حل أسئلة الدرس الثالث Earth on Energy Solar من القسم الثالث الوحدة الثالثة منهج انسباير

تاريخ إضافة الملف على موقع المناهج: 2024-10-21 23:18:26

المزيد من مادة علوم:	ملفات ا كتب للمعلم ا كتب للطالب ا اختبارات الكترونية ا اختبارات ا حلول ا عروض بوربوينت ا أوراق عمل منهج انجليزي ا ملخصات وتقارير ا مذكرات وبنوك ا الامتحان النهائي ا للمدرس

التواصل الاجتماعي بحسب الصف السادس

صفحة المناهج الإماراتية على فيسبوك					
المواد على تلغرام	التربية الاسلامية	اللغة العربية	اللغة الانجليزية	الرياضيات	

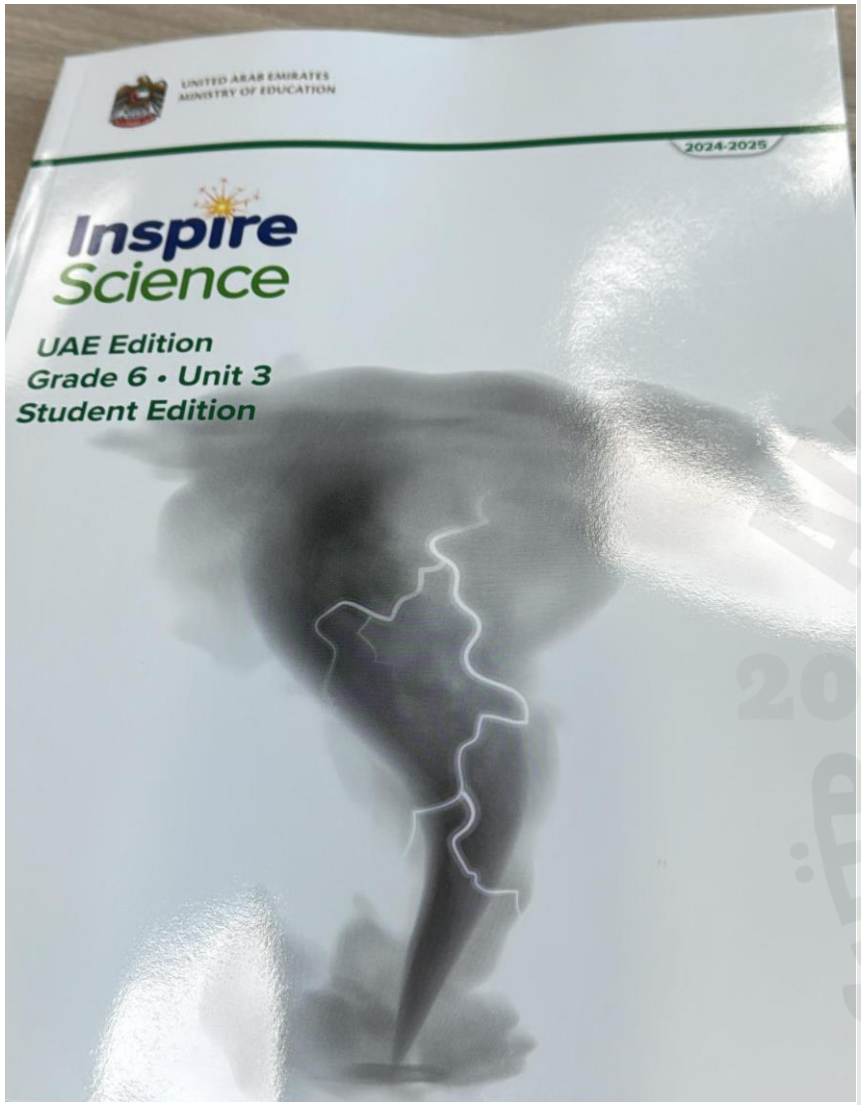
المزيد من الملفات بحسب الصف السادس والمادة علوم في الفصل الأول

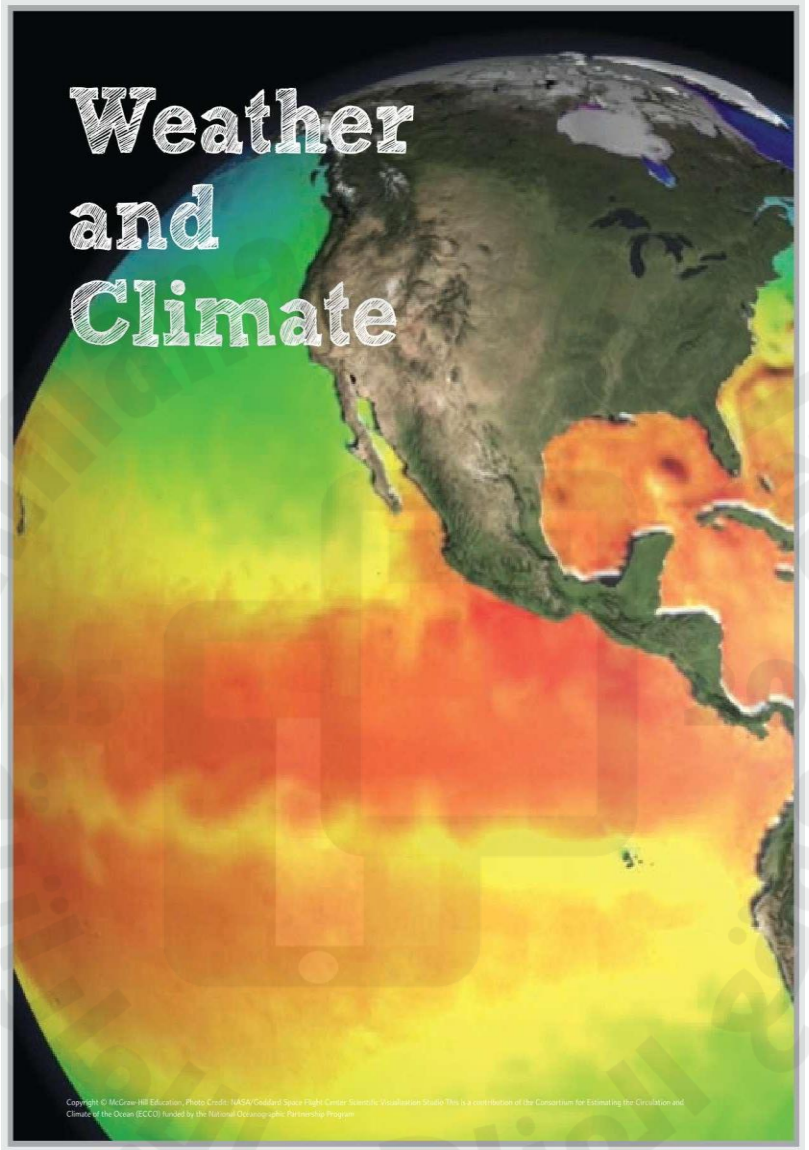
1	حل أوراق عمل الدرسين الأول والثاني من قسم cycle water من الوحدة الثالثة منهج انسباير
2	أوراق عمل الدرسين الأول والثاني من قسم cycle water من الوحدة الثالثة منهج انسباير
3	أوراق عمل الوحدة الثانية Cycle Water The دورة الماء متبوعة بالإجابات منهج انسباير
4	حل الدرس الثاني surface s'earth on water الماء على سطح الأرض من الوحدة الثالثة
5	كتاب دليل المعلم الوحدة الثانية منهج انسباير

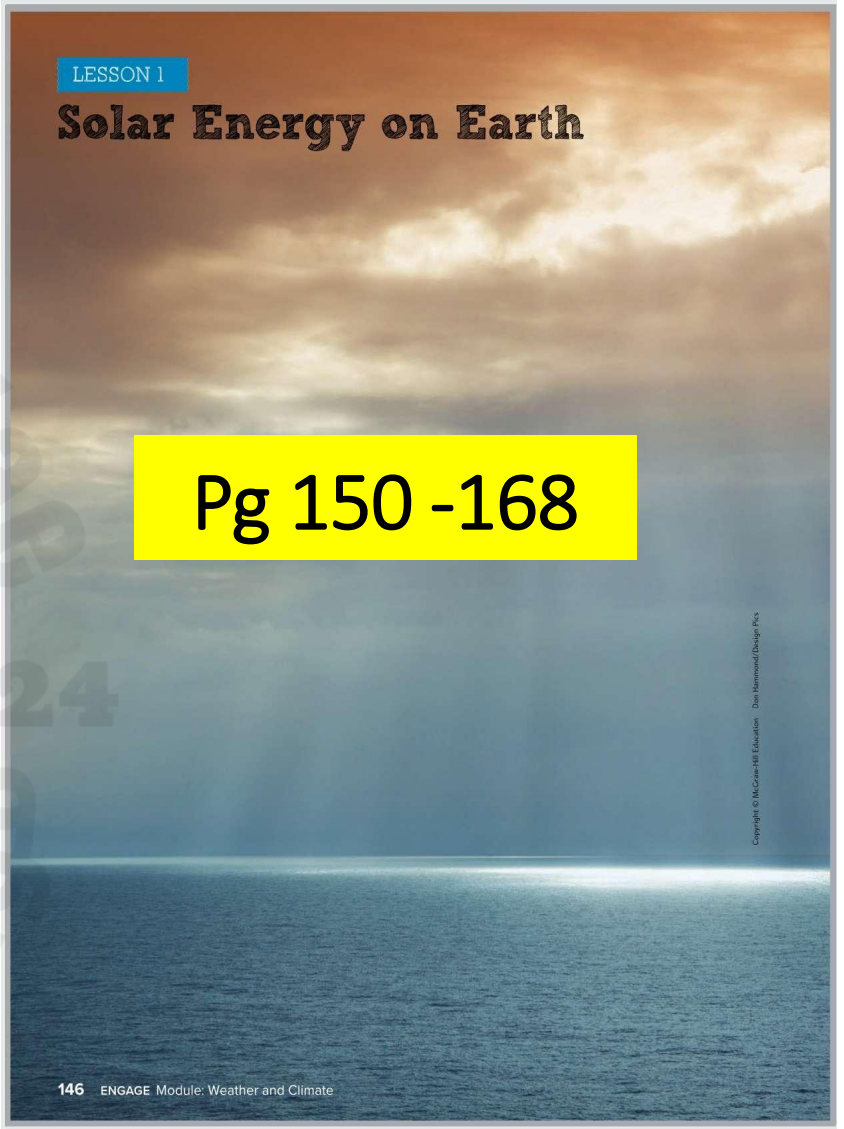
Unit 3

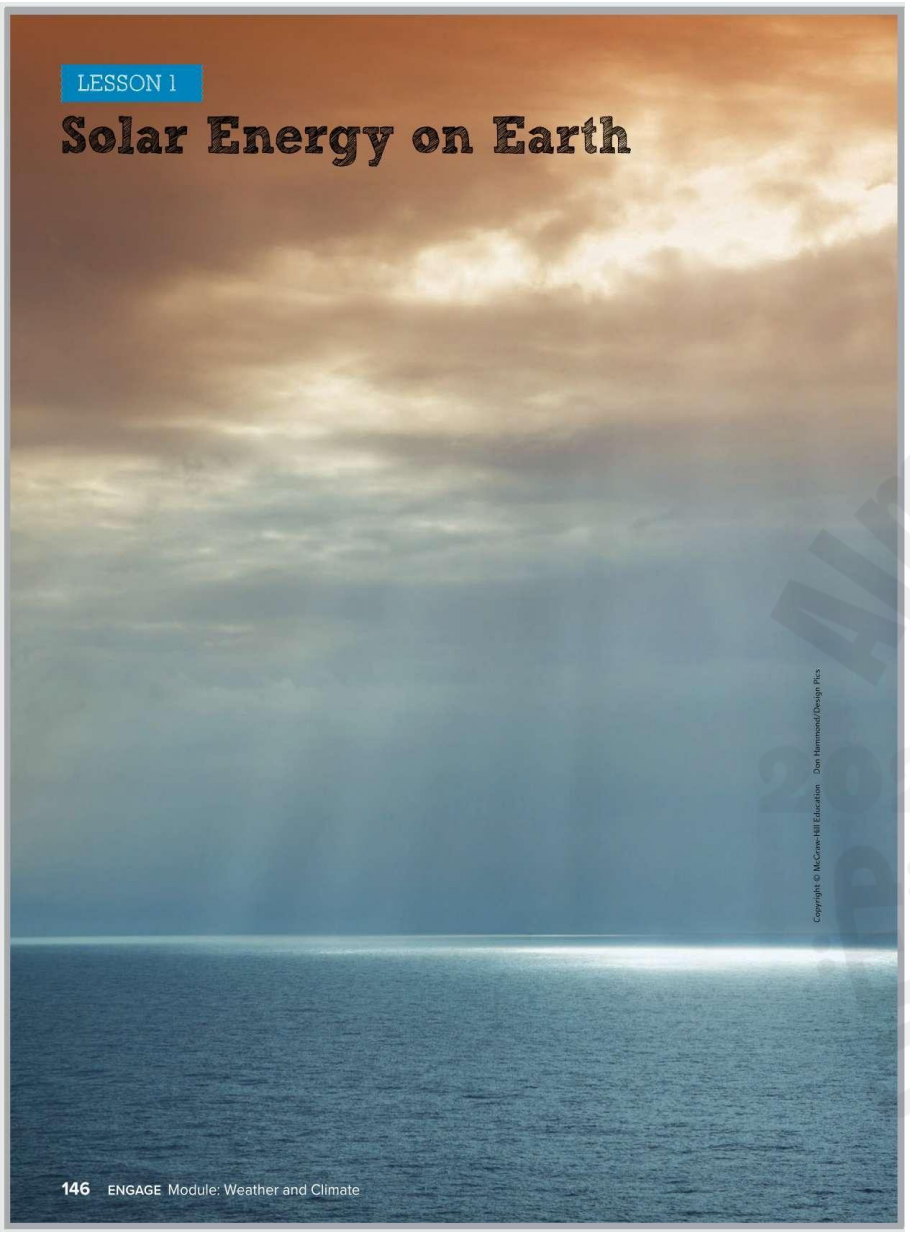
Module 3

Lesson 1









Important Terms

Northern hemisphere	Southern hemisphere
Radiation	Absorption
Conduction	Reflectivity
Convection	Albedo
Equator	Atmosphere
Latitudes	Temperature

Concept Map

L7 Solar energy on earth

Radiation

- Heat transfer through electromagnetic waves.
  - Do not require any medium.

Solar energy Distribution

- Depends on latitudes
- Equator- biggest latitude
- Northern and southern hemisphere
- Poles- very cold Tropics very hot

Rate of absorption

- Depends specific heat
- Land- Low specific heat
- Water- high specific heat
- Heat transfer by conduction

Effect of color

- Based on reflectivity
  - Albedo- Measure of reflectivity
    - Light color
      - High albedo
        - Low temperature
    - Dark color
      - Low albedo
        - High temperature

ENCOUNTER THE PHENOMENON | What effect does the Sun have on water?

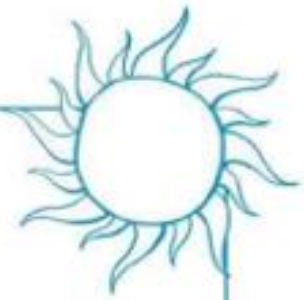
Two containers, one black and one white, were filled with room temperature water. A lid, the same color as its respective container, was placed on top. Both containers were placed in the Sun. The water temperature of each container was measured after 20 minutes.

Analyze the data that resulted as each container was exposed to the Sun.

Water Temperature	Black Container	White Container
Temperature before sunlight exposure	25°C	25°C
Temperature after sunlight exposure	32°C	28°C

sunlight exposure

What reasoning can you provide that energy from the Sun reached the containers?



The temperature of both containers increased.

Why do you think the containers were different temperatures after exposure to the sunlight?

The color of the containers affected the amount of energy absorbed from the Sun.

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2. Describe the direction in which energy was transferred between the systems.

Energy was transferred from the light to the bowl.

3. What evidence can you provide that energy from the light reached the bowl?

The ice cube in bowl *A* melted at a faster rate than the ice cube in bowl *B*, which was not exposed to the light source.

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THREE-DIMENSIONAL THINKING

Models can be used to represent **systems** and their interactions. How did this demonstration **model** energy transfer between the Sun and Earth? Support your reasoning with a real-life example.

Energy from the Sun is transferred to Earth. Surfaces on Earth are exposed to this energy and are heated. For example, energy from the Sun can melt snow and ice on Earth's surface.

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Analyze and Conclude

8. Make a claim about how the shape of Earth affects incoming solar radiation.

Earth's spherical shape causes an unequal distribution of sunlight on Earth's surface.

9. What evidence from the investigation supports your claim?

The light is more spread out near the balloon's top and bottom. The balloon is slanted relative to the flashlight beam near the top and the bottom. The light is more directed at the balloon's center.

10. Use your model to explain why Earth is warmer near the equator and colder near the poles.

Solar energy is more concentrated at Earth's equator and more spread out at Earth's poles because different parts of Earth's surface are curved relative to light from the Sun.

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1. Suppose you go to the beach in the morning of a sunny summer day. **Explain** the rate at which thermal energy is absorbed by the water, sand, and air during the day.

The sand will absorb thermal energy at a faster rate than the water. The air above the land will absorb thermal energy at a faster rate than the air above the water.

2. **Explain** why the flow of energy between air and sand is different than that between air and water as thermal energy is absorbed from day to night.

Water has a higher specific heat than land. Air has a lower specific heat compared to land and water. Therefore, energy is absorbed at a faster rate between land and air than between water and air. Land and water highly influence the temperature of air.

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3. As the Sun begins to set, predict the **effect** on the rate at which the air, water, and sand will cool.

The sand will release thermal energy at a faster rate than the water. The air above the land will release thermal energy at a faster rate than the air above the water.

4. **Explain** why the flow of **energy** between air and sand is different than that between air and water as thermal energy is released.

The specific heat of water is higher than the specific heat of land. Therefore, it takes water a longer time to absorb and release thermal energy compared to land. If thermal energy is released slower, it keeps the air above water warmer for a longer period of time.

Analyze and Conclude

Lab - To Absorb, or Not to Absorb

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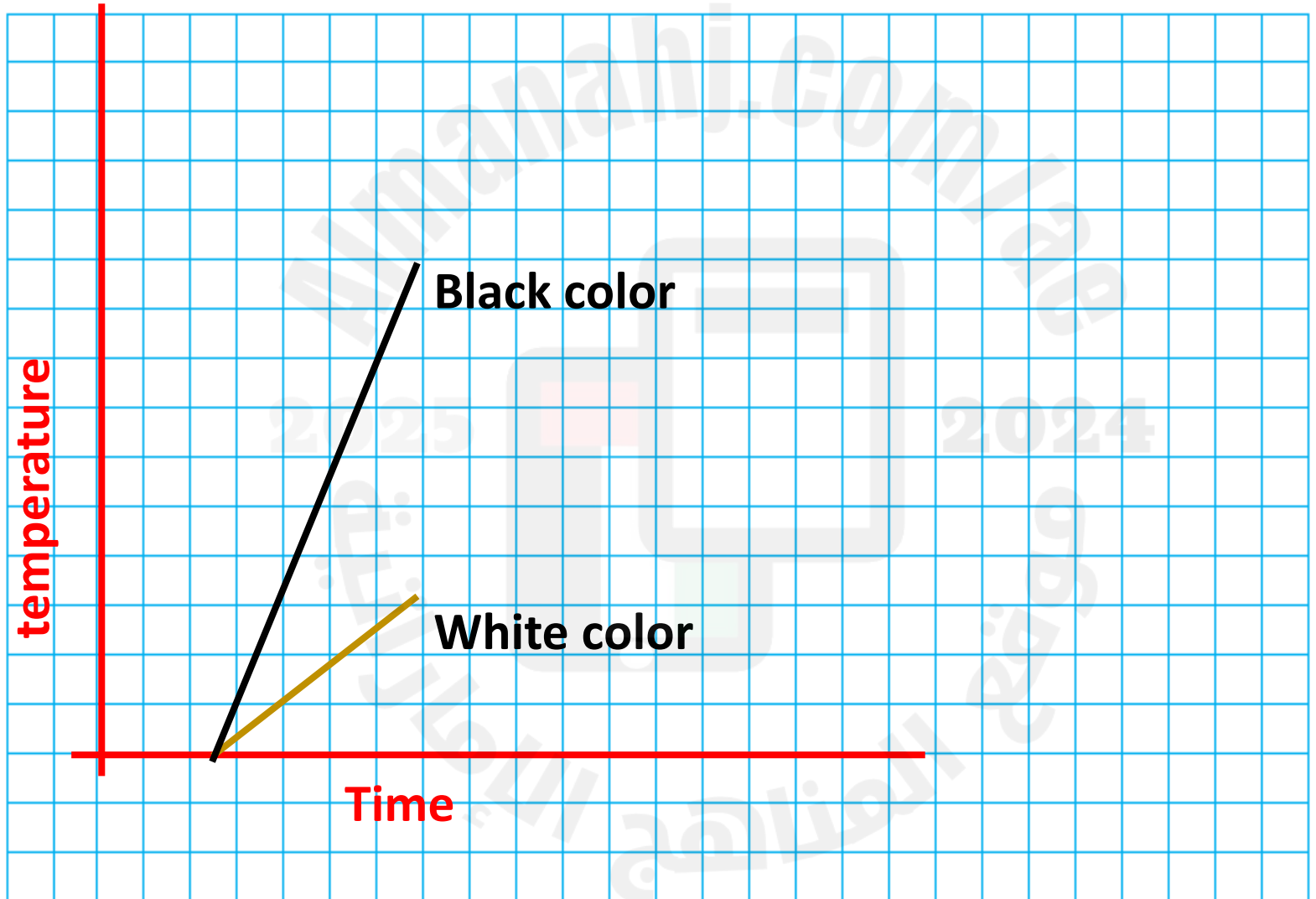
8. Plot how the temperature for each paper type changed on the grid below. Plot temperature on the vertical axis and time on horizontal axis. Use two colors to differentiate your results. Label each axis and give your graph a title**.**



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9. Explain why you think the temperature readings differed.

I think the temperature readings differed because the black paper absorbed more thermal energy than the white paper.

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Use the photo to describe areas of high and low albedo. **Explain** your reasoning.

The snow peaked mountain tops have a high albedo compared to the darker mountain rocks. This is because lighter colored objects are more reflective than darker colored objects.

LESSON 1

Review

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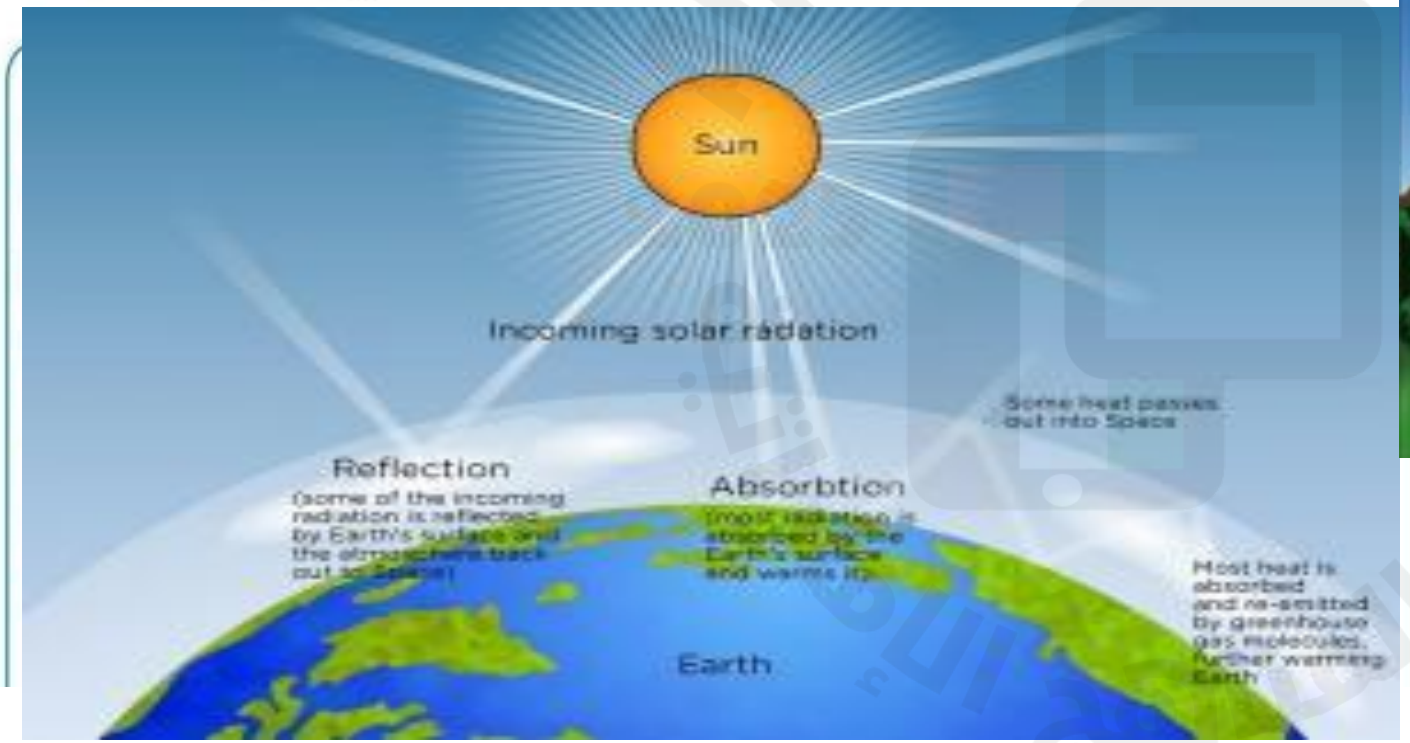
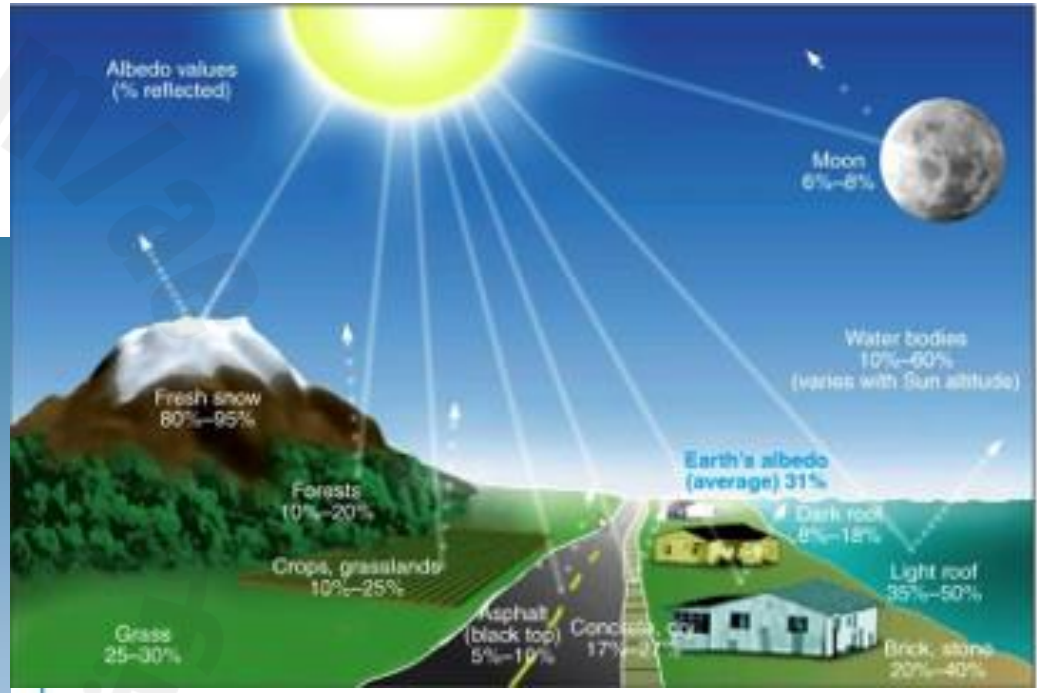
Summarize It!

1. **Diagram** Create a visual to show how energy is transferred from the Sun to Earth and the atmosphere. Include how features on Earth's surface affect this transfer of energy.





Three-Dimensional Thinking

Natia set up an investigation to model heat absorption and release for soil and water. She began by filling one container with water and one container with soil. She measured the initial temperature of the water and the soil. She then exposed both the water and the soil to a heat lamp for 2 minutes. After the time was up, she turned off the light and measured the temperature of both the water and the soil. Her results are indicated in the table below.

Surface Type	Temperature Before	Temperature After
Soil	25°C	27°C
Water	24°C	32°C

2. Are Natia's results valid?

A No. Soil absorbs heat faster than water and therefore the temperature of the soil after exposure to the light should be higher than the water.

B No. The temperature of the soil and water should be the same after exposure to the light.

C Yes. Water absorbs heat faster than soil and therefore her temperature readings are accurate after exposure to the light.

D Yes. Molecules in water are more compact and therefore retain heat better than soil.

3. How is conduction related to cold air temperatures at the poles, which are covered with ice and snow?

A Ice and snow cannot conduct as much thermal energy to the atmosphere because the particles that make up ice and snow are more compacted and therefore they absorb and retain little thermal energy.

B Ice and snow cannot conduct as much thermal energy to the atmosphere because they reflect more solar energy than they absorb.

C The absorption rate of ice and snow allows for a greater amount of solar energy to be conducted to the atmosphere.

D The reflectivity of snow and ice allows for a greater amount of solar energy to be conducted to the atmosphere because more solar energy is exposed to the air particles.

Real-World Connection

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4. **Explain** How can the Sun continue to heat the atmosphere at night?

Earth's surface is warmed by the Sun through radiation. As air moves over warm land or water, molecules in the air are heated by direct contact. If the Sun has warmed the surface during the day, its heat can still warm the air in contact with the ground by conduction after sunset.

5. **Predict** Are temperatures typically cooler in rural areas or in urban cities? Explain your reasoning.

Streets, parking lots, and buildings with darker surfaces have a lower albedo than surrounding, more reflective surfaces such as grasses, water, or rocky areas that are more likely to be found in rural areas. These surfaces heat up, in turn heating the air through conduction. This produces higher temperatures in cities than in the surrounding countryside.