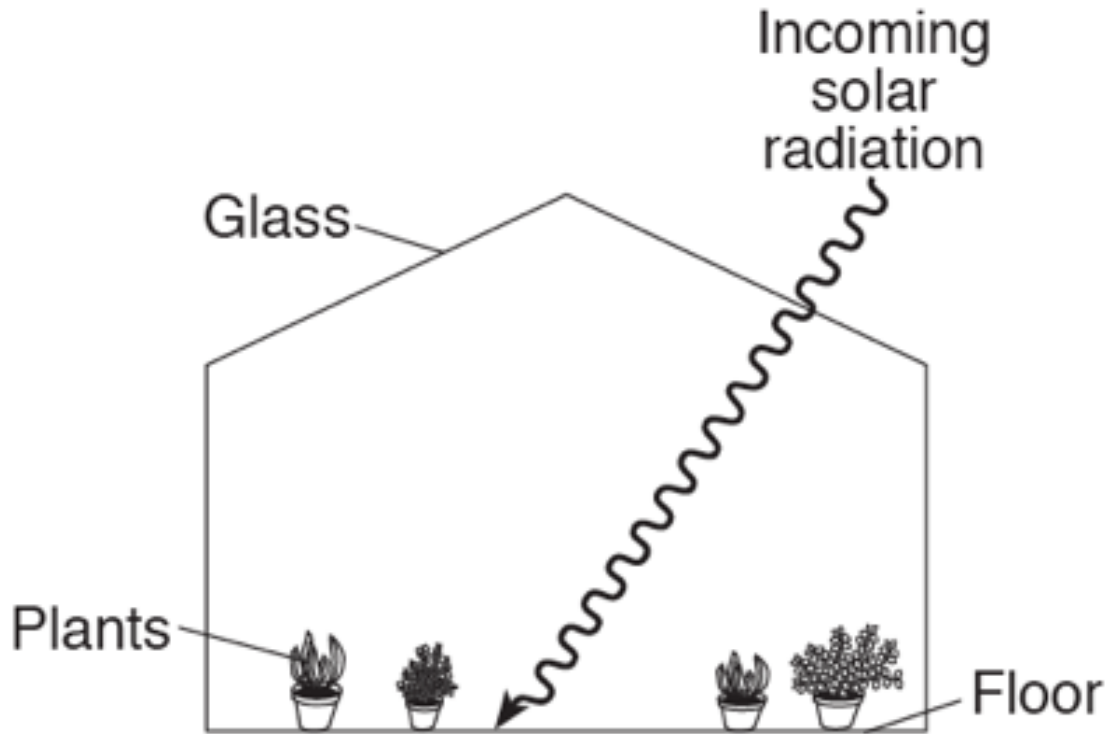
#### Ozone in Earth's Atmosphere

Ozone is special form of oxygen. Unlike the oxygen we breathe, which is composed of two atoms of oxygen, ozone is composed of three atoms of oxygen. A concentrated ozone layer between 10 and 30 miles above Earth's surface absorbs some of the harmful ultraviolet radiation coming from the Sun. The amount of ultraviolet light reaching Earth's surface is directly related to the angle of incoming solar radiation. The greater the Sun's angle of insolation, the greater the amount of ultraviolet light that reaches Earth's surface. If the ozone layer were completely destroyed, the ultraviolet light reaching Earth's surface would most likely increase human health problems, such as skin cancer and eye damage.

1. State the name of the temperature zone of Earth's atmosphere where the concentrated layer of ozone gas exists. \_\_\_\_\_
2. Explain how the concentrated ozone layer above Earth's surface is beneficial to humans.  
\_\_\_\_\_
3. Explain how the depletion of the ozone layer is harmful to humans. \_\_\_\_\_  
\_\_\_\_\_
4. Assuming clear atmospheric conditions, on what day of the year do people in New York State most likely receive the most ultraviolet radiation from the Sun? \_\_\_\_\_

### Part 3: Energy, Water, Climate

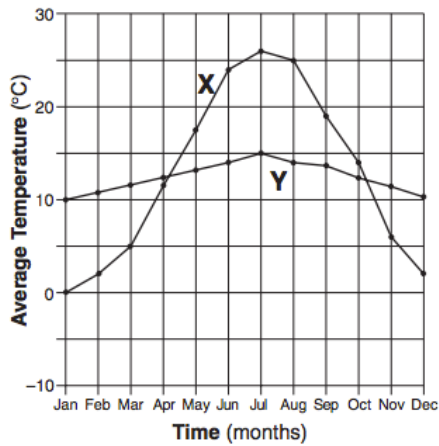
#### Energy & the Greenhouse Effect



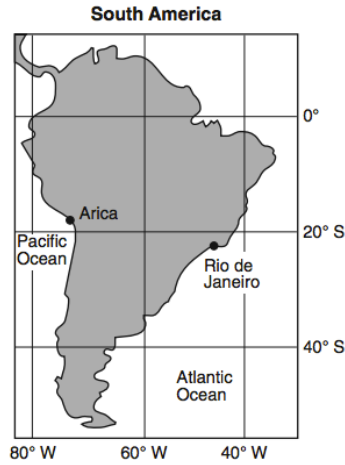
1. What are dark, rough surfaces good at doing? \_\_\_\_\_
2. What are light, smooth surfaces good at doing? \_\_\_\_\_
3. How is the electromagnetic spectrum organized? \_\_\_\_\_
4. What type of radiation enters the greenhouse? (Provide wavelength and name of waves)  
\_\_\_\_\_
5. What type of radiation tries to leave the greenhouse? (Provide wavelength and name of waves)  
\_\_\_\_\_
6. Provide 3 examples of greenhouse gases. \_\_\_\_\_
7. Which greenhouse gas is equivalent to the glass of a greenhouse? \_\_\_\_\_
8. The greenhouse effect is warming the lowest layer of Earth's atmosphere. State the name of this layer. \_\_\_\_\_
9. What are some possible reasons for the increased amount of carbon dioxide in the atmosphere?  
\_\_\_\_\_
10. How can humans reduce that amount of greenhouse gases in the atmosphere? \_\_\_\_\_  
\_\_\_\_\_

## Part 3: Energy, Water, Climate

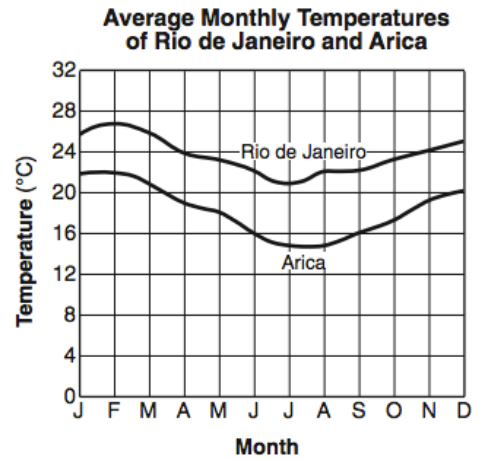
### Climatic Conditions



**A**



**B**



**C**

1. Diagram A shows two cities at the same latitude. Explain how these two cities could have very different temperature ranges.

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2. Describe the summers and winters of an inland region. \_\_\_\_\_

3. Describe the summers and winters of a coastal region. \_\_\_\_\_

4. Which substance has the highest specific heat? \_\_\_\_\_

5. Describe the time required for the heating/cooling for substances that has a high specific heat.

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6. Diagram B shows two cities in South America which are at a similar latitude. Explain why the graph in Diagram C shows Arica with a much lower temperature than Rio de Janeiro.

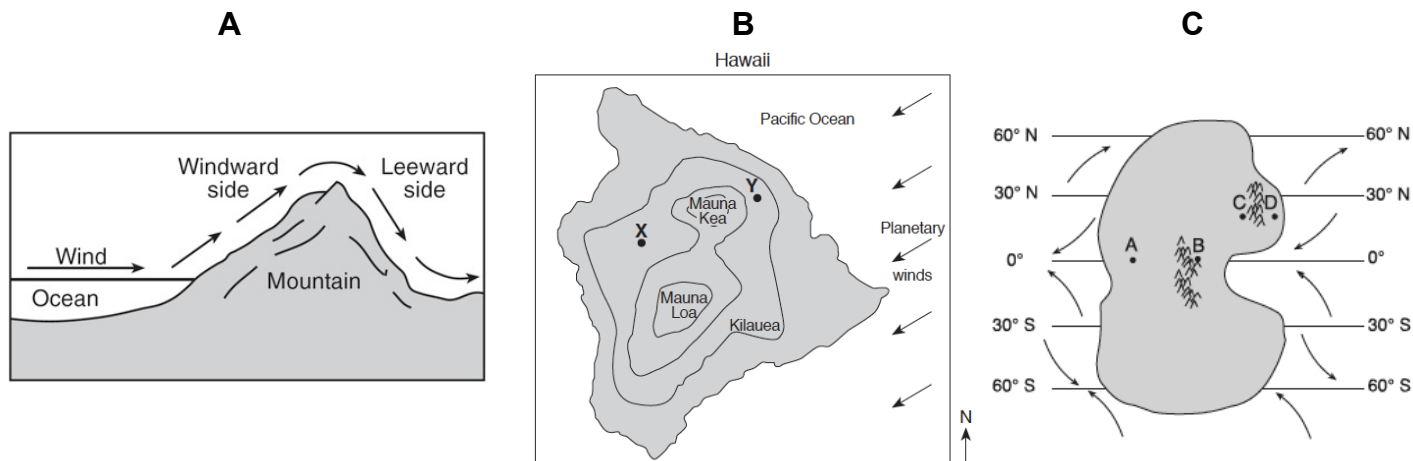
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## Part 3: Energy, Water, Climate

### Orographic Effect



1. Describe the temperature and humidity on the windward side of the mountain.

Temperature: \_\_\_\_\_

Humidity: \_\_\_\_\_

2. Describe the temperature and humidity on the leeward side of the mountain.

Temperature: \_\_\_\_\_

Humidity: \_\_\_\_\_

3. When air rises, it expands and \_\_\_\_\_.

4. Which phase change occurs as a cloud forms? \_\_\_\_\_

5. In Diagram B above, which letter represents the windward side of the mountain? \_\_\_\_\_

6. In Diagram B above, which letter represents the leeward side of the mountain? \_\_\_\_\_

7. In Diagram C above, which letter represents the windward side of the mountain? \_\_\_\_\_

8. In Diagram C above, which letter represents the leeward side of the mountain? \_\_\_\_\_

9. What is the name of the planetary wind belt that letters A, B, C, and D are located in Diagram C?

\_\_\_\_\_