

Intro to meteorology essay



**ASSIGN
BUSTER**

1) Which of the six colors of the rainbow is refracted the greatest? Out of the 7 colors of the rainbow, Violet is refracted the greatest. 2) What is a mirage and why does it always disappear as the observer gets closer? A mirage is a naturally occurring optical phenomenon in which light rays are bent to produce a displaced image of distant objects or the sky. Mirages appear at very low viewing angles, when you are far away.

As you approach, the viewing angle increases and the mirage disappears, or moves farther away. The reflection of heat dissipates in the human eye causing the mirage or blur to vanish. 3) If you were looking for a rainbow in the morning, which direction (N, S, E, W) would you face and why? It is best to look towards the west. Rainbows always appear in the opposite side of the sky away from the sun. 4) What is a halo? A Halo is a burst of light produced by ice crystals creating colored or white arcs and spots in the sky.

Many are near the sun or moon but others are elsewhere and even in the opposite part of the sky. They can also form around artificial lights in very cold weather when ice crystals called diamond dust are floating in the nearby air. 5) Why is the sky blue? The sky is blue because molecules in the air scatter blue light from the sun more than they scatter red light on a cloudless day. When we look towards the sun at sunset, we see red and orange colors because the blue light has been scattered out and away from the line of sight.

6) Why are sunrises and sunsets red/orange? Because the light from the sun has passed a long distance through air and some of the blue light has been scattered away. If the air is polluted with small particles, natural or

otherwise, the sunset will be redder. Sunsets over the sea may also be orange, due to salt particles in the air. The sky around the sun is seen reddened, as well as the light coming directly from the sun. 7) Why are clouds white? Clouds are white because their water droplets or ice crystals are large enough to scatter the light of the seven wavelengths, which combine to produce white light. Clouds will appear dark or gray when either they are in another clouds shadow or the top of a cloud casts a shadow upon its own base.) What is the basis for the classification of clouds and why? Clouds are broadly grouped into four classes: low-level, middle-level, high-level, and vertically developed. The specific names for different cloud types are based on the cloud's shape and structure as well as its altitude, and there are many different combinations.

9) Why are high clouds always thin in comparison to low clouds? As temperature is very less at the heights where these high clouds form convection currents are absent or very less so that vertical growth of the clouds is restricted. A cloud is classified as low, medium and high according to the height of its base and not based on top of the cloud. 10) What is a condensation nucleus and why is it important? Cloud condensation nucleus is aerosols that act as the initial sites for condensation of water vapor into cloud droplets or cloud ice particles. Virtually all cloud droplets or ice particles originate around some sort condensation nuclei which tend to “attract” water. It is important for the formation of rain and clouds. 11) How does hail form? Inside of a thunderstorm are strong updrafts of warm air and downdrafts of cold air.

If a water droplet is picked up by the updrafts it can be carried well above the freezing level. As the frozen droplet begins to fall, carried by cold downdrafts, it may thaw as it moves into warmer air toward the bottom of the thunderstorm or it may also get picked up again by another updraft carrying it back into very cold air and re-freezing it. With each trip above and below the freezing level our frozen droplet adds another layer of ice until it finally hits the ground. 2) What is the difference between clouds and fog? Fog is a cloud in contact with the ground. Fog differs from other clouds only in that fog touches the surface of the Earth. The same cloud that is not fog on lower ground may be fog where it contacts higher ground such as hilltops or mountain ridges.

A cloud is a visible mass of condensed droplets or ice crystals suspended in the atmosphere above the surface of the Earth or another planetary body. The branch of meteorology in which clouds are studied is nephrology. 3) If you see towering puffy clouds in the afternoon, you are probably seeing what kind of cloud? A cumulonimbus Cloud. What does this mean for the weather forecast this afternoon and early evening? Cumulonimbus clouds are mostly affiliated with thunderstorms, lightning, heavy rainfall, blizzard or hail. The forecast should reflect rain or chances of rain. 14) What is a weather satellite and how does it help us make forecasts? A weather satellite is used by meteorologists to gather information about the weather. Weather satellites give meteorologists a view of weather patterns over a very large area. This enables meteorologists to track large weather patterns and make more accurate predictions of future weather behavior.

15) How do computers help weather forecasting? Using computers in meteorology helps weather forecasters analyze the atmosphere by drawing weather maps separately for each of several atmospheric levels. Then the computer can put it all together and generate a prediction. Can we just let the computer tell us what the weather will be without human intervention? No, meteorologist must always use algorithms and other calculations to ensure that the computer models are closest to accurate as possible.

16) What is an ensemble and how does it help us tell what is coming up in the weather (or accuracy of our forecast)? Ensemble will identify the expected 'spread' of weather conditions and assess the probability of particular weather events. Ensembles also influence the confidence a forecaster places on weather events taking place. 17) What is weather radar? A type of radar used to locate precipitation, calculate its motion, and estimate its type (rain, snow, hail, etc.). How does Doppler radar differ and how is it the same as old-fashioned weather radar? Modern weather radars are mostly pulse-Doppler radars, capable of detecting the motion of rain droplets in addition to the intensity of the precipitation. Doppler Radars measures instantaneous speed of precipitations at discrete range intervals as the beam is slewed across the sky.

18) How do vertical profilers help us understand the weather? It controls the vertical movement of air, determines the existence of clouds and rainfall, affects visibility, and regulates the level of pollution near the Earth's surface.

19) What is a microburst? A Microburst is a localized column of sinking air, straight-line winds at the surface that are similar to a tornado however the winds are the opposite way. There are two types of microburst: wet

microburst and dry microburst. Why is it dangerous and how do vertical profilers help us see them happening? Microbursts are mainly dangerous due to the scale of suddenness. It is hard to predict and determine which makes it hard to prepare.

20) What is the practical limit for accurate precipitation forecasts? The most impressive gain in forecast accuracy in recent years has been in prediction for the 1 to 5 day range. A number of factors have contributed to the increase in accuracy. Foremost among these has been the further development of numerical prediction models, based on the laws of physics, which are able to forecast the formation and movement of the large high and low pressure systems that govern day-to-day weather changes in middle and high latitudes.