Earth Science Chapter 16: Energy in Earth's Atmosphere

*Match the definition with the appropriate term. Answers that cannot be read will be counted as incorrect.*

a. electromagnetic waves
b. radiation
c. infrared radiation
d. ultraviolet radiation
e. scattering
f. greenhouse effect

_____ 1. an invisible form of energy with wavelengths that are shorter than violet light; can cause sunburns, skin cancer and eye damage

_____ 2. the process by which gases hold heat in the air

_____ 3. a form of energy that can move though a vacuum of space

_____ 4. a process by which dust particles and gases in the atmosphere reflect light in all directions

_____ 5. the direct transfer of energy by electromagnetic waves

_____ 6. one form of electromagnetic energy that has wavelengths that are longer than red light; invisible, but can be felt as heat

Earth Science Chapter 16: Heat Transfer

*Answer the following questions. Answers that cannot be read will be counted as incorrect.*

1. What is temperature? _____

_____

_____

2. How do we measure air temperature? Define that term. _____

_____

_____

3. What are the two temperature scales that are commonly used to measure temperature? _____

_____

_____

4. What are the three ways that heat is transferred? List and define each.

A. _____

_____

_____

B.

_____

_____

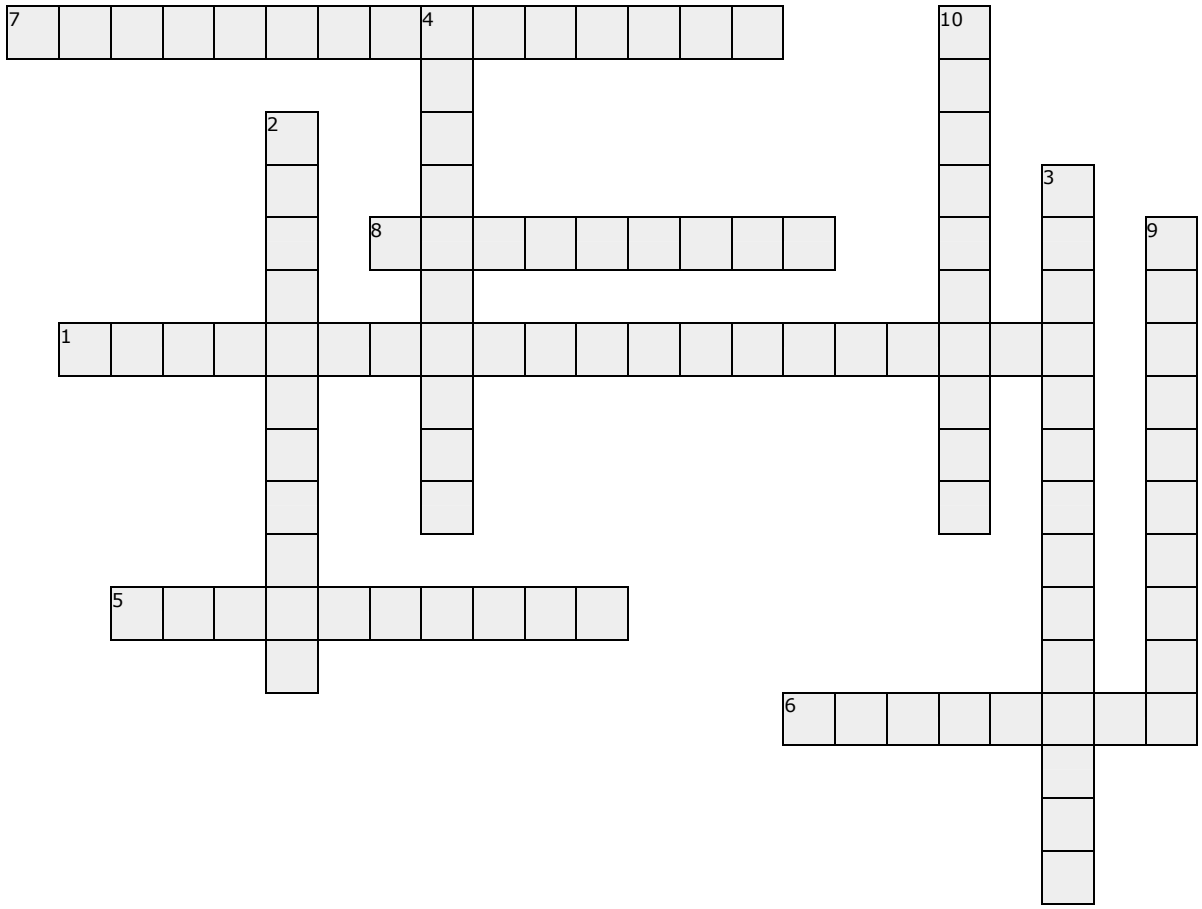
C.

_____

_____

Earth Science Chapter 16: Winds

*Fill in the crossword puzzle below. There are **NO** spaces between words in the puzzle. A word bank is provided below. Answers that cannot be read will be counted as incorrect.*




Local winds | global winds | jet streams | trade winds | sea breeze | land breeze | doldrums | prevailing westerlies | horse latitudes | polar easterlies

**Across:**

1. blow away from the horse latitude from the west to the east
5. flow of air from land to a body of water
6. a calm area where warm air rises; regions near the equator with little to no wind
7. blow cold air away from the poles to the west
8. a local wind that blows from an ocean or lake

**Down:**

2. created by the unequal heating of Earth's surface and occur over a large area
3. calm areas of falling air approximately 30º north and south of the equator
4. blow from the horse latitudes toward the equator; used by merchants carrying cargo
9. bands of high-speed winds approximately ten km over Earth's surface
10. winds that blow over short distances

Earth Science Chapter 16: Water in the Atmosphere

*Circle the correct answer. Answers that cannot be read will be counted as incorrect.*

1. What is a measure of the amount of water vapor in the air?
    a. evaporation
    b. pressure
    c. humidity
    d. altitude

2. What is a psychrometer?
    a. an instrument that measures relative humidity
    b. an instrument that measures the changes in air pressure
    c. an instrument that has two thermometers, a wet-bulb thermometer and a dry-bulb thermometer
    d. both a and c

3. What is the temperature at which condensation begins?
    a. dew point
    b. 33ºF
    c. 0ºC
    d. 0ºF

4. Which of the following is NOT a main type of cloud?
    a. cirrus
    b. circus
    c. cumulus
    d. stratus

5. What is fog?
    a. smoke created by the burning of fossil fuels
    b. clouds that form at or near the ground
    c. clouds that are released from an erupting volcano
    d. clouds that form in the stratosphere

Earth Science Chapter 16: Precipitation

*Fill in the chart below. Answers that cannot be read will be counted as incorrect.*

| Type of precipitation | Definition |
|---|---|
| Rain | |
| | Raindrops that freeze when they hit a cold surface |
| Hail | |
| | Raindrops that freeze as they fall and are no bigger than 5 millimeters in diameter |
| Snow | |

Earth Science Chapter 16: Study Guide

**Section 1**

- Vocabulary

| | | |
|---|---|---|
| Electromagnetic waves | Infrared radiation | Scattering |
| Radiation | Ultraviolet radiation | Greenhouse effect |

- Know where nearly all of the energy in Earth's atmosphere comes from and what it travels there as
- Know how electromagnetic waves are classified
- Know the different types of visible and non-visible light/radiation and their wavelengths
- Know what happens to sunlight as it reaches the atmosphere
- Know why you see certain colors at sunset and sunrise
- Know what happens to sunlight that is absorbed by the land and water
- Know the importance of the greenhouse effect

**Section 2**

- Vocabulary

| | | |
|---|---|---|
| Temperature | Heat | Convection currents |
| Thermal energy | Conduction | |
| Thermometer | Convection | |

- Know how particle motion relates to energy, temperature and thermal energy
- Know how air temperature is measured and how thermometers work
- Know the units of measurement of temperature and the two commonly used scales
- Know what heat is and the three ways it can be transferred
- Know how the troposphere is heated and how the heat is moved through the troposphere

**Section 3**

- Vocabulary

| | | |
|---|---|---|
| Wind | Sea breeze | Latitude |
| Anemometer | Land breeze | Jet stream |
| Wind-chill factor | Global | |
| Local winds | Coriolis effect | |

- Know what wind is and how it is caused
- Know how wind direction is determined and what instrument is used to measure wind speed
- Know what the name of a wind tells you about its direction and origin
- Know what a wind-chill factor is and how it is determined
- Know the differences between local winds and global winds and how they are caused
- Know the two types of local winds and how they form
- Know how global winds develop and how the Coriolis effect affects them
- Know the major global wind belts, where they start, where they go, their cause, their purpose and what type of air they carry
- Know what doldrums and horse latitudes are and where they are located
- Be able to point out each type of global wind patterns on page 557
- Know what jet streams are, where they are located and what they can be used for

**Section 4**

- Vocabulary

| | | |
|---|---|---|
| Water cycle | Psychrometer | Cumulus |
| Evaporation | Condensation | Stratus |
| Humidity | Dew point | |
| Relative humidity | Cirrus | |

- Know the water cycle and what happens to water at each step
- Know what humidity is and how it differs from relative humidity
- Know how relative humidity can be measured and how the instrument works
- Know the process through which clouds form including the roles of cooling and particles
- Know the three main types of clouds and how they are classified
- Be able to recognize the three types of clouds from page 564 and 565
- Know what *alto-* means and what altocumulus and altostratus are
- Know what fog is and how it forms

**Section 5**

- Vocabulary

| | |
|---|---|
| Precipitation | Cloud seeding |
| Drought | Rain gauge |

- Know what precipitation is, where it forms and how it forms
- Know the common types of precipitation and how they form
- Know what droughts and cloud seeding are
- Know how scientists measure precipitation