

Multiple Choice: Earth's Radiation Balance

Directions: Answer the multiple choice questions.

Questions

1. Where does maximum heating of Earth's surface occur?

- poles
- equator
- subtropics

2. About how much of all incoming solar radiation is reflected back to space before ever reaching Earth's surface?

- 90
- 50
- 20

3. Solar radiation that reaches Earth's surface is converted to heat energy and then is re-emitted back toward space as infrared radiation
remains at Earth's surface and accumulates
is trapped by greenhouse gases

4. Which of the following is responsible for motion of the atmosphere?

- unequal solar heating of Earth's surface
- greenhouse gases
- changes in precipitation

5. During winter, why do the polar areas have weeks of no sunlight?

- the atmosphere is thinner
- 100% reflection of sunlight by snow and ice
- Earth's tilt on its axis places the poles pointing away from the Sun

6. Where does solar radiation strike Earth nearly vertically, and with the highest concentration?

- equator
- poles
- subtropics

7. Where is incoming solar radiation most diffuse, or spread out over a large area?

- equator
- poles
- subtropics

8. What happens to air at the equator?
cools and sinks
warms and sinks
warms and rises

Answers

1. equator
The maximum heating of Earth's surface occurs at the equator.
2. 50%
About 50% of the incoming solar radiation is reflected back to space.
3. is re-emitted back toward space as infrared radiation
The solar radiation that reaches Earth's surface is re-emitted back into space as infrared radiation.
4. unequal heating of Earth's surface
The unequal heating of Earth's surface causes motion in the atmosphere.
5. Earth's tilt on its axis
Polar areas have weeks of no sunlight because the Earth tilts on an axis away from the Sun.
6. equator
Rays from the Sun hit the equator at nearly a ninety-degree angle causing the greatest heating.
7. poles
Since the Sun's rays hit at the greatest angle at the poles, it spreads out over a large area.
8. warms and rises
The air at the equator warms and rises.