WASHINGTON STATE WEATHER

Number _____

Name _____

Date _____ Period _____

Some things you need to know:

I. Washington State is located in the mid-latitudes which is about half way between the equator and north Pole.

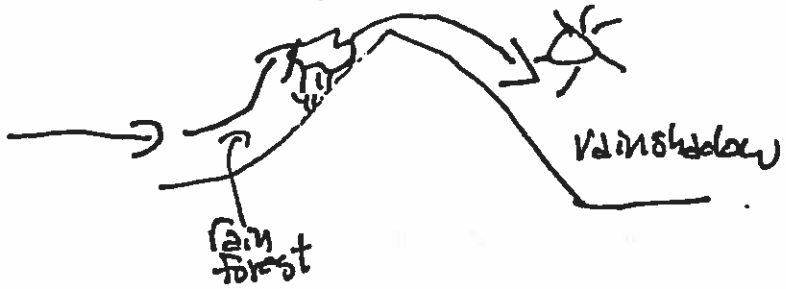
II. Washington's weather in the winter is influenced by jet stream directed low pressure systems from the pacific ocean (west).

III. In the summer the weather is sunny due to the influence of the seasonal sub-tropical high pressure zone.

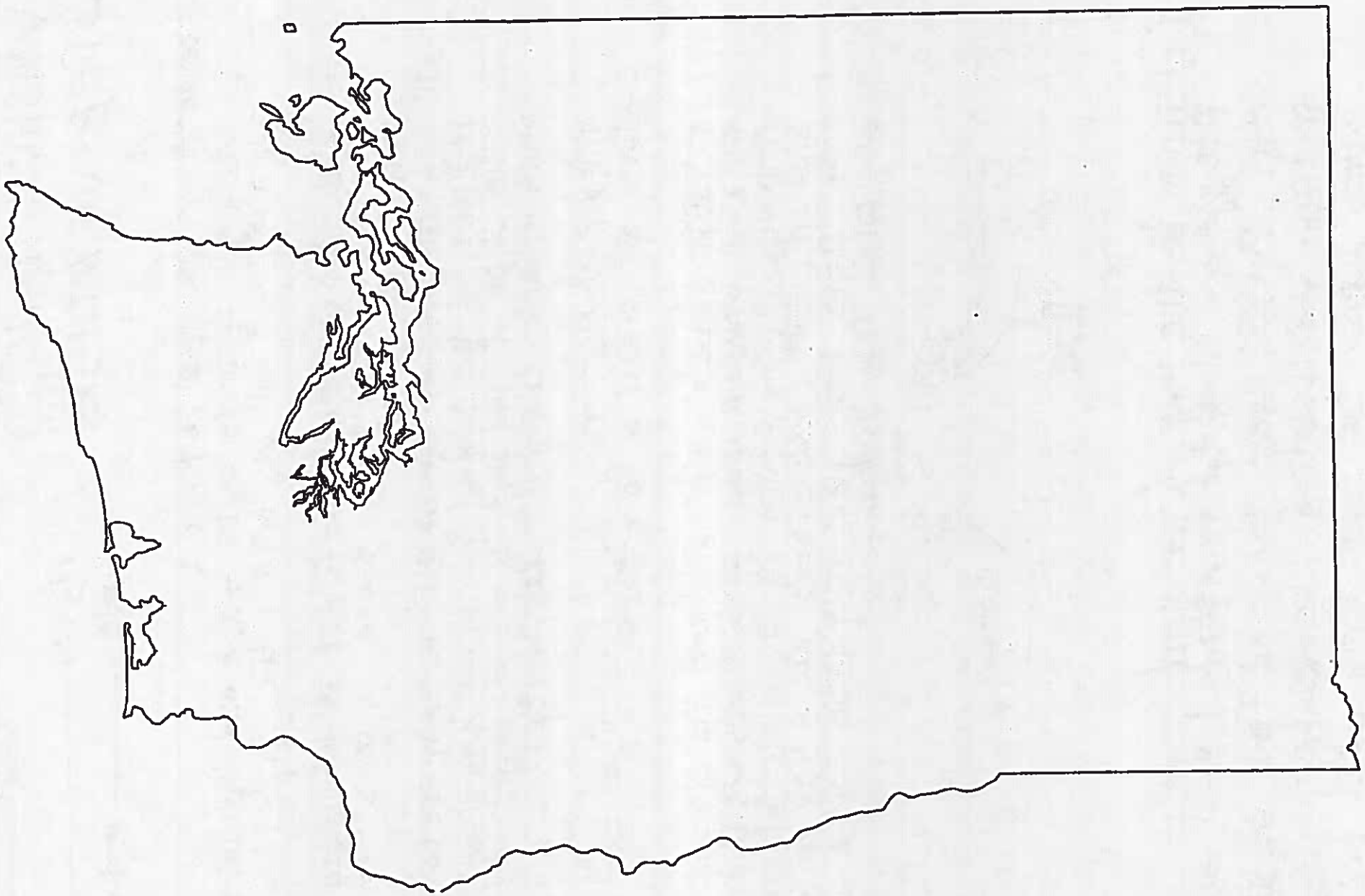
IV. The shape of the land is one of biggest factors which influences Washington State weather.

MOUNTAIN RANGES: These block incoming fronts. They can force air around or over them

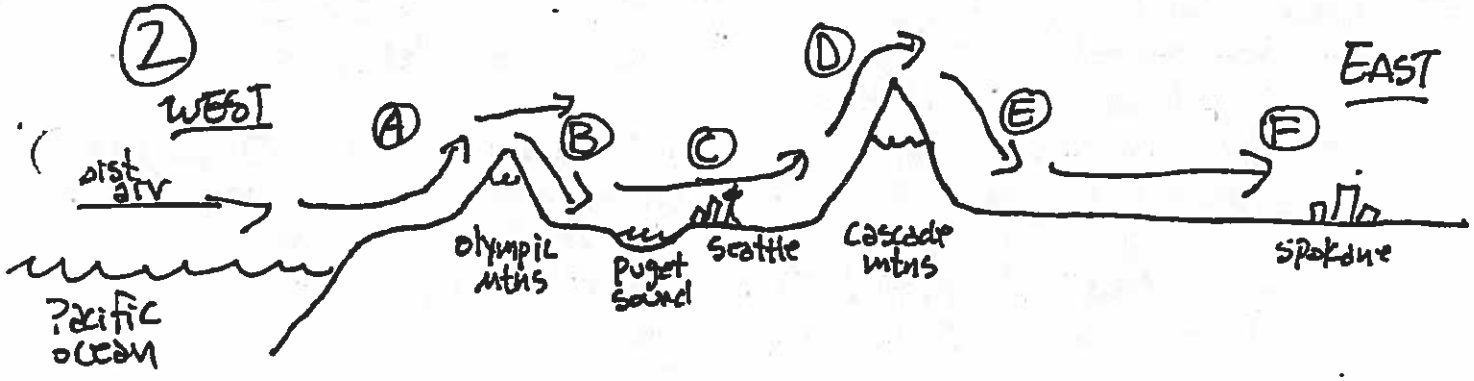
- <u>Rain Shadow</u>: air is forced to rise up over a mountain range. when it goes up, it rises, contracts, rains. when it is on the other side it sinks, and expands like a high pressure area. These areas have very little rain and are called rain shadows



(1) Turn to the map on the next page. Put ## on all of the <u>rain shadow</u> areas on the map. Put ∴ where you would find <u>above</u> average precipitation. Remember, weather moves across the state from west to East.



(2)



Describe the weather at points (A) and (D)

— Explain in terms of temperature + energy and pressure

Describe the weather at points (B) and (E)

— Explain in terms of temperature, energy, and pressure.

(3) Seattle is near point (C) and gets 35 inches of rain a year. Spokane is near point (E) and gets only 15 inches of rain a year. Explain why Spokane gets less rain than Seattle.

(4) Try and guess why Spokane is hotter than Seattle in the summer and why Spokane is colder than Seattle in the winter.

THE PUGET SOUND CONVERGENCE ZONE

- Sometimes air can't flow over mountains so it flows around them.
- Air from the Pacific flows around the Olympic mountains through the Willapa gap and the Strait of Juan de Fuca. It collides over the central Puget Sound area. This is the Puget Sound convergence zone.

(5) Draw arrows on your map which show the Puget Sound convergence zone.

(6) When the air collides over Puget Sound it makes it rain. Explain how this happens

(7) In the Puget Sound convergence zone does the air behave like a high or low pressure area? Explain

HOW WE GET SNOW IN WESTERN WASHINGTON

- one inch of rain equals 10 inches of snow
- you get snow when the temperature drops below freezing.
- Therefore <u>cold</u> air needs to collide with moist air.

(8) Look on the map. Eastern Washington has trapped cold air to the east of the Cascade mountains. Name two gaps in the Cascade mountain range where cold air can flow from eastern Washington to Western Washington.

⑨ wet weather in winter usually hits the state from the Southwest. This means that Sequim is in a rainshadow — they get 10 inches of rain a year. A few winters ago, Sequim got 14 inches of snow and the rest of western Washington didn't.

— Look on the map. where would the cold air be flowing from? (would it becoming from the North or South)

— Explain how this would create a lot of snow in Sequim

— MOISTURE DENSITY: when it starts to snow, the air is not cold enough so the snow melts when it falls. When it melts from a solid to a liquid, it takes energy from the air, so this makes the air colder. When the air gets colder, the freezing level drops lower. When it starts snowing hard there is enough melting snow to lower the air temperature enough so that the snow doesn't melt and the snow sticks — this is called moisture density. If it is not snowing hard, it will not get cold enough to stick

⑩ Using the idea of moisture density explain why why we get more snow in the central Puget Sound area (hint: think of the Puget Sound convergence zone)

(11) Weather prediction is <u>very</u> difficult in western Washington. List as many variables as you can think of that would make weather prediction hard.

(12) Small local weather conditions are called micro climates. An example might be that 3 houses on your street never get as much snow as everyone else. Describe a local micro climate you have observed in the North Kitsap area — why do you think they happen?

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