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 and Interpreting Data · CCC Patterns

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

1. Two towns in Washington.

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

2. Which number is very different for the two towns? Tick one.

☐ latitude ☐ temperature ☐ rain and snow

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

Loop	Cards	What grows there (from the strips)	Loop	Cards	What grows there (from the strips)
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.

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. Card A (Hilo, Hawaii) and card B (Manaus, Brazil) are about 6,000 miles apart. Why do they grow the same biome? Use both of their numbers.

Part 2. The biome map (Tab 2)

SEP 7 Engaging in Argument from Evidence · CCC Structure and Function

Press **Show the biome regions** and pick each of the six biomes. For **6**, write the cards in each biome, then tick where it sits on the grid (one box in each row). For **7**, look closer at cards **C** and **E**.

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 _____ 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

Pick one row. How does that build help the plant live in its climate? _____

9. A classmate says, "Deserts are always hot." This claim is ☐ true ☐ false

Evidence (card E's two numbers): _____ A desert is a place with _____

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

SEP 2 Developing and Using Models · CCC Cause and Effect

Around the world: press **Follow the air** and watch it all the way around. Move the marker to **0°** and **30° N**. **Over a mountain:** set **0**, **2,000**, **4,000** and **6,000** ft, and press **Send in ocean air** each time.

10. Around the world.

Where the air is	Air temperature (°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 _____. At 30° N it is _____. Card B gets _____ in. Card D gets _____ in.

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

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. Why does Forks get 120 inches a year and Yakima only 8? Use the words **rain shadow** and two numbers from Q11.

Part 4. Buffalo and city L (Tab 4)

SEP 6 Constructing 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.

Card	Latitude	°F	Inches	Biome on the grid
K: Buffalo				
L: city L				

15. A drier Buffalo, still 49°F.

Rain and snow	Lands in
41 in (today)	
30 in	
15 in	
5 in	

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

16. Buffalo and city L (Turpan) are both at 43° N. Why do they grow different biomes? Use both numbers for both places.

17. If Buffalo got only 15 inches a year for 100 years, its forest would likely
☐ stay the same ☐ change toward grassland

Would one dry year do the same? Why or why not? _____

Wrap it up

SEP 7 Engaging in Argument from Evidence · CCC Patterns

18. A classmate says, "If you know a place's latitude, you know its biome." Argue against this claim. Use one pair of places at about the same latitude, and one pair that are far apart but grow the same biome.

NYSSLS: building toward HS-ESS2-7, HS-ESS2-5 and HS-LS2-6 (DCI ESS2.D, ESS2.C, LS2.C). Environmental Science, Chapter 6 introduction, Lesson 6.1 and Lesson 6.2: What Are the Major Types of Terrestrial Ecosystems? (pp. 156-179). SEP = Science and Engineering Practice, CCC = Crosscutting Concept. Cards: real 1991 to 2020 normals (NOAA, WMO).