Temperature, Rainfall, and Biome Distribution Activity

🔴 In this lab you will investigate the relationship between the amount of rainfall and the variance of temperature and the effect on the distribution of biomes globally.

🔴 You will find below six examples of climatograms, grids on which averages of precipitation and temperature at a particular location are plotted together. These climatograms show variations in only two important climatic factors during a year. Other factors may greatly affect climate, but a climatogram does give a rough idea of climate in the location from which the data were obtained.

Biomes are closely associated with climate. You can easily associate the climate of your own locality with the biome found there. Only by extensive travel, however, can the close relationship of particular climates with particular biomes be learned on a worldwide basis. This exercise is a poor substitute for such travel; but if it is carried out thoughtfully and with frequent reference to the description of biomes in the text, it can help you understand the biological relationships that make up the diversity of the biotic communities found on land.

Purpose:

This exercise provides practice in associating climate (as expressed in monthly averages of precipitation and temperature) with biomes. You will also make predictions about the distribution of a biome via altitude and latitude.

Procedure:

Follow the instructions below and answer any questions in your notebook. You will need the following: Blank climatogram sheets and precipitation and temperature data (see below).
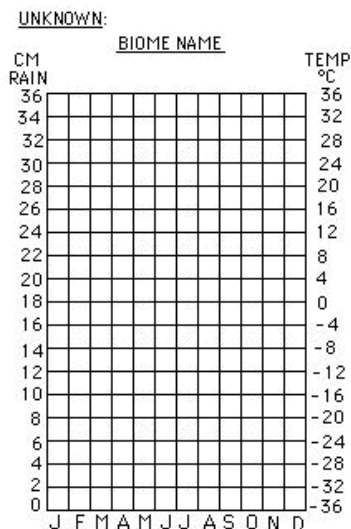
Graph the climate figures for precipitation and temperature for the four locales in Group 1 onto your blank climatogram sheets (ex. on left). Be sure that you label each with it's biome name. Also be extremely careful as to how you record the information. All temperature readings are measured on the right side of the climatogram. All precipitation measurements are on the left side of the climatogram. Be sure to draw line a graph for temperature and a bar graph for precipitation.

Group 1

Cuiaba, Brazil: Tropical Deciduous Forest

	J	F	M	A	M	J	J	A	S	O	N	D
P:	24.9	21.1	21.1	10.2	5.3	0.8	0.5	2.8	5.1	11.4	15	20.6
T:	27.2	27.2	27.2	26.6	25.6	23.9	24.4	25.6	27.8	27.8	27.8	27.2

Santa Monica, California: Chaparral

	J	F	M	A	M	J	J	A	S	O	N	D
P:	8.9	7.6	7.4	1.3	1.3	0	0	0	0.3	1.5	3.5	5.8
T:	11.7	11.7	12.8	14.4	15.6	17.2	18.9	18.3	18.3	16.7	14.4	12.8

Moshi, Tanganyika: Tropical Grassland

	J	F	M	A	M	J	J	A	S	O	N	D
P:	3.6	6.1	9.2	40.1	30.2	5.1	5.1	2.5	2	3	8.1	6.4
T:	23.3	23.2	22.2	21.1	19.8	18.4	17.9	18.4	19.8	21.4	22	22.4

Aden, Aden: Tropical Dessert

	J	F	M	A	M	J	J	A	S	O	N	D
P:	0.8	0.5	1.3	0.45	0.3	0.3	0	0.3	0.3	0.3	0.3	0.3
T:	24.6	25.1	26.4	28.5	30.6	31.9	31.1	30.3	31.1	28.8	26.5	25.1
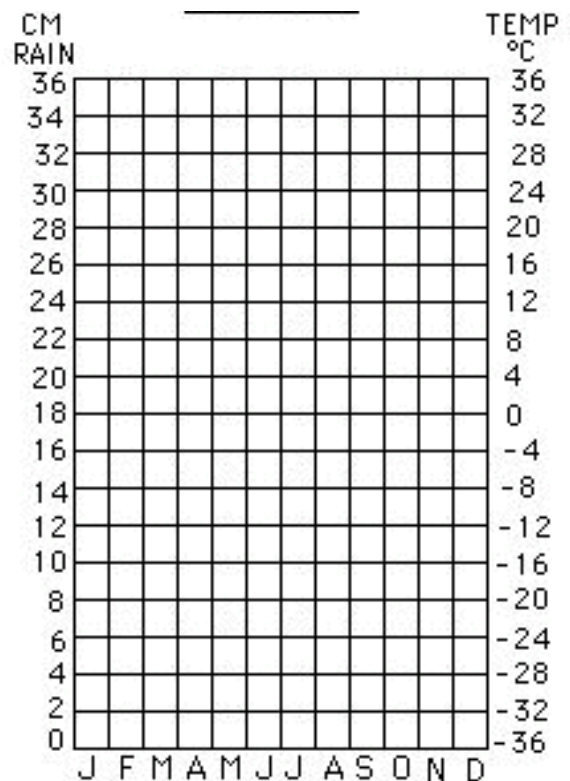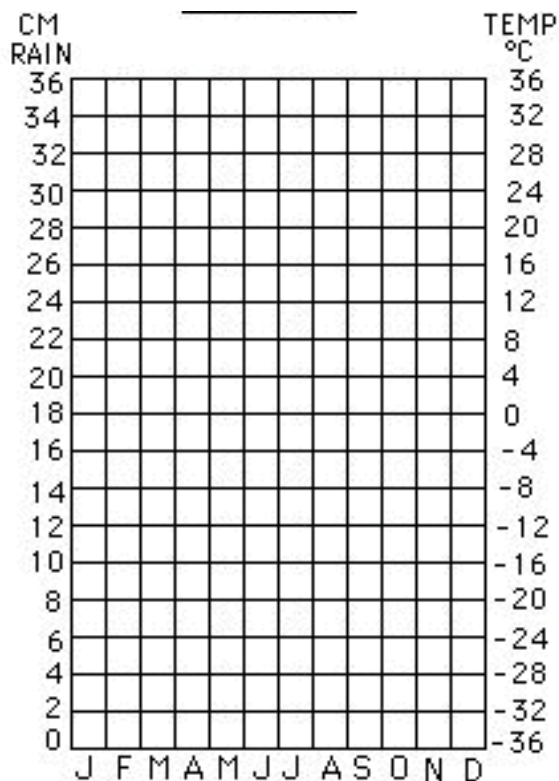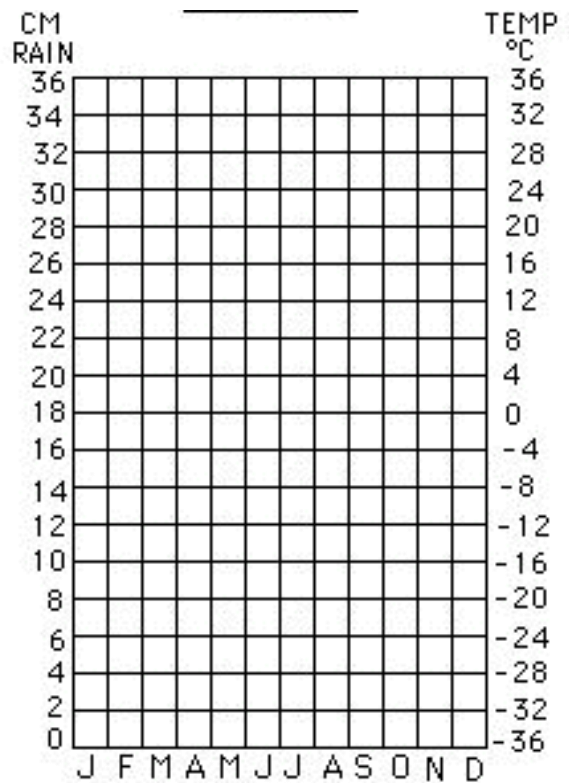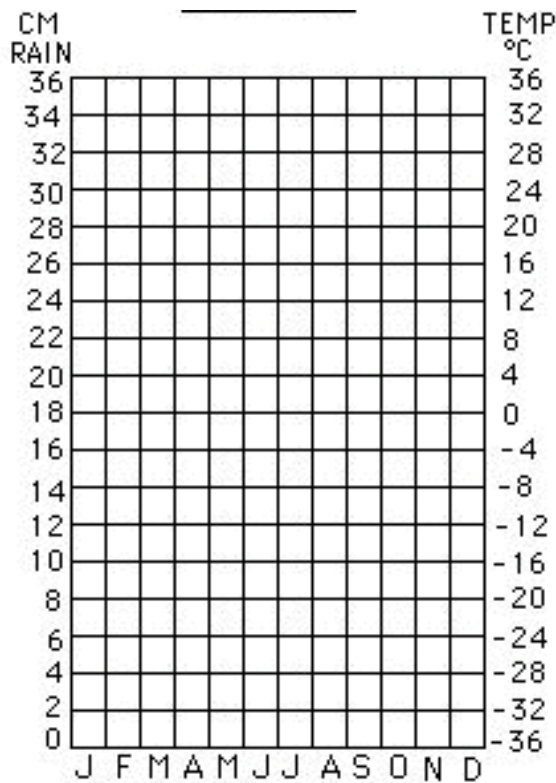
🟤 **Combined with the six climatograms given as examples (see below), you now have ten climatograms representing ten different biomes found worldwide.**

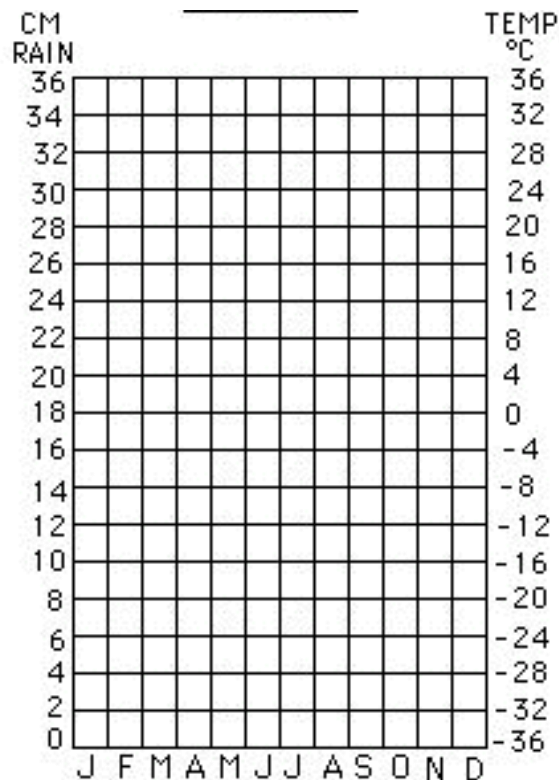
TUNDRA
Barrow, Alaska

Taiga
Anchorage, Alaska

Middle-Latitude Deciduous Forest
Nashville, Tennessee

Tropical Rain Forest
Manokwari, New Guinea

Middle-Latitude Grassland
Lawrence, Kansas

Middle-Latitude Desert
Reno, Nevada
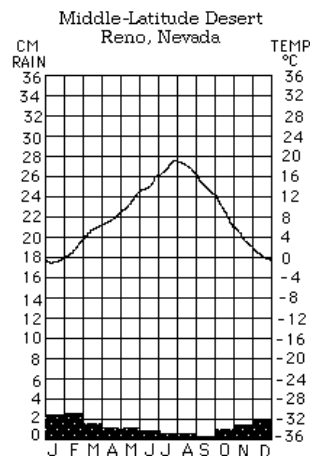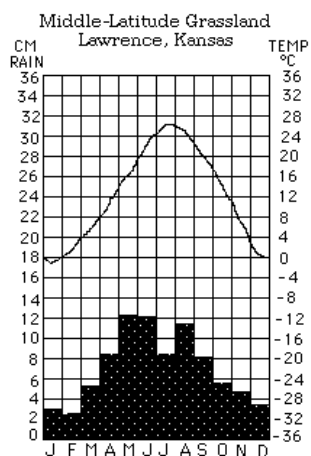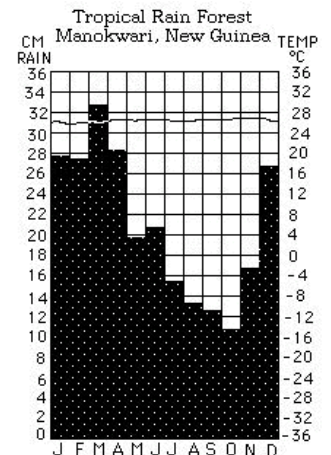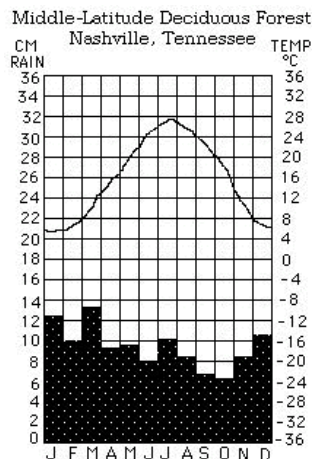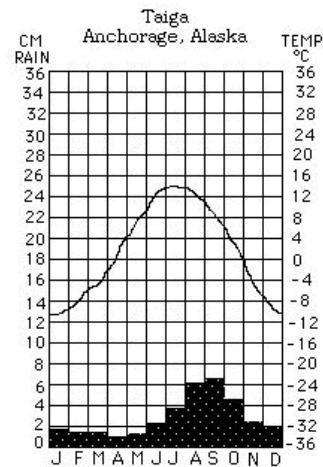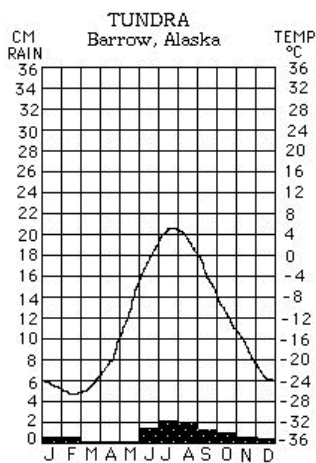
Now graph the information for San Francisco.

● San Francisco

	J	F	M	A	M	J	J	A	S	O	N	D
P:	4.5	2.8	2.6	1.5	0.3	0.1	0	0.1	0.2	1.1	2.5	3.5
T:	13.0	15.0	16.0	17.0	17.0	19.0	18.0	18.0	21.0	20.0	17.0	14.0

Compare the climatogram for San Francisco with the ten knowns. What biome is San Francisco found in? If needed estimate for a best-fit guess.

1. Which biome has the lowest temperatures throughout the year?

2. Which biome has the most regular rainfall?

3. Which biome has the most irregular rainfall pattern?

4. What similarities are there between the arctic tundra in Barrow, Alaska, and the desert biome in Reno, Nevada?

5. What are the major differences between the grasslands biome and the northern desert biome?