1.

What causes wind?

Wind is caused by differences in pressure.

4.

What steers / deflects the wind?

The Coriolis effect describes how Earth's rotation steers winds and surface ocean currents. The Coriolis effect causes freely moving objects to appear to move to the right in the Northern Hemisphere and to the left in the Southern Hemisphere.

7.

What happens to the pressure as bad weather approaches and why?

When cold air encounters warm air, the warm air rises over the cold air and makes surface air pressure drop. As a result, a low pressure system forms and winds begin to blow. Storms form in response to changes in air temperature.

10.

What is a trough? What is a ridge? What kind of weather is usually associated with both?

Troughs are elongated areas of low pressure that extend equatorward. They are usually associated with cool wet weather. Ridges are elongated local upper atmosphere highs that extend to the poles. They are associated with warm dry air.

13.

Where is the Coriolis effect strongest (in terms of latitude zones)? Weakest? How does it affect wind in each hemisphere?

The Coriolisforce is strongest at the poles and weakest towards the equator. It deflects winds and ocean currents to the right of motion in the northern hemisphere and to the left of motion in the southern hemisphere.

16.

Know the difference between how wind flows near the surface and how wind flows up above in the atmosphere in relation to isobars.

There are three convection cells in each hemisphere referred to as the Hadley cell, Ferrelcell, and Polar Cell. These winds shift up and down slightly throughout the year.

2.

How do we normally name a wind?

We always name wind by referring to the direction it comes from.

5.

What are some common units of pressure and in each unit what pressure do we normally experience on the earth?

Pascal (Pa), atmosphere (atm), pound per square inch (psi), bar, millibar (mb), and millimeter of mercury (mmHg) or torr.

8.

What is the relationship between pressure and temperature (all other factors being equal)?

Pressure decreases with height. The atmospheric pressure is halved for every 5.6km rise in the atmosphere because the mass is halved at each level.

11.

Be able to explain what a small or large pressure gradient force is and be able to identify a small or large pressure gradient on a map. In addition, what is the relationship between pressure gradient and wind?

The force that causes wind to move is called the Pressure Gradient Force. PGF = pressure change / distance change, Large PGF = fast wind, and Small PGF = slow wind.

14.

How does friction affect wind in the lower and upper atmosphere?

Increased friction of the surface can slow wind downand also influence the winds path. Increased friction causes the Coriolisforce to decrease and therefore the wind is not parallel to the isobars.

17.

What instrument measures wind direction and what instrument measures wind speed?

Cup Anemometer- Used to measure wind speed, Wind Vane- Used to measure wind direction, and Wind Sock- used commonly at airports for pilots to quickly estimate wind direction and speed

3.

What causes differences in pressure?

Air flowing from zones of high pressure to zones of low pressure causes winds, just like the way air gushes from a punctured tire or balloon. Uneven heating and convection generate the pressure differences; the same tendencies create currents in a saucepan of water heating on a stove.

6.

What are lines of equal pressure called?

Lines of equal pressure are called isobars. The values seen here are surface pressure equivalent values.

9.

What is another name for a low pressure system? A high pressure system?

Cyclone is a low pressure system, anticyclones are high pressure system.

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12.

What is a sea breeze and a land breeze and how do each occur? When do these typically occur?

A sea breeze is a wind moving from the sea towards the land. Occurs in the late morning throughout the afternoon. A land breeze is a wind moving from the land towards the sea. Occurs during the early evening or at nighttime. Both are caused by differential heating of Earth's surface. Heating of the land during the day decreases the pressure causing air to blow from the ocean to the land.

15.

How does air circulate around a low pressure or high pressure system in both the northern and southern hemisphere? Be able to describe the wind at any point inside these pressure systems (e.g. what is the general wind direction in the northwest corner of a low pressure system in the southern hemisphere).

Winds which originate as static masses of very cold air atop mountains. Once forced to move, this very cold dense air cascades down a mountain at very high speeds.

18.

What is meant by a prevailing wind?

A wind which consistently blows in a particular direction. (note: we always name wind by referring to the direction it comes from!)

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