**Unit 3 Study Guide Key – Weather**

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| Name of Air Mass | Where was the air mass formed? (over land or water) (in a cold or warm region) | What are its two known properties?  (warm or cold) (humid or dry) |
| Continental Polar | *Over Land Cold Region* | *Cold*  *Dry* |
| Continental Tropical | *Over Land*  *Warm Region* | *Warm*  *Dry* |
| Maritime Polar | *Over Water*  *Cold Region* | *Humid*  *Cold* |
| Maritime Tropical | *Over Water*  *Warm Region* | *Humid*  *Warm* |

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|  | How does it heat up? | How does it cool off? |
| Land | *Land heats up quickly* | *Land cools off quickly* |
| Water | *Water heats up slowly* | *Water cools off slowly* |

1. Compare the heating and cooling rates of land and water.

1. Because land and water heat and cool at different rates, this causes a difference in pressure. Complete the sentences below using the following words; more, high, less, rise, low, sink.  
   1. Warm air is \_*less*\_\_ dense. This causes it to \_\_\_*rise*\_\_\_ and have \_\_\_*low*\_\_\_ air pressure.
   2. Cool air is \_\_\_*more*\_\_\_ dense. This causes it to \_\_\_\_*sink*\_\_\_\_ and have \_\_\_*high*\_\_\_\_ air pressure.
2. What is created by the difference in air pressure?  
   \_\_\_\_*wind*\_\_\_\_\_\_\_
   1. What is caused by the unequal heating of Earth due to direct and indirect light?   
        
      \_\_\_\_\_*global winds*\_\_\_\_\_\_
   2. What is caused by the unequal heating of land and water?  
        
      \_\_\_\_\_*local winds*\_\_\_\_\_\_\_\_
3. What layer of the atmosphere does weather occur in? \_\_\_*troposphere*\_\_\_\_
4. These differences in pressure are most easily demonstrated at the beach with land and sea breezes. Complete the chart on land and sea breezes.

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|  | Where does it start and what direction does it move? | Does it happen during the day or at night? | Is the air over the land: Cold or warm  More or less dense Have high or low pressure | Is the air over the water: Cold or warm  More or less dense Have high or low pressure |
| Land Breeze | *Land to Sea* | *Night* | *Cold*  *More Dense*  *High Pressure* | *Warm*  *Less Dense*  *Low Pressure* |
| Sea Breeze | *Sea to Land* | *Day* | *Warm*  *Less Dense*  *Low Pressure* | *Cold*  *More Dense*  *High Pressure* |

1. What is the greenhouse effect and how does it impact our climate? *The warming of the surface and lower atmosphere of the Earth that occurs when carbon dioxide, water vapor and other gasses in the air absorb and trap thermal energy*
2. What causes climates and what areas would have similar climates? *Locations that are similar distances from the equator will receive the same amount of direct and indirect light. This would cause them to have similar climates.*
3. What are the four types of fronts, what do they look like and what kind of weather could you expect?

Cold

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| --- | --- | --- | --- | --- |
| Name of front: | 1. *Cold Front* | 2. *Warm Front* | *3. Stationary Front* | *4.Occulded Front* |
| Drawing of front: | Warm  Cold | Cold  Warm | Warm  Cold | Warm  Cold |
| Weather expected: | Heavy rain or snow.  Cool weather will follow | Light rain followed by clear warm weather | Rain in one place for many days | Heavy rain, snow, strong winds and extreme thunderstorms |

1. What needs to be present for a tornado to form? *A funneled shaped, destructive, rotating column of air that makes contact with the ground is known as*
2. How does lightning form? *During a thunderstorm a negatively charged cloud and a positively charged cloud interact and energy is released. This energy is released as*