

Answers
Science 9: Weather Review

1. Define the following terms:
 - a. Weather dynamics - study of how motion of water and air causes weather patterns
 - b. Weather – set of environmental conditions occurring each day
 - c. Climate – average weather pattern in an area over many years
 - d. Longitude – east to west coordinate measurements
 - e. Latitude – north to south coordinate measurements
 - f. Runoff – when water from the water cycle flows down mountains or ground back into lakes, rivers and streams
 - g. Precipitation – water that reaches the ground as solid or liquid form
 - h. Condensation – water changing from vapor to a liquid
 - i. Evaporation – water changing from a liquid to a gas
 - j. Transpiration – evaporation from the leaves of plants
 - k. Percolation – water from the water cycle moves down through the soil
 - l. Capillarity – the process by which water moves upwards through soil particles due to pressure differences
 - m. Sleet – solid water that forms when snow partially melts when falling through warm air, and then passes through a layer of air below 0°C.
 - n. Frost – when air temperature is below 0°C and water vapor sublimates (gas to liquid)
 - o. Dew – forms when water vapor condenses on a cool surface near the ground
 - p. Convective cloud – produced when air near the ground absorbs energy from heated surfaces (oceans, lakes, asphalt etc)
 - q. Frontal cloud – forms when the leading edge or front of a large moving mass meets another mass of air at a different temperature
 - r. Orographic cloud – forms when air moves up a mountain

2. Explain or classify each of the following clouds in general terms (what they look like and whether they are high, low or medium in the atmosphere)
 - a. Nimbus – rain holding cloud
 - b. Cumulus – puffy, billowing cloud
 - c. Stratus – flat layered cloud
 - d. Altocumulus – mid level in the atmosphere, puffy billowing cloud
 - e. Cirronimbus – high in the atmosphere, precipitation holding cloud
 - f. Altostratus – mid level in the atmosphere, layered, flat cloud
 - g. Cirrocumulus – high level in the atmosphere, puffy billowing cloud

3. Identify which of the following refer to climate and which refer to weather:
 - a. weather The temperature is 20°C and it is cloudy.
 - b. weather The wind is blowing 20km/h from the northwest.
 - c. climate In southeastern Quebec, snowfall on December 21 occurs less than 15% of the time.
 - d. weather The temperature is 15°C and it is raining.
 - e. climate Most hurricanes in Atlantic Canada occur in September or October.

4. Compare and Contrast each of the following:
 - a. Rain and drizzle – rain is water droplets that are between 0.5mm and 5mm in diameter and drizzle is water droplets that are <0.5mm
 - b. Weather and Climate – weather is the temperature, precipitation etc for a specific day. Climate averages temperature, precipitation etc averaged over a period of time.

5. Explain how air temperature affects the formation of precipitation. Give examples to aid in your explanation.

The air temperature effects precipitation because in colder air the liquid will turn to a solid forming snow or sleet. In warmer air the liquid will remain a liquid forming rain or drizzle. Also if it is in a solid form like snow and encounters warmer temperatures on its decent it will form wet snow instead of dry snow.

6. Starting with water at the ground level explain the water cycle and include how a cloud forms. Be sure to include all of the proper terminology.

Water on the ground is evaporated from lakes, rivers, streams and oceans by the sun. When this vapor enters the cold air further up in the atmosphere it condenses forming a liquid. This forms the droplets of a cloud and as more and more water condenses a larger cloud forms. Eventually the force of gravity will be strong enough to pull the drop to the ground.

7. Using the diagram below decide where each of these areas is either Tropics, Mid-Latitude, Arctic or Antarctic.



- a) Africa - Tropics
- b) South America - Tropics
- c) Europe – Mid-latitude
- d) Asia – Mid-latitude