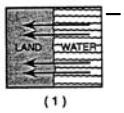
Atmospheric Variables Review #1: Air Pressure and Wind
ANSWERS

1. (2) increase – If the temperature and humidity decrease, then a high pressure center is moving in. That means air pressure will increase.

2. (1) 

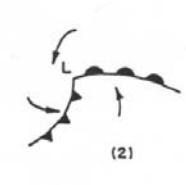
– Sea breezes occur during the day. – Cooler air develops over the ocean creating higher pressure while warmer air is over land making it lower pressure. Wind blows from regions of high to low pressure.

3. (3) higher temperatures, with winds blowing in from the ocean – same reasoning as #2

4. (2) 28.88in – Use ESRT page 13 - Pressure Conversion Chart

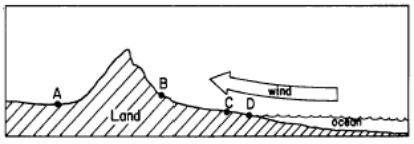
5. (3) 990.0mb – Use ESRT page 13 - Pressure Conversion Chart

6. (1) decreases, only – As altitude increases, air pressure decreases.

7. (2) 

– In a low pressure system, winds blow counter-clockwise and toward the center.

8. (1) rotation – The Coriolis Effect that bends the winds to the right in the Northern Hemisphere is caused by the Earth's rotation.



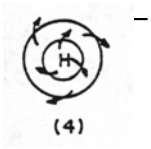
9. (3) low pressure exists over the land and high pressure over the ocean – The only explanation for the wind going from the ocean toward the land is that there is higher pressure over the water and lower pressure over the land. Once again, wind blows from regions of high to low pressure.

10. (4) sea breeze – Winds are named based on where they come from. The wind is coming from the sea.

11. (2) northeast – Because the U.S. is located in the SW planetary wind belt (prevailing westerlies), all weather systems move from the SW to the NE.

12. (4) – west - The closer the isobars the faster the winds. Therefore, on a map where the isobars are spaced farther apart, the wind speeds are slower.

13. (4) pressure gradient – Wind velocity is controlled by the difference in pressure between two locations (PGF).

14. (4) 

– High pressure systems have surface winds that blow outwards and clockwise.

15. (1) an approaching storm – A falling barometer indicates a low pressure system approaching. "Low and lousy" indicates that bad weather is coming.

16. (3) convection – Wind is caused by unequal heating of the Earth. The flow of air that results is partly due to convection because of the different density of the warm and cold air.

17. (1) 15°S – The Planetary Wind Belt chart on page 14 of the ESRT shows the different wind belts on the Earth. Only a location at 15°S would be affected by the southeast winds

18. (1) Winds converge from higher latitudes – The Planetary Wind Belt chart on page 14 of the ESRT shows this. The arrows on the surface of the Earth that represent the winds come together (converge) at the Equator. (Diverge means to spread apart or move away from each other and is the opposite of converge.)

19. (4) a low pressure system is approaching from the west – The arrow in the diagram shows the weather moving from west to east. On the left side of the diagram there is a low pressure center (the numbers on the isobars get lower closer to the center of the "bulls-eye" that is just starting to appear on the left side of the picture). Therefore a low pressure system must be moving across the map from the west to the east.

20. (2) increase – The difference in pressure is the Pressure Gradient Force (PGF). The greater the difference in pressure, the faster the winds.

21. (1) anemometer – just a fact.