

Science
Semester 2 Exam

MATCHING - 1

Directions: Place the correct letter on the line that matches the definition to the word

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| _____ 1. Thunderstorm | A. air rises because of unequal heating of Earth's surface within one air mass |
| _____ 2. Air-mass thunderstorm | B. storm from cumulonimbus cloud with lightning and thunder |
| _____ 3. Mountain thunderstorms | C. violent downdrafts concentrated in a local area |
| _____ 4. Sea-breeze thunderstorms | D. occurs when an air mass rises moving up the side of a mountain |
| _____ 5. Frontal thunderstorm | E. produced by advancing cold fronts and more rarely, warm fronts |
| _____ 6. Wind | F. violent, whirling column of air in contact with the ground |
| _____ 7. Stepped leader | G. local air mass thunderstorms that occur because land and water store and release thermal energy differently |
| _____ 8. Spider lightning | H. channel of partially charged air |
| _____ 9. Return stroke | I. ranks tornadoes by their paths of destruction, wind speed and duration |
| _____ 10. Supercell | J. air in motion horizontally |
| _____ 11. Downbursts | K. intense, rotating updrafts taking 10 to 20 minutes to reach top of cloud |
| _____ 12. Tornado | L. large, rotating, low pressure tropical storms near Indian Ocean |
| _____ 13. Enhanced Fujita
Tornado intensity scale | M. large, rotating low pressure tropical storm for those living near west Pacific Ocean |
| _____ 14. Tropical cyclone | N. branched channel of positively charged particles that rushes upward to meet a stepped leader nearing the ground |
| _____ 15. Typhoon | O. crawls across the sky up to 150 km. |

FILL IN

Directions: Use each of the terms below just once to complete the passage.

condensation

warmer

unstable

convection

cumulonimbus

moisture

stable

At any moment, more than 2000 thunderstorms are occurring on Earth. Thunderstorms develop from cumulus clouds that grow into huge _____ clouds.

Thunderstorms form when three conditions exist that cause cumulus clouds to grow by the energy transfer method of _____. First, there must be sufficient _____ in the lower atmosphere to condense and release latent heat. Second, some mechanism must make the air rise, causing the cloud to grow. Third, the portion of the atmosphere that the cloud grows through must be _____. The rising cloud must stay _____ than the air around it in order for the growth to continue.

The cloud's growth stops when the rate of _____ in the cloud, which diminishes with height, is insufficient to create enough heat to keep the cloud warmer than the air around it. Growth will also stop if the rising air meets a layer of _____ air that it cannot overcome.

MULTIPLE CHOICE

Directions: Circle the letter that best completes the question.

1. What weather events are most cold fronts associated with?
A. floods
B. polar high pressure systems
C. tropical high pressure systems
D. drought
2. Which way do hurricanes rotate in the southern hemisphere?
A. south
B. clockwise
C. counterclockwise
D. north
3. What percentage of tornadoes are classified as F4 or F5 on the Fujita tornado intensity scale?
A. 1%
B. 10%
C. 50%
D. 75%

4. Heat waves involve high pressure systems that cause air to sink and warm by what process?
- A. compression
 - B. conduction
 - C. evaporation
 - D. condensation
5. What is the first stage of a lightning bolt?
- A. return stroke
 - B. stepped leader
 - C. positive charge
 - D. downdraft
6. Flooding is most likely to take place because of rains associated with what type of front?
- A. stationary front
 - B. occluded front
 - C. cold front
 - D. warm front
7. What would work against the development of a thunder storm?
- A. rising air
 - B. stable air
 - C. moisture
 - D. unstable air
8. In which ocean would you expect to experience a tropical cyclone?
- A. West Pacific
 - B. North Atlantic
 - C. Indian Ocean
 - D. all of the above
9. Which of the following describes a type of damaging thunderstorm wind?
- A. downburst
 - B. microburst
 - C. macroburst
 - D. all of the above
10. Which of the following factors, if increased, would make a thunderstorm severe?
- A. temperature
 - B. surface area
 - C. duration
 - D. conduction
11. During what stage of a tropical cyclone does an eyewall develop?
- A. tropical depression
 - B. tropical storm
 - C. hurricane
 - D. tropical wave
12. Which of the following weather hazards involves a lack of moisture?
- A. hail
 - B. drought
 - C. storm surge
 - D. flood
13. Which of the following plays a key role in the development of hail?
- A. super cooled water
 - B. strong updrafts
 - C. strong downdrafts
 - D. all the above
14. A mound of water driven toward coastal areas by hurricane winds is called _____.
- A. cyclone
 - B. supercell
 - C. storm surge
 - D. cold front

15. An extended period of well below normal rainfall is a _____.
- A. flood
 - B. drought
 - C. heat wave
 - D. tropical cyclone
16. Which of the following conditions contributes to the formation of hail?
- A. the ability of water droplets to exist in a liquid state in parts of a cloud where the temperature is below freezing
 - B. the encounter between super cooled water droplets and ice pellets
 - C. the dissipation of warm, moist air on Earth's surface by downdrafts
 - D. the existence of strong updrafts and downdrafts side by side within a cloud
17. Extremely powerful thunderstorms that develop intense, rotating updrafts are _____.
- A. downbursts
 - B. supercells
 - C. cumulus cells
 - D. convection bursts
18. Electricity caused by the rapid rush of air in a cumulonimbus cloud is _____.
- A. thunder
 - B. hail
 - C. friction
 - D. lightning
19. Violent downdrafts that are concentrated in one local area are _____.
- A. downdraft cells
 - B. downstrokes
 - C. downbursts
 - D. return strokes
20. Powerful downdrafts that affect an area of less than 3 km are _____.
- A. microbursts
 - B. macrobursts
 - C. supercells
 - D. convection currents
21. Precipitation in the form of balls or lumps of ice is _____.
- A. sleet
 - B. drizzle
 - C. snow
 - D. hail
22. The intense updrafts and downdrafts that characterize severe thunderstorms are the result of _____.
- A. unstable air caused by temperature differences between the upper and lower parts of a storm
 - B. the contact between the rising air and a layer of stable air
 - C. the slowing of the rate of condensation within a cloud
 - D. the cooling of the air inside a cumulonimbus cloud to a temperature lower than the surrounding air
23. Flooding often occurs if rain falls faster than _____.
- A. snow
 - B. rates of condensation
 - C. the ground can absorb it
 - D. clouds can form
24. Hail forms in part because of the presence of _____.
- A. super cooled water droplets
 - B. above freezing temperatures
 - C. high pressure systems
 - D. melting snow

SHORT ANSWERS

Directions: Answer all short answer questions using complete sentences. Spelling and grammar count.

1. Where in the United States do many tornadoes occur? Explain why.

2. The Fujita Scale classifies tornadoes according to what criteria?

3. Describe a situation where a light rain could cause flooding.

4. Identify the four main stages of a tropical cyclone.

5. What two conditions must exist for a tropical cyclone to form?

6. Why are some thunderstorms more severe than others?

7. What conditions must be present for a thunderstorm to form?
