**Weather Connections**

1. Write the following ***molecules & their mass*** in order of highest mass to lowest mass: **H2O, O2, & N2**

O2 = 32 amu; N2 = 28 amu; H2O = 18 amu

1. Use the information from the answer in #1 to explain:
   1. Which will be less dense at an equal temperature: humid air OR dry air? Dry air – more N2 & O2 molecules = more mass = denser
   2. Why are high pressure systems associated with dry and sunny weather?

Dry air is more dense = sinking = higher pressure

* 1. Why are low pressure systems associated with moist air?

Moist air has more water, which has less mass = less dense = rises = low pressure

1. Draw a concept map for the following terms by putting the terms in order from start to finish: Cloud formation, Low pressure system forms, Condensation, Humid and rainy weather, Air rises, Air cools

1) Air rises – 2) Low pressure system forms – 3) Air cools –

4) Condensation – 5) Cloud formation – 6) Humid & rainy weather

1. Draw a concept map for the following terms by putting the terms in order from start to finish: Dry weather, High Pressure system forms, Dense air sinks, Dense air warms as it sinks

1) Dense air sinks – 2) High pressure system forms – 3) Dense air warms as it sinks – 4) Dry weather

1. What is the effect of dense sinking air being heated as it sinks?

The heating prevents condensation – remember warming causes evaporation; cooling causes condensation

1. Air masses are labeled by the region they came from and their moisture and temperature characteristics.

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| **Moisture Conditions** | **Thermal Conditions** |
| continental (c) = dry | Arctic (A) = very cold |
| maritme (m) = wet | Polar (P) = cold |
|  | Tropical (T) = warm |

a. Describe the temperature & moisture conditions for the following air masses:

cP = cold, dry

cT = warm, dry

mP = cold, wet

mT = warm, wet

b. Which air mass will be a source of high pressure? cP Low pressure? mT

1. When air masses collide = Fronts (Warm, Cold, Stationary, Occluded) = named by which air mass is the “leading edge”

a. Illustrate each type of front in the chart below. Include the weather symbol for the front, cold air, warm air, & draw arrows showing which way the air is moving.

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|  |  |
| **Cold Front** | **Warm Front** |
|  |  |
| **Stationary** | **Occluded** |

b. Identify the front associated with the described weather conditions:

1. Strong winds, heavy precipitation: Occluded
2. Intense precipitation, thunderstorms: Cold
3. Light wind & precipitation: Stationary
4. Widespread light precipitation: Warm
5. Weather forecasting is dependent upon what three **key** factors?
6. Temperature: warm air rises, cold air sinks
7. Pressure: Wind is created by air moving from high to low pressure
8. Humidity: wet air rises, dry air sinks
9. Station models show weather data. Draw and label a station model that includes: Cloud cover (25%), Wind speed & direction (15 mph SE), Barometric pressure (523 mb), Temperature (20°C), Dew-point (19°C)
10. What are all those lines on a weather map? **Isopleths** – connect the dots of equal or constant values to show the ***isobars*** (same pressure) or ***isotherms*** (same temperature)
    1. What is the difference between the lines called? interval
    2. What happens to the intervals & pressure reading for a high pressure system as you move towards the center?

Intervals stay the same; pressure increases

* 1. What happens to the intervals & pressure reading for a low pressure system as you move towards the center?

Intervals stay the same; pressure decreases