BIOMES OF "A LONG WALK TO WATER"

<u>This set of exercises can be teacher led, or done by students on their own. Follow the instructions below for either teacher-led exercises, or for independent student exercises .</u>

INSTRUCTIONS FOR TEACHER LED EXERCISES:

This lesson is designed to be an interactive, web-based lesson.

<u>For Exercise 1:</u>
1. Give students the attached "Biome Map Worksheet".
2. Have the students go to the "Boundless Biomes" website from Arizona State University at https://askabiologist.asu.edu/explore/biomes to complete the worksheet. (NOTE: the worksheet is also available on the right hand side of the page on that website under "Biome Bits" in the yellow boxes.)
    a. NOTE: There is a Share to Google Classroom button at the bottom of the yellow boxes on the right hand side of the screen where you can share the website with the students so they do not have to enter it into their computer.
3. Once students have completed the map, move on to Exercise 2.

<u>For Exercise 2:</u>
1. Go to the following website https://www.waterforsouthsudan.org/for-educators/
    a. Scroll down to "Extension Activities"
    b. Click on "A Google Earth Map of Where Salva Walked"
    c. Project the map on to your SmartBoard or screen so that the class can see the map.
    d. Have students complete the attached worksheet about "Biomes Salva Travelled Through During his Journey".
    e. This map is interactive, you can zoom in on the path that he walked from Sudan to Kenya, and then zoom out to see where he took flights to in order to get the New York.

INSTRUCTIONS FOR INDEPENDENT STUDENT EXERCISES:
1. Copy the worksheets for the Independent Student Exercises.
2. All instructions that students will need to follow is included on the worksheets.
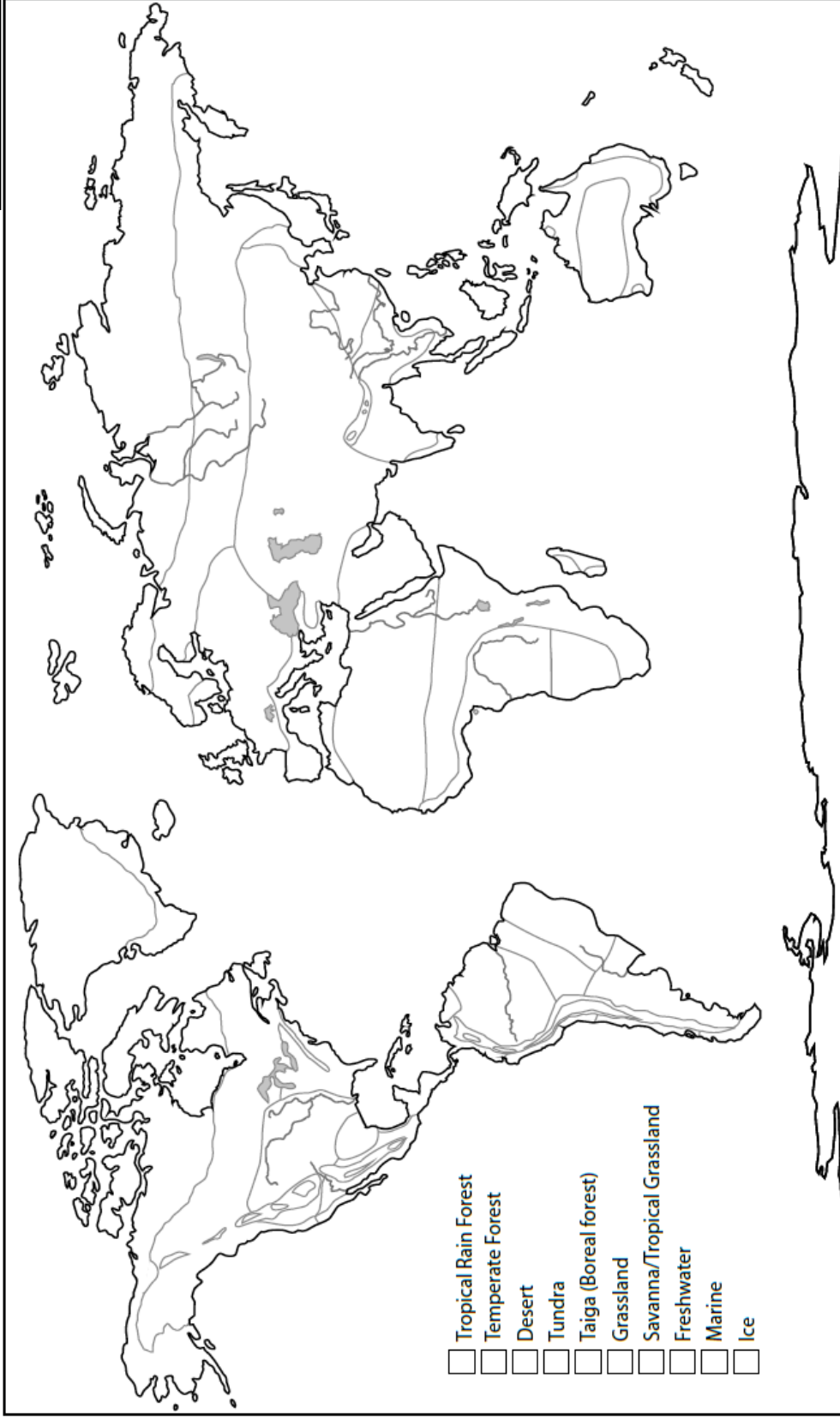
Worksheets for Teacher-led Exercises

Biomes

Biome Map Coloring Worksheet

- ☐ Tropical Rain Forest
- ☐ Temperate Forest
- ☐ Desert
- ☐ Tundra
- ☐ Taiga (Boreal forest)
- ☐ Grassland
- ☐ Savanna/Tropical Grassland
- ☐ Freshwater
- ☐ Marine
- ☐ Ice

Often biologists group the different natural areas on Earth into categories based on plant and animal life and how they are able to survive in that part of the world. These are called biomes. Grouping organisms into biomes help us to better understand the complexity of life on Earth.

Go to this web page [askabiologist.asu.edu/explore/biomes] and start learning where the different biomes are located in the world. As your explore, you can color the different regions based on the type of biome.

Exploring Biomes

Use this web page [askabiologist.asu.edu/explore/biomes] to explore the different biomes. As you learn about each one use this sheet to write about some of the **plants** and **animals** found in each biome. Also include some of the **characteristics** of each biome.

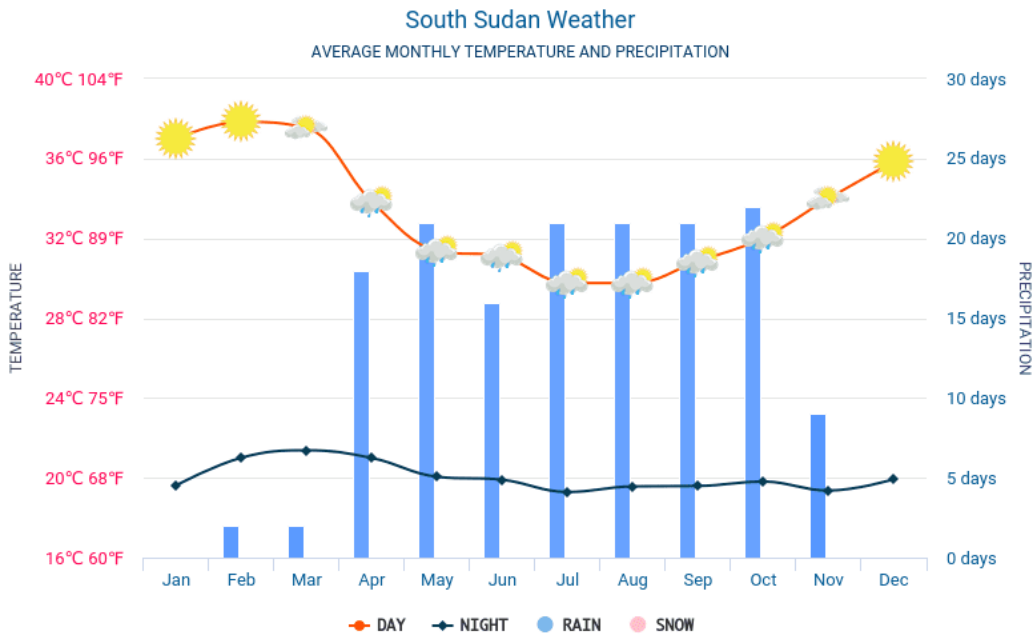| Tropical Rainforest	Grassland
Temperate Forest	Savanna
Desert	Freshwater
Tundra	Marine (Coastal)
Taiga	Marine (Open Ocean

EXERCISE 2: Biomes Salva Travelled Through During his Journey

PART 1: Compare the map you just colored with the map that your teacher is sharing with you of Salva's journey. Answer the questions below.

1. What Biome does Salva start his journey from?

2. Describe this biome. (Temperature, plants, animals, etc.)

3. When Salva lands in New York, what biome is he in now?

4. Describe this biome. (Temperature, plants, animals, etc.)

5. Given what you have learned about these two biomes, why is Salva so shocked when he gets off the plane in New York? (HINT: look back at Chapter 15, what season had Salva never heard of?)
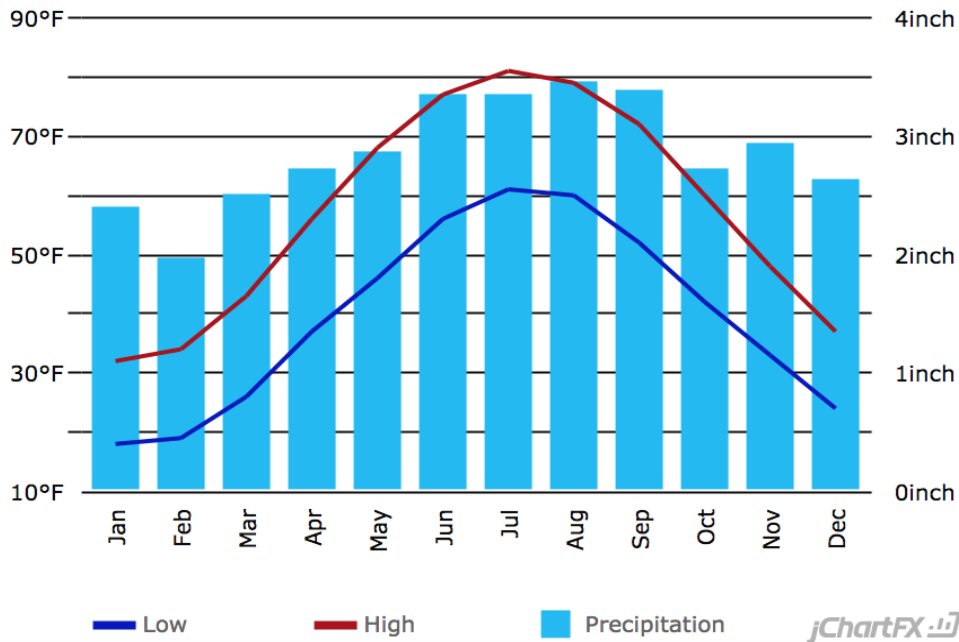
PART 2: Data Analysis

Use the graphs below to answer the questions after the graphs.

South Sudan Weather
AVERAGE MONTHLY TEMPERATURE AND PRECIPITATION

Graph from http://hikersbay.com/climate/southsudan?lang=en, Aug 3, 2020

Rochester Climate Graph - New York Climate Chart

Graph from https://greatruns.com/location/rochester-ny/, Aug 3, 2020

1. Fill in the chart below with data from the graphs.

Location	Average High or Daytime Temperature in January (^{0}F)	Average Low or Night-time Temperature in January (^{0}F)	Average Low or Night-time Temperature in July (^{0}F)	Average High or Daytime Temperature in July (^{0}F)
South Sudan				
Rochester, NY				

a. What is the difference in average "High or Daytime" temperature in January between South Sudan and Rochester, NY?

b. What is the difference in average "Low or Night-time" temperature in January between South Sudan and Rochester, NY?

c. What is the difference in average "High or Daytime" temperature in July between South Sudan and Rochester, NY?

d. What is the difference in average "Low or Night-time" temperature in July between South Sudan and Rochester, NY?

e. What biome is South Sudan located in? _____

f. What biome is Rochester, New York located in? _____

g. What conclusions can you make regarding the temperature differences of these 2 biomes? Be specific. Include overall temperature variation, seasons or no seasons, etc.

2. Looking at the climate graphs. Which location appears to have a "rainy season"? Explain why you chose your answer based on the graph data.
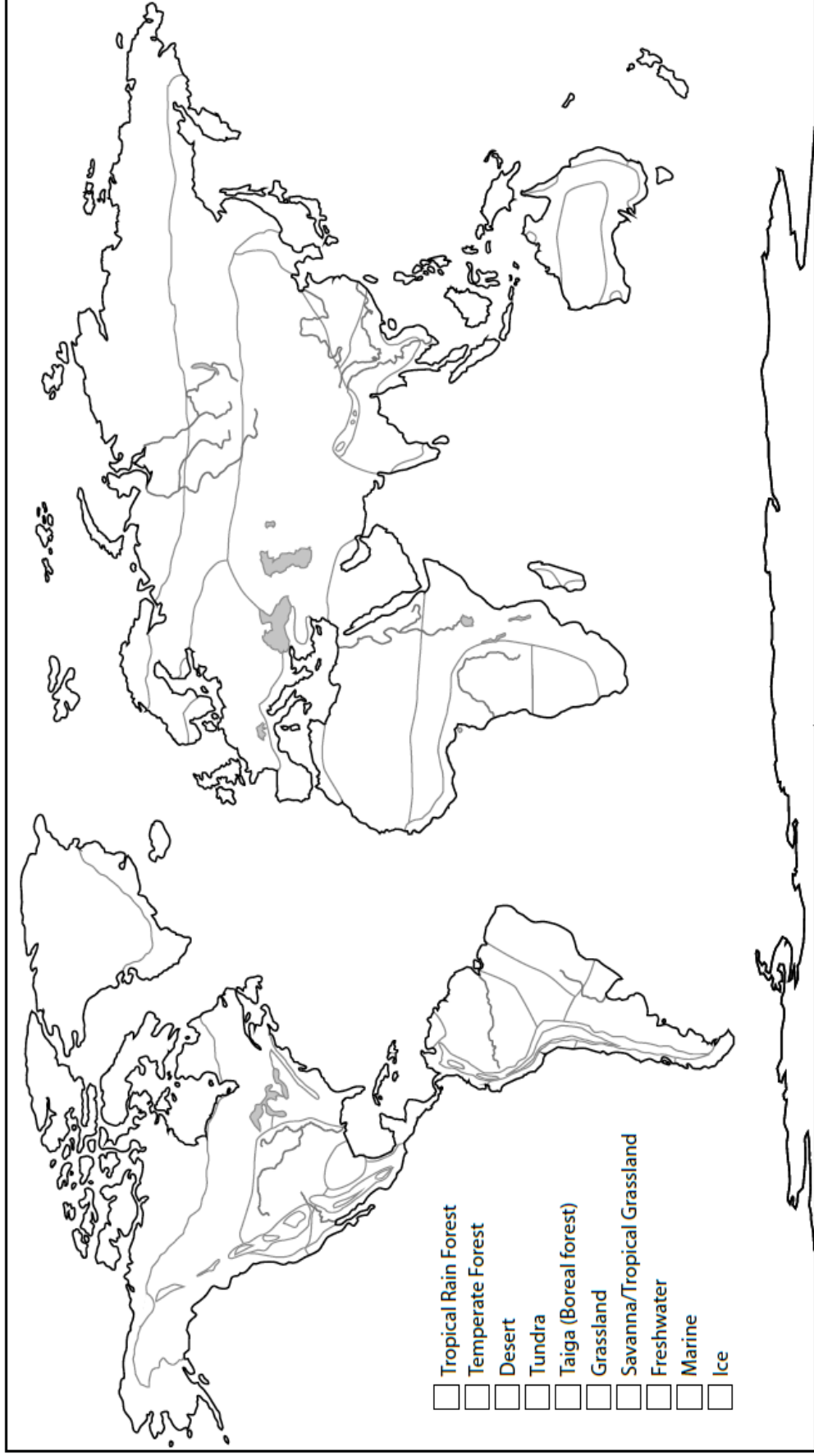
Independent Student Exercises

Biomes

Image from: https://earthobservatory.nasa.gov/experiments/biome, accessed Aug. 3, 2020

Biomes and "A Long Walk to Water"

This in an interactive, web-based lesson, you will need your computer out for this one.

EXERCISE 1: BIOMES OF THE WORLD, MAPPING BIOMES
Go to the "Boundless Biomes" website from Arizona State University at
https://askabiologist.asu.edu/explore/biomes to complete the following 2 worksheets. On these worksheets you will be making a map of the biomes of the world and comparing their characteristics.

Answer the following questions first upon getting to the website:

1. Define a biome:

2. What are the 7 major land biomes?
   1.)

   2.)

   3.)

   4.)

   5.)

   6.)

   7.)

3. What are the two major aquatic biomes?
   1.)

   2.)

Time to Map Them!!!

Biome Map Coloring Worksheet

☐ Tropical Rain Forest
☐ Temperate Forest
☐ Desert
☐ Tundra
☐ Taiga (Boreal forest)
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Tropical Rainforest	**Grassland**
Temperate Forest	**Savanna**
Desert	**Freshwater**
Tundra	**Marine (Coastal)**
Taiga	**Marine (Open Ocean**

EXERCISE 2: Biomes Salva Travelled Through During his Journey

Instructions:

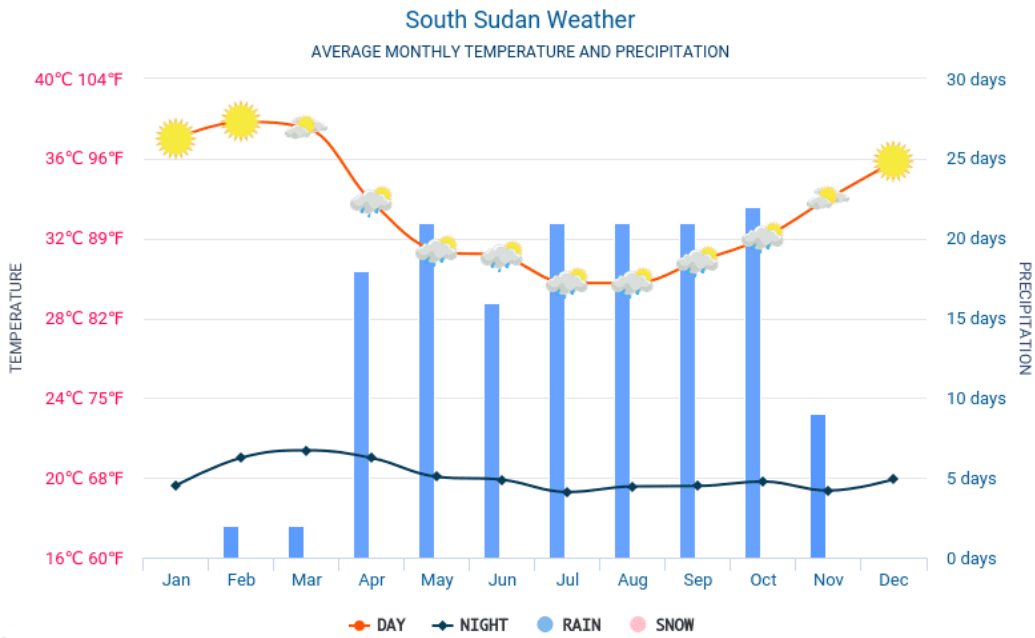Go to the following website https://www.waterforsouthsudan.org/for-educators/

a. Scroll down to "Extension Activities"
b. Click on "A Google Earth Map of Where Salva Walked"
c. This map is interactive, you can zoom in on the path that he walked from Sudan to Kenya, and then zoom out to see where he took flights to in order to get the New York.

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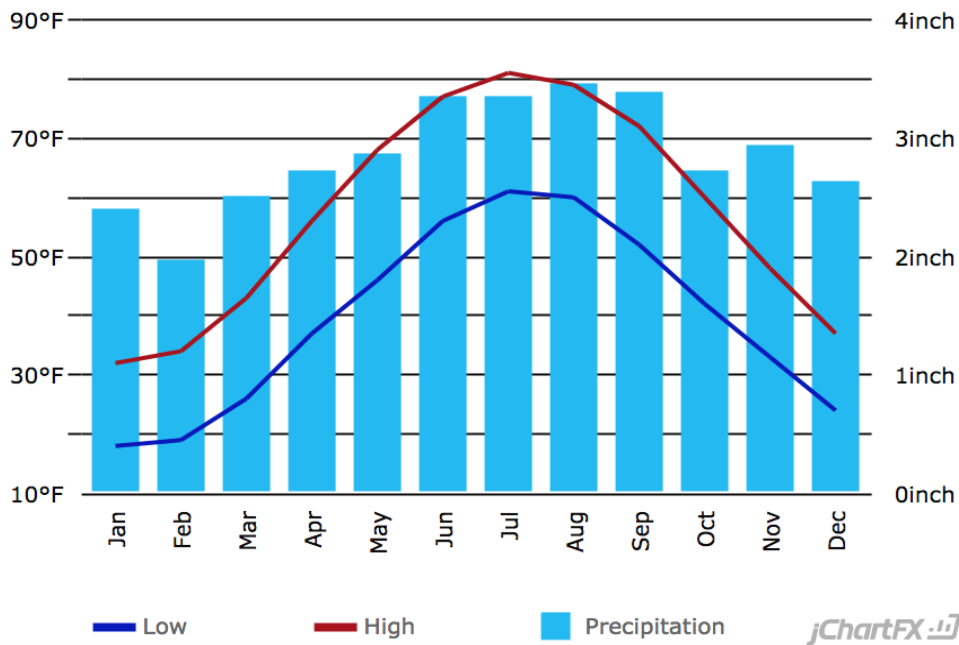
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REFERENCES FOR WORKSHEETS:

Hikersbay.com, & Moser, M. (2019, May 08). South Sudan: Weather - average temperatures in the day and at night, sunny and cloudy days. Annual rainfall and snowfall in South Sudan. Retrieved August 03, 2020, from http://hikersbay.com/climate/southsudan?lang=en

Lowenstein, M. (2020). Running in Rochester, NY. Best routes and places to run in Rochester. Retrieved August 03, 2020, from https://greatruns.com/location/rochester-ny/

Moeller, K. (2013, July 19). Boundless Biomes. Retrieved July 31, 2020, from https://askabiologist.asu.edu/explore/biomes

Przyborski, P., & Levy, R. (Eds.). (nd). Mission: Biomes. Retrieved August 03, 2020, from https://earthobservatory.nasa.gov/experiments/biome

Water for South Sudan, Inc. (2020). Water for South Sudan For Educators and Groups. Retrieved July 31, 2020, from https://www.waterforsouthsudan.org/for-educators/