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Lab 56: Ocean Temperatures

Key Words: *No new key words.*

Getting Started:

1. In this activity, you will simulate the work of climatologists who sample ocean surface temperatures and compile that data to investigate global climates. Climatologists often have to collect and analyze huge amounts of data before they can begin making conclusions.

2. Read the introduction and Challenge to Activity 56, "Ocean Temperatures," in your Student Book.

Procedure:

1. Complete the table below. Hint: to convert a temperature from Celsius to Fahrenheit, multiply it by 1.8 and then add 32.

Temperature Conversion

Temperature (°C)	Temperature (°F)
0	
5	
10	
15	
20	
25	
30	

2. Your classmates played the roles of climatologists studying the ocean temperatures on one part of the earth's surface. They each attended Regional Meetings where they gathered this information, then returned to their lab groups and shared their data. Since you missed, you will need to collect the data for all four regions listed below.
    a. northern Pacific Ocean and parts of the Arctic Ocean and Indian Ocean (Student Sheet 56.1a)
    b. northern Atlantic Ocean, Caribbean Sea, Gulf of Mexico, and part of the Arctic Ocean (Student Sheet 56.1b)
    c. southern Atlantic Ocean and parts of the southern Pacific Ocean and Southern Ocean (Student Sheet 56.1c)
    d. parts of the Southern Pacific Ocean, Indian Ocean, and Southern Ocean (Student Sheet 56.1d)

3. You may want to look at a completed copy of Student Sheet 54.1, "World Map," from Activity 54 to help you identify different bodies of water.

4. Begin with Student Sheet 56.1a, "Mapping Mean Ocean Surface Temperatures." Fill in your map, using colored pencils and the Temperature Color Key. Hint: You may use Transparency 56.1, "How to Complete Student Sheets 56.1a-d, 'Mapping Mean Ocean Surface Temperatures,'" that is attached to

this packet to help you. After you have completed Student Sheet 56.1a, move on to complete Student Sheets 56.1b-d.

5. What patterns do you see in the different maps? For example, think about the temperature range, the relationship between temperatures and latitude, and any areas where high or low temperatures seem unusual.

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6. Place the four sections of Student Sheet 56.1 together to form a single world map. What worldwide patterns do you observe in the ocean temperatures? Hint: As you did in Step 5, think about temperature range, relationships between temperatures and latitudes, and any areas of unusually high or low temperatures. Identify similarities and differences between individual sections of the map and the entire map.

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Analysis Questions:

1. What is the temperature range of mean ocean surface temperatures on earth?

2. How do temperatures vary with latitude? Support your answer with evidence from this activity.

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3. Compare your answer to Question 2 above with your answer to Question 2 of Activity 53, "Weather and Climate." What similarities and differences do you notice?

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4. Hurricanes start in areas where the ocean surface temperature is above 26.5 °C (80 °F). At what range of latitudes would you expect most hurricanes to begin? Explain.

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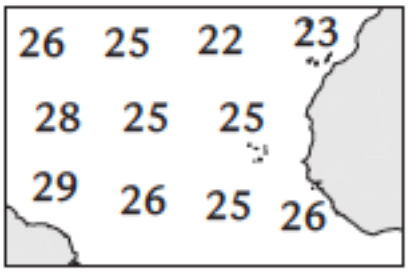
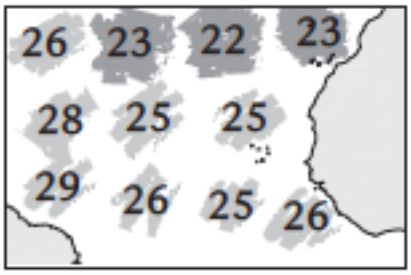
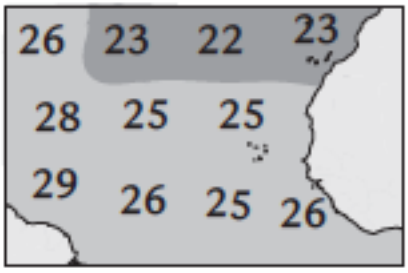
How to Complete Student Sheets 56.1a–d, "Mapping Mean Ocean Surface Temperatures"



Look at the mean ocean surface temperatures shown on your map. Land areas have been shaded gray.



Using the "Temperature Color Key" on the bottom of your map, shade the oceans with their corresponding colors.



When shading, connect regions in the same temperature range.

Be sure to use your colors all the way to the borders of the land.

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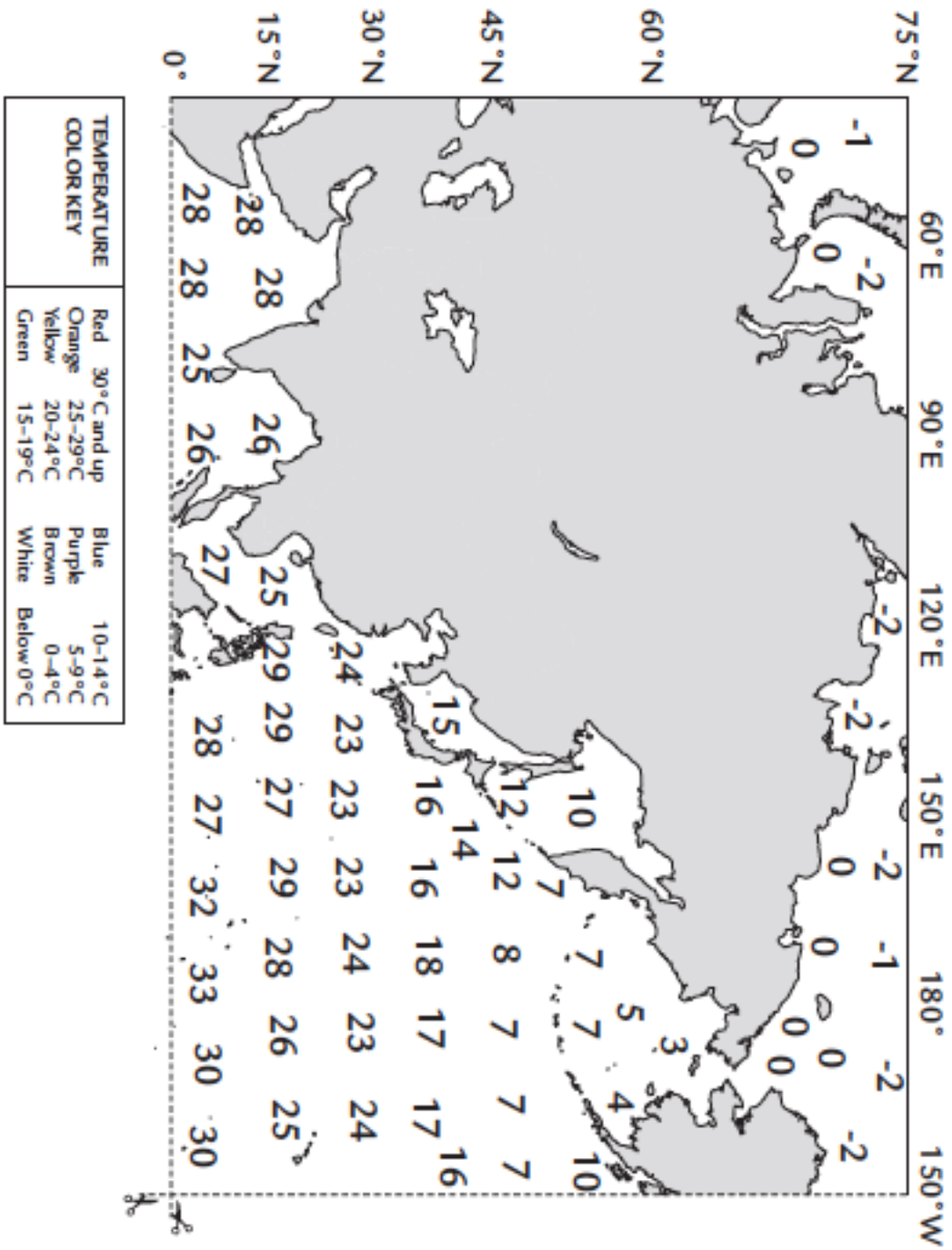
Mapping Mean Ocean Surface Temperatures



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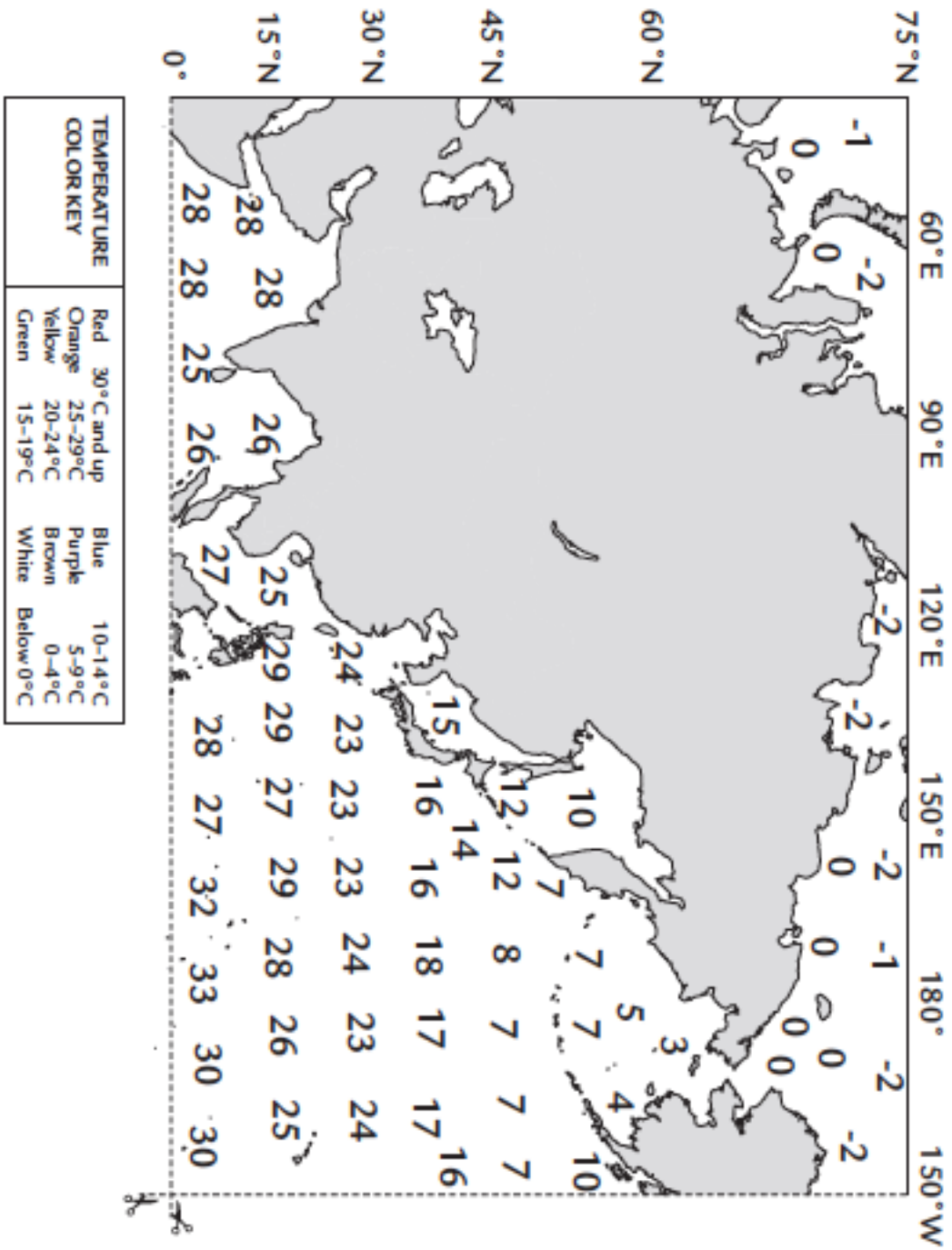
Mapping Mean Ocean Surface Temperatures



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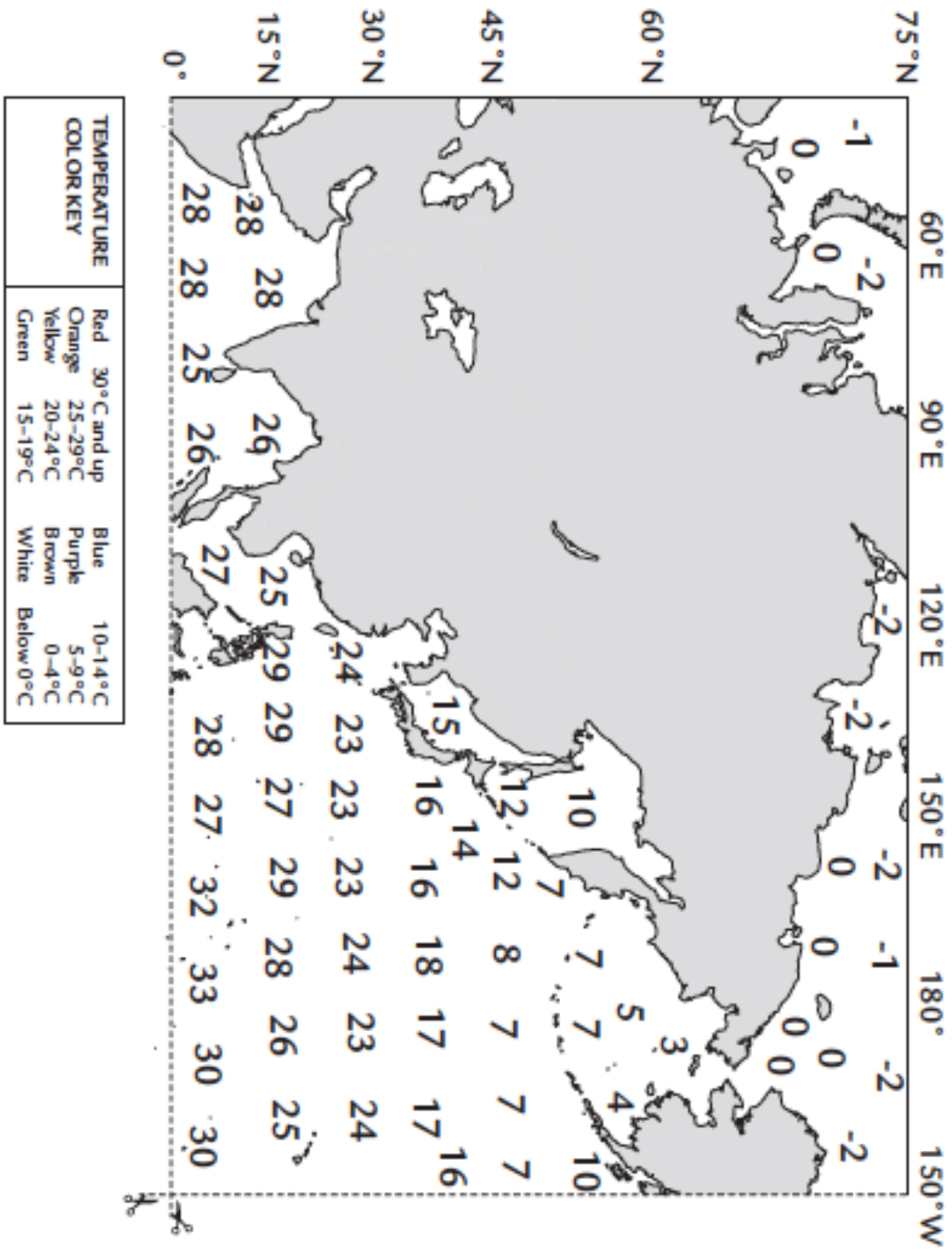
Mapping Mean Ocean Surface Temperatures



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Mapping Mean Ocean Surface Temperatures