Two Numbers Make a Biome Lab

Name _____

Date _____

Period _____

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Forks and Yakima, Washington: same latitude, same temperature. One is a rainforest. One is dry sagebrush. Why?

☐ I can place real climate data on a grid and find the groups. ☐ I can explain how temperature and precipitation decide which biome grows. ☐ I can explain why rainforests and deserts are where they are.

Part 1. The card sort (Tab 1)

SEP 4 Analyzing Data · CCC Patterns

Press **Put Forks on the grid** and **Put Yakima on the grid**. Place cards **A** to **J**: drag each card, or pick a letter and tap the grid. Loop the close cards. Then press **Open the strips**.

Example: a card that says 30 °F and 12 in goes across the bottom to 30, then up to 12.

1. Two towns in Washington.

Town	Latitude	Year average (°F)	Rain and snow (in)
Forks			
Yakima			

2. Which number is very different? Tick one.

☐ latitude
☐ temperature
☐ rain and snow

WORD BANK for Q3: tall broadleaf trees · cactus, sand or gravel · short grasses · oak and maple · pine and spruce · mosses, no trees · palm trees · rice fields

3. Write the cards in each loop. After you open the strips, write what grows there. Use the word bank.

Loop	Cards	What grows there	Loop	Cards	What grows there
1			**4**		
2			**5**		
3			**6**		

Cards in the same loop grow ☐ similar plants ☐ very different plants

READ FIRST. In the lab, find the green **Learn It** box and read it. Then answer 4 to 5.

WORD BANK for Q4: climate · plants · temperature · precipitation · latitude · soil

4. A **biome** is a large region with a similar _____ and similar _____ and animals. The two numbers that decide a biome are the yearly _____ and the yearly _____.

5. Hilo (card A) and Manaus (card B) are 6,000 miles apart. Both are ☐ warm ☐ cold and both get ☐ a lot of rain ☐ very little rain.

So both grow the same biome: ☐ tropical rainforest ☐ desert ☐ tundra

Part 2. The biome map (Tab 2)

SEP 7 Arguing from Evidence · CCC Structure and Function

Press **Show the biome regions** and pick each of the six biomes. For **7**, look closer at cards **C** and **E**.

CLUE: Warm = right side. Cold = left side. Wet = high up. Dry = near the bottom.

6.

Biome	Cards in it	Where it sits on the grid
Tropical rainforest		☐ warm and wet ☐ dry ☐ in the middle ☐ cold
Desert		☐ warm and wet ☐ dry ☐ in the middle ☐ cold
Grassland		☐ warm and wet ☐ dry ☐ in the middle ☐ cold
Temperate deciduous forest		☐ warm and wet ☐ dry ☐ in the middle ☐ cold
Boreal forest		☐ warm and wet ☐ dry ☐ in the middle ☐ cold
Tundra		☐ warm and wet ☐ dry ☐ in the middle ☐ cold

7. Card C: _____°F, _____ in. Card E: _____°F, _____ in. Both are in the ☐ desert ☐ tundra region.

READ FIRST. In the lab, find the green **Learn It** box and read it. Then answer 8 to 9.

8. Which biome is each plant built for? Tick one box in each row.

How the plant is built	Biome
A thick stem that stores water, with spines and no leaves	☐ desert ☐ boreal forest ☐ deciduous forest
Thin, waxy needles that stay green all year	☐ desert ☐ boreal forest ☐ deciduous forest
Broad, flat leaves that drop in fall	☐ desert ☐ boreal forest ☐ deciduous forest

A cactus stem stores ☐ water ☐ snow for dry months.

9. "Deserts are always hot." This claim is ☐ true ☐ false. Card E (the Gobi) is _____°F and gets _____ in.

A desert is a place with ☐ very little rain and snow ☐ hot weather all year

Part 3. Rising air and the rain shadow (Tab 3)

SEP 2 Using Models · CCC Cause and Effect

Follow the air. Marker to **0°** and **30° N**. **Over a mountain: 0**, **2,000**, **4,000**, **6,000** ft, **Send in ocean air** each time.

10. Around the world.

Where the air is	Air temp (°F)	Water it carries
Ground at 0° (the start)		
Top, about 10 miles up		
Ground at 30° N		

11. Over a mountain.

Mountains	Ocean side (in)	Far side (in)	Water left at the top
0 ft			
2,000 ft			
4,000 ft			
6,000 ft			

Marker: at 0° the air is ☐ rising ☐ sinking. At 30° N it is ☐ rising ☐ sinking. Card B: _____ in. Card D: _____ in.

READ FIRST. In the lab, find the green **Learn It** box and read it. Then answer 12 to 13.

WORD BANK for Q12: rises · sinks · rain · desert · snow · forest

12. At the equator, warm wet air _____ and cools, so it drops _____. Near 30°, dry air _____ and warms, so the land there is often a _____.

13. Forks is on the ☐ ocean side ☐ far side of the mountains. Yakima is in the ☐ rain shadow ☐ rainforest

With 6,000 ft mountains, the ocean side gets _____ in and the far side gets _____ in.

Part 4. Buffalo and city L (Tab 4)

SEP 6 Explanations · CCC Stability and Change

Place card **K** (Buffalo) and card **L** (a mystery city). Then, in **A drier Buffalo**, record **30**, **15** and **5** inches.

14. Two new cards. Biome: forest, grassland or desert.

Card	Latitude	°F	Inches	Biome
K: Buffalo				
L: city L				

15. A drier Buffalo, still 49°F.

Rain and snow	Lands in
41 in (today)	☐ forest ☐ grassland ☐ desert
30 in	☐ forest ☐ grassland ☐ desert
15 in	☐ forest ☐ grassland ☐ desert
5 in	☐ forest ☐ grassland ☐ desert

READ FIRST. In the lab, find the green **Learn It** box and read it. Then answer 16 to 17.

16. Both are at 43° N. Buffalo: _____ in. City L: _____ in. The biomes differ because of ☐ rain and snow ☐ latitude

17. After 100 years of 15 inches, Buffalo's forest would likely ☐ stay the same ☐ change toward grassland

One dry year would ☐ change the biome ☐ not change the biome, because one year is ☐ weather ☐ climate

Wrap it up

SEP 7 Arguing from Evidence · CCC Patterns

18. "If you know a place's latitude, you know its biome." I ☐ agree ☐ disagree

Same latitude, different biomes: _____ and _____. Far apart, same biome: _____ and _____.

NYSSLS: toward HS-ESS2-7, HS-ESS2-5, HS-LS2-6. Environmental Science, Chapter 6 introduction, Lessons 6.1 and 6.2.