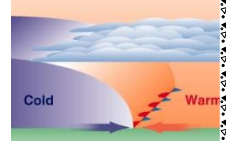# YOU ARE A METEROLOGIST!

★A meteorologist is a scientist who studies the atmosphere to forecast weather in a given area.

## ASSIGNMENT:

You have been hired by the Weather Channel as a meteorologist to forecast weather in the United States.  Since the Weather Channel provides forecasts for all over the country, your first assignment with them is to forecast four different areas of the United States using your knowledge about air masses and fronts.

## TASK:

1.) Examine the map of the United States and locate the four cities named on your data table. (Use an atlas to help you find these places.)

2.) After locating the cities, identify and describe the fronts heading towards each city and the air mass that follows it. (Use your reference sheet to help recall types of air mass: continental polar, continental tropical, maritime polar, or maritime tropical.)  Record this information in the data table.

3.) For each city, predict how the incoming front will change the weather (temperature, air pressure, storms in that area.)  Record your thinking in the data table.

4.)  Select one city and write a paragraph about the anticipated weather for that area.  Be sure to include data from the table to explain your thinking and forecast.
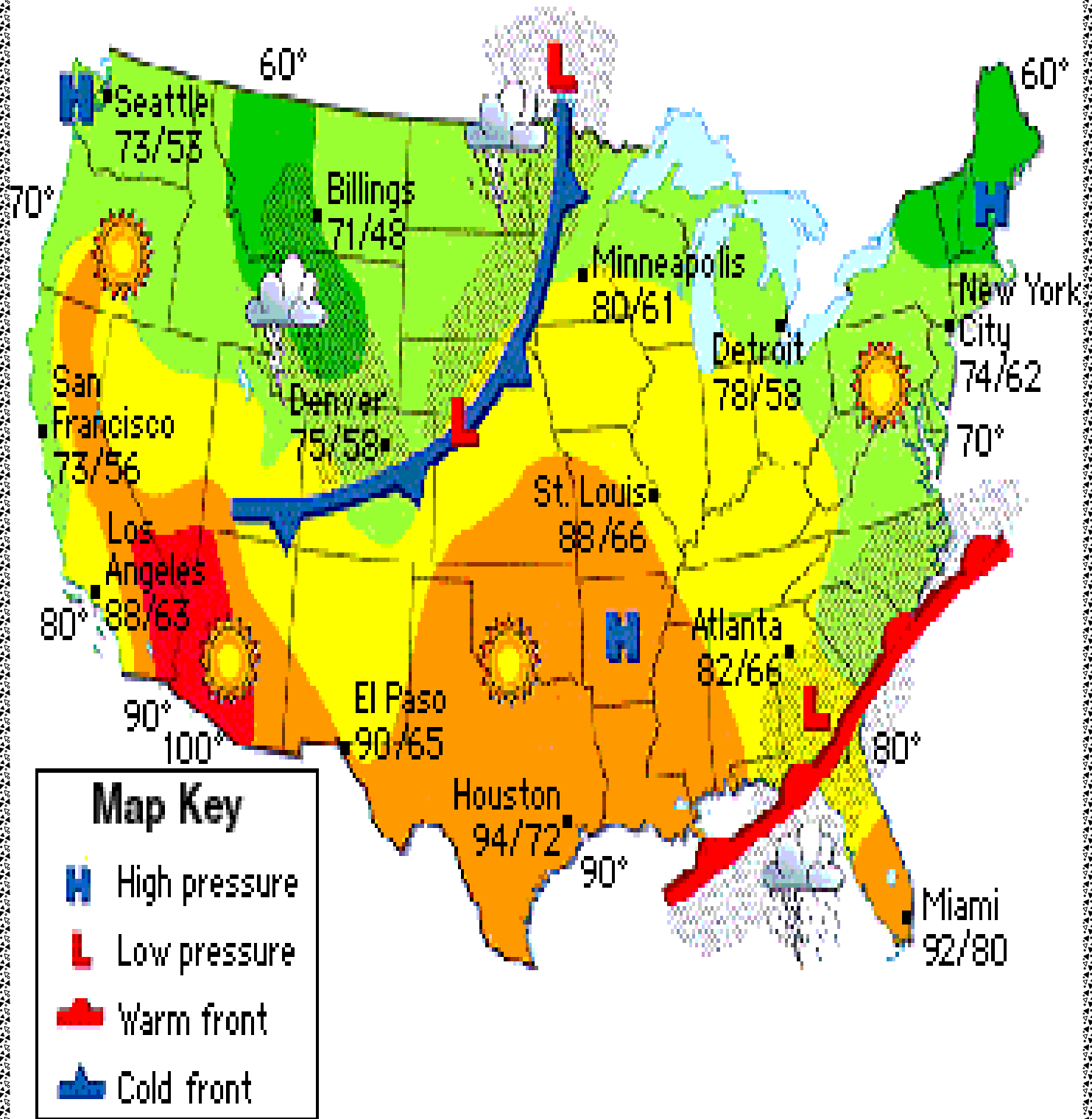
## DATA TABLE-FORECASTING WEATHER IN THE UNITED STATES

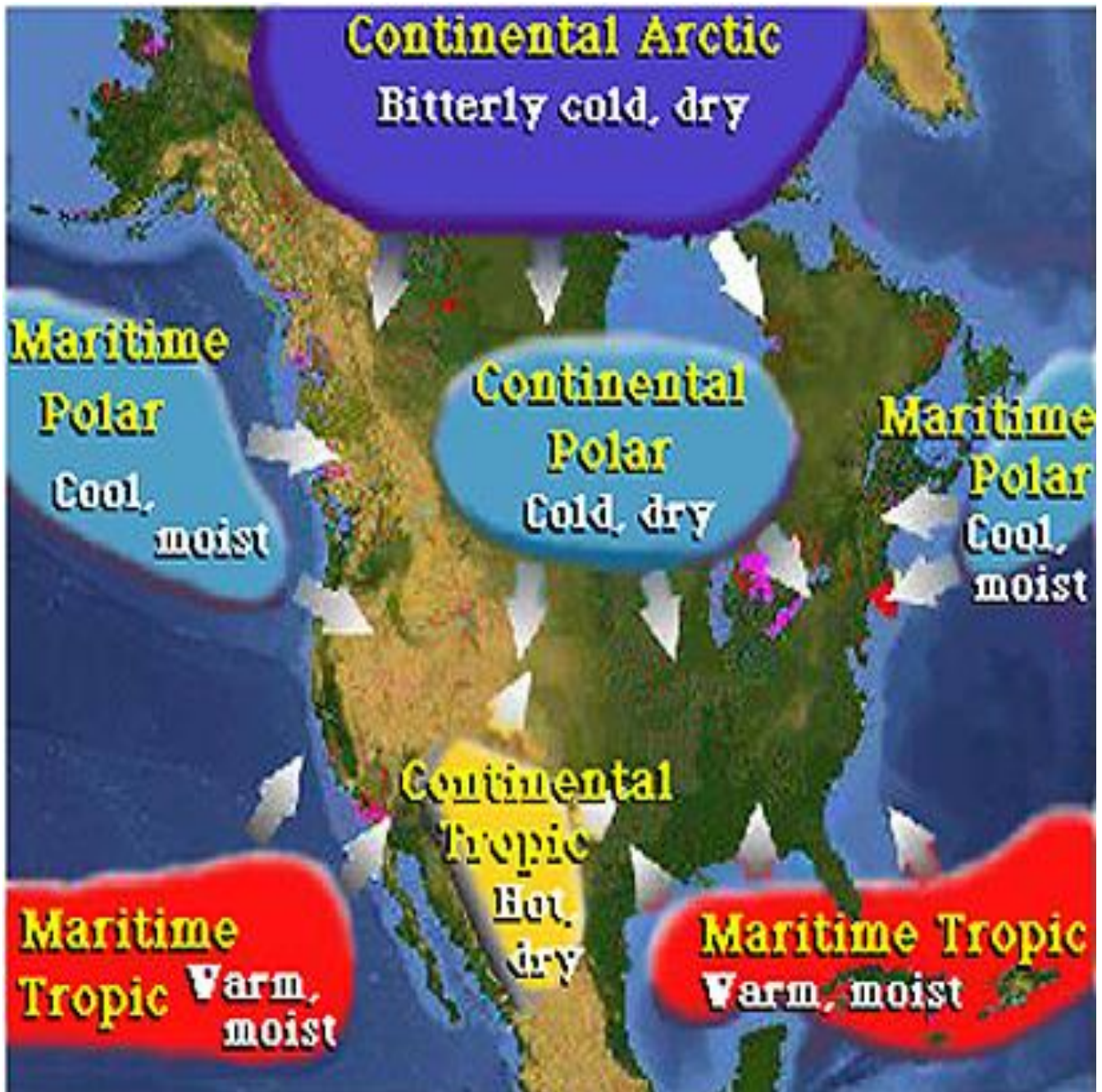| CITY, STATE IN THE UNITED STATES | INCOMING FRONT (Warm Front or Cold Front) | INCOMING AIR MASS How do you know? (What's your evidence from the map?) | EXPLAIN HOW THIS FRONT MIGHT CHANGE THE WEATHER AT THIS AREA? | |
|---|---|---|---|---|
| | | | TEMPERATURE | POSSIBLE WEATHER |
| St. Louis, Missouri | | | | |
| El Paso, Texas | | | | |
| Atlanta, Georgia | | | | |
| Minneapolis Minnesota | | | | |

★MAKE AN INFERENCE: Locate Boston, Massachusetts. Predict what kind of weather is heading that way.  What is your evidence from the map?

Use this map to forecast weather in the following places:

St. Louis, Missouri / El Paso, Texas/ Atlanta Georgia / Minneapolis, Minnesota



Seattle 73/53
Billings 71/48
Minneapolis 80/61
Detroit 78/58
New York City 74/62
San Francisco 73/56
Denver 75/58
St. Louis 88/66
Los Angeles 88/63
Atlanta 82/66
El Paso 90/65
Houston 94/72
Miami 92/80

60° 60° 70° 70° 80° 80° 90° 90° 100°

**Map Key**

H High pressure

L Low pressure

Warm front

Cold front

# AIR MASSES-REFERENCE SHEET

# WRITE YOUR FORECAST

Select one city from your data table and write a paragraph about the anticipated weather for that area. Be sure to apply what you have learned about air masses and fronts by using data you recorded in the table and key terms from your air mass reference sheet to explain your thinking and justify your forecast.

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## High Pressure

- A mass of cool, dry air.
- Generally brings fair weather and light winds
- Bring sunny skies
- Represented as a big, blue H on a weather map

## Low Pressure

- Mass of warm moist air
- Generally brings strong winds and stormy weather
- Represented by a big, red L on a weather map

## Air Mass

- Large body of air with similar properties of temperature and moisture content (humidity), at any given altitude,
- Cover large (hundreds of miles) areas.
- Controls the weather for a long time: from a period of days, to months.
- Most weather occurs along their boundaries called fronts. T
- Four air masses are classified by the source region: polar, tropical, continental and marine.

## A Front

- Boundary between two different air masses, resulting in stormy weather.
- A line of separation between warm and cold air masses.

## Moving Fronts

- Note drastic temperature changes over a short distance
- Change in moisture
- Quick shifts in wind direction, air pressure, clouds, and precipitation

## Cold Front

- A boundary between two air masses, one cold and the other warm
- Colder air moves in replacing warm air, heavy precipitation falls
- Represented on a map as a blue line with the triangles pointing toward the direction it is moving

## Warm Front

- A boundary between two a cold air masses and a warm one
- Warmer air replaces cold air, longer periods of precipitation falls
- Represented as a red line with half circles pointing toward the direction on movement on a weather map.

## RUBRIC:

**3**-responses demonstrate understanding and are consistently thoughtful, accurate, and complete

**2**-repsonses demonstrate understanding, but contain errors or lack details

**1**-reponses demonstrate limited understanding

**0**-no understanding is demonstrated

| Student Name:<br><br>Assessment:<br><br>Date: | 3 | 2 | 1 | 0 | N/A |
|---|---|---|---|---|---|
| **Scientific Ideas**<br><br>Student demonstrates a thorough understanding of scientific concepts and ideas. | | | | | |
| **Terminology and Language**<br><br>Student uses scientific terminology and language appropriately and correctly. | | | | | |
| **Application**<br><br>A student effectively and accurately applies scientific knowledge, skills, and methods to new situations. | | | | | |