Lesson 2 Energy Transfer in the Atmosphere

Predict *three facts that will be discussed in Lesson 2 after reading the headings. Record these facts in your Science Journal.*

Main Idea

Energy from the Sun

I found this on page _____.

I found this on page _____.

I found this on page _____.

Energy on Earth

I found this on page _____.

Details

Define radiation.

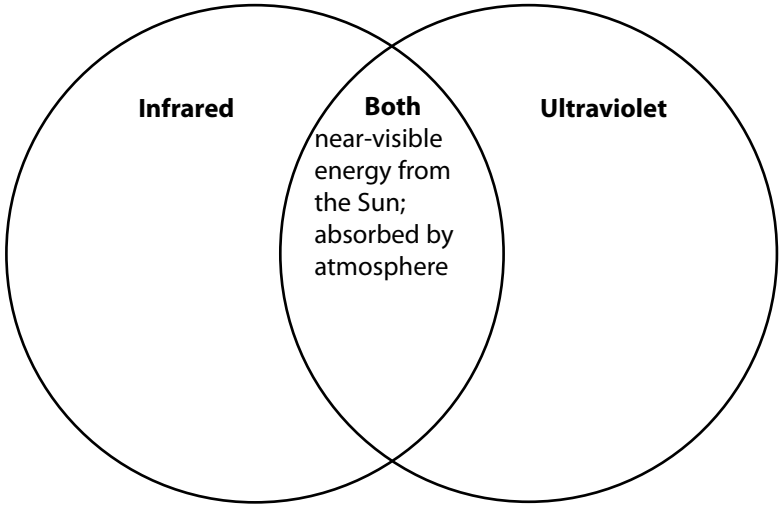
Radiation: _____

_____

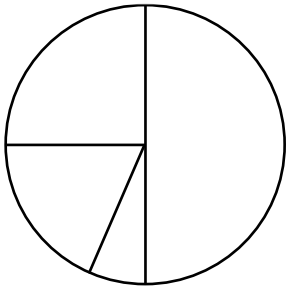
Identify *the 3 forms of* radiation *that make up most of the Sun's energy.*

1. _____
2. _____
3. _____

Compare and contrast *infrared and ultraviolet light.*



Color *the circle graph to represent the portion of* radiation *reflected and absorbed by Earth's surface and atmosphere. Complete the key to show what each color indicates.*



KEY

- ☐ 25% reflected back to space by particles in the atmosphere
- ☐ 20% absorbed by particles in the atmosphere
- ☐ 50% absorbed by Earth's surface
- ☐ 5% reflected back by land and sea surfaces

Main Idea

Details

Radiation Balance

I found this on page _____.

Explain *how* radiation *levels are kept in balance.*

Incoming	Outgoing
Solar radiation that reaches Earth's surface is _____ _____ _____.	Earth emits _____ back toward the Sun in the form of _____.

The Greenhouse Effect

I found this on page _____.

Identify *three greenhouse gases, and include their chemical formulas.*

1. _____

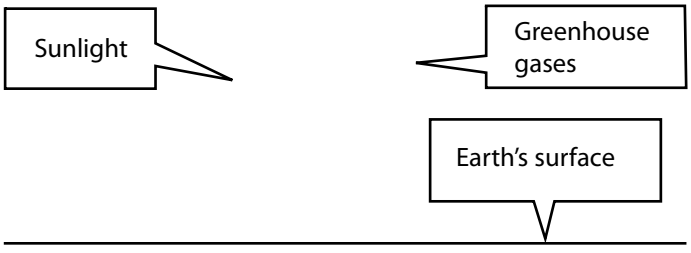
2. _____

3. _____

I found this on page _____.

Draw *a yellow arrow to indicate the incoming visible light. Draw red arrows to indicate the paths of infrared energy.*

Greenhouse Effect



Thermal Energy Transfer

I found this on page _____.

Identify *and define 3 ways that thermal energy is transferred.*

1. _____

_____

2. _____

_____

3. _____

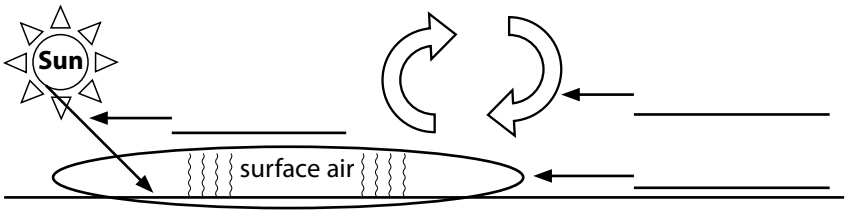
_____

Main Idea

I found this on page _____.

Details

Identify *each type of energy transfer.*



I found this on page _____.

Describe *latent heat's relationship to water, and give an example.*

_____

_____

Example: _____

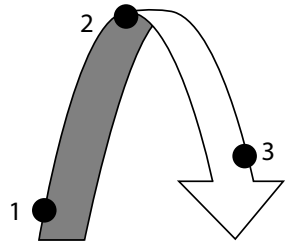
_____

_____

Circulating Air

I found this on page _____.

Describe *how air moves as it is heated and cooled. Indicate what happens at each position.*



Position 1: As air warms, it becomes _____ and _____.

Position 2: As air moves away from the warm surface, it loses _____ and _____. Cool air is _____ than warm air, so it begins to _____.

Position 3: Cool air _____ and pushes the _____ air out of the way.

I found this on page _____.

Define stability.

Stability: _____

_____

Main Idea

I found this on page _____.

Details

Distinguish *the motion of stable and unstable air.*

Motion of Stable Air	Motion of Unstable Air

I found this on page _____.

Explain *air movement during a thunderstorm.*

During unstable conditions, ground level air is much warmer than _____. Air rises _____, cools, and produces large, tall clouds. _____, released as water vapor, changes from a _____ to a _____, adds to the instability, and produces a violent storm.

I found this on page _____.

Sequence *a* temperature inversion.

Ground-level air is nearly the same temperature as _____.

↓

A layer of _____ is trapped by a layer of _____ above it.

↓

A _____ prevents air from mixing and can trap _____ in the air close to Earth's surface.

Analyze It While on a picnic in the Rocky Mountains, you notice that clouds form and disappear at the top of the peaks. How can you explain this phenomenon?

_____

_____

_____

_____