

Name: Key - HAW Date: _____ Pd: _____
Unit 7 Formative Assessment – Severe Weather & Climate

- Which gases are responsible for the Greenhouse Effect?
H₂O vapor
CO₂
CH₄ (methane)
- The two most important heat-absorbing gases in the lower atmosphere are _____.
 a. oxygen and nitrogen
 b. ozone and chlorofluorocarbon
 c. argon and hydrogen
 d. water vapor and carbon dioxide
c. argon and hydrogen
d. water vapor and carbon dioxide
- What is the enhanced greenhouse effect?
increased heat retention @ night due to increase in greenhouse gases from human activities
- Circle the correct phrase that will make each statement correct:
 a. Places at higher elevations tend to be (warmer/colder) than places at lower elevations.
 b. Places near water have more (extreme/moderate) climates than places farther from water.
 c. As latitude increases, the intensity of the solar energy increases/decreases.
 d. Where an area is near land/water, the temperatures are more temperate.

5. Which hemisphere has the greatest temperature variations? What **MAJOR** factors make this true?
↳ highest land mass

Northern Hemisphere Southern Hemisphere
 Western Hemisphere Eastern Hemisphere

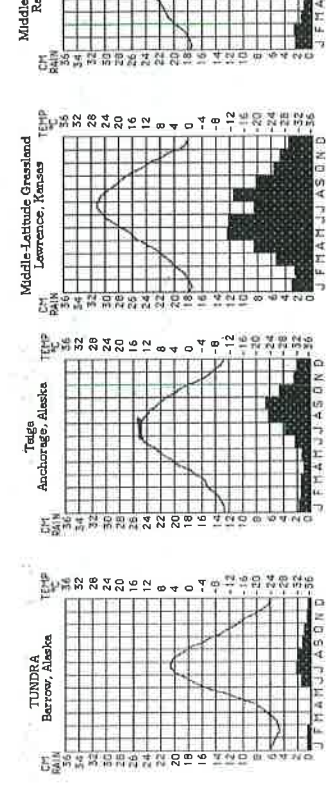
- Which phenomenon is associated with surface temperatures in the eastern Pacific Ocean that are warmer than average?
El Niño OR La Niña
- An arid climate is (wet/dry). A humid climate is (wet/dry).
- A significant change in carbon dioxide concentration in the atmosphere is likely caused by _____.
 a. More frequent El Niño
 b. Increase use of fossil fuels
 c. Polar jet stream winds
 d. Increased hydrothermal vents

- CIRCLE** all of the factors that determine Köppen climate zones: temperature, elevation, latitude, precipitation, pressure, vegetation.

- What is the main source of acid deposition in the Northeast United States?
 a. Ground level ozone
 b. Nitrogen from volcanoes
 c. Methane from thawing Siberian lakes
 d. Sulfur dioxides from coal burning

- What factors are included in an air quality index?
level of air pollutants
health concerns from
people most at risk

- Using the climatograms below:
 a. What is the temperature range for Anchorage, Alaska? -10 to 14°C
 b. How much rain does Barrow, Alaska get in August? 2 cm
 c. Which of the four cities below has the greatest average amount of rainfall? Lawrence
 d. What is the temperature of Reno in January? -1°C



- During which stage of thunderstorm development would each of the following occur:
 a. Precipitation begins → Cumulus
 b. Updrafts decrease → Dissipation
 c. Cloud formation → Cumulus
 d. Most intense stage → Mature
 e. Updrafts and downdrafts create convection cell → Mature
 f. Warm air runs out → Dissipation

- What conditions are necessary for a tornado to form?
warm air trapped below cold air
strong horizontal wind 3mi. above
primarily late spring/early summer
- What factor does the Enhanced Fujita scale use to determine the intensity of a tornado?
 a. Diameter of funnel
 b. Wind speeds
 c. Amount of damage caused
 d. Duration of tornado

16. A. Where does a hurricane usually develop?

over tropical waters

B. What factors allow it to develop in these areas?

heat + moisture

17. Describe the three stages of a hurricane as it develops over time.

Trop. Dep. - low press., 20-40 mph winds

Trop. Storm - warm water pulled in, 40-75 mph

Hurricane - press. drops lower, clear eye, > 74 mph winds

18. How does a hurricane over water differ from a hurricane that makes landfall? Explain WHY.

Over water = source of warm water = power
Over land = dry = no power = breaks up

19. The heating of the lower layer of the atmosphere from radiation absorbed by certain heat-absorbing gases is called:

greenhouse effect

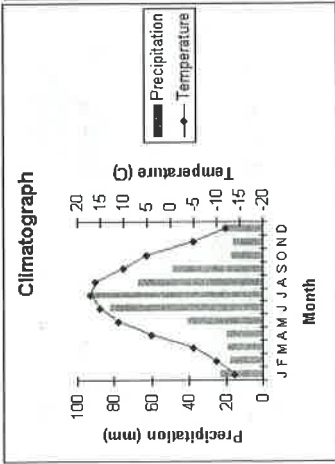
20. List several weather instruments used by meteorologists **AND** briefly describe its purpose.

Hygrometer + psychrometer - humidity

Anemometer - wind speed

Air Pressure - barometer

21. Analyze the climatogram below. Answer the questions based on the graph.



- What is the highest temperature? 17°C
In which month does it occur? July
- What is the lowest temperature? -14°C
In which month does it occur? Jan.
- Describe the climate. When is it warm, cold, wet and dry?
warm + wet May-Sept
Cold + dry Oct-April

22. Explain the significance of ground level ozone and its effect on human health, vegetation, and sensitive ecosystems.

loss of species

↑ respiratory disease

↓ slows production of O₂ via photosynthesis

23. Why is the amount of carbon dioxide concentration increasing at such a fast rate in our atmosphere?

burning of fossil fuels releases CO₂ + H₂O

24. Identify both natural and man-made causes of climate change.

forest fires → factory smoke + H₂O vapor, burning of fossil fuels
land, solar radiation, volcanic tilt, seasons, shape of orbit
El Niño/La Niña
- melting glaciers/ice
- severe weather (storms, droughts)
- diseases

26. Create a climatogram for **precipitation** and **temperature** of the following biome below:

a. Be sure to label the climatogram with its biome name.

b. All temperature readings are measured on the **right side** of the climatogram.

c. All precipitation measurements are on the **left side** of the climatogram.

d. Be sure to draw a **line graph for temperature** and a **bar graph for precipitation**.

** Santa Monica, California: Chaparral Biome

Month	J	F	M	A	M	J	J	A	S	O	N	D
Precipitation (cm)	8.9	7.6	7.4	1.3	1.3	0	0	0	0.3	1.5	3.5	5.8
Temperature (°C)	11.7	11.7	12.8	14.4	15.6	17.2	18.9	18.3	18.3	16.7	14.4	12.8

UNKNOWN Santa Monica, CA

