NAME:_____ **PERIOD:**_____**DATE:**_____

LAB PARTNERS:_____ **LAB # 33**

CONSTRUCTING & INTERPRETING STATION MODELS

PHENOMENON

Using the provided the link https://www.wpc.ncep.noaa.gov/html/sfcloop/currobs.html , analyze the map and note your observations:

_____

_____

_____

Based on the map data, describe why this is an important representation, or "plotting", of the weather variables measured and how it is helpful in the field.

_____

_____

_____

INTRODUCTION

At commercial airports around the world the weather is observed, measured, and recorded multiples times a day. Currently there are more than 1,000 operating weather collection sites in the United States, alone. Each site gathers weather data, including – temperature, dew point, cloud cover, visibility, precipitation, wind speed and direction, and atmospheric pressure, that is recorded on a station model. Data is collected every three hours and used to interpret changes and make inferences about the weather. In order for meteorologists to share and communicate their collected data, information must be represented systematically to quickly and effectively share their recordings.

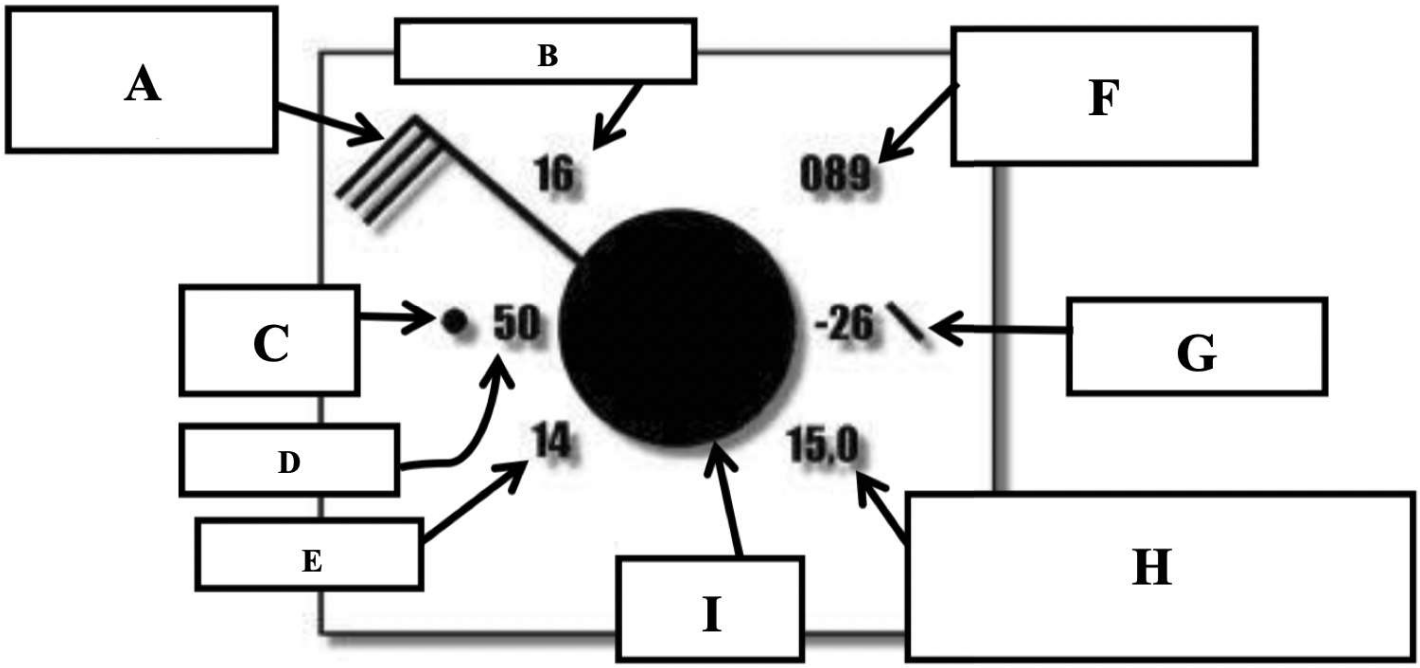
SCIENCE & ENGINEERING PRACTICES

HS-ESS2-4

Developing and Using Models Modeling in 9–12 builds on K–8 experiences and progresses to using, synthesizing, and developing models to predict and show relationships among variables between systems and their components in the natural and designed world(s). ▪ Use a model to provide mechanistic accounts of phenomena.

MATERIALS

Earth Science Reference
Tables Pencil Computer



Using your Earth Science Reference Tables page 13 to identify the weather variable at each location.

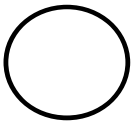
	Weather Variable
A	
B	
C	
D	
E	

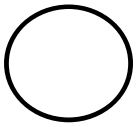
	Weather Variable
F	
G	
H	
I	

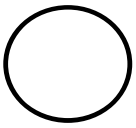
PART 1 – Pressure Practice

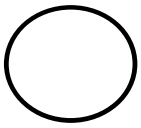
Complete the charts below:

1. ***Encode the following atmospheric pressure readings to fit a station model***

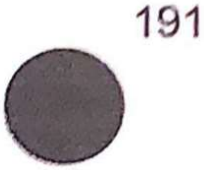
1011.1 mb 

983.7 mb 

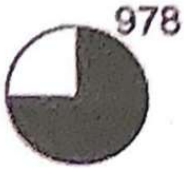
1003.4 mb 

960.8 mb 

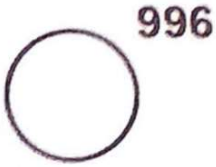
2. ***Decode the following atmospheric pressure readings be sure to record in millibars***



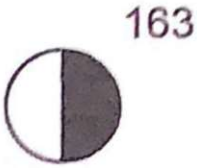
Barometric Pressure: _____



Barometric Pressure: _____

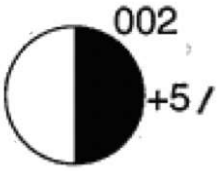
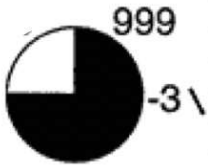


Barometric Pressure: _____



Barometric Pressure: _____

3. ***Determine the pressure trend three hours earlier based on the given data for each station model***

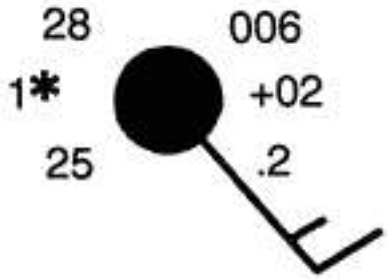
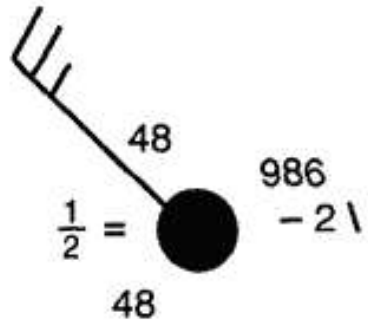
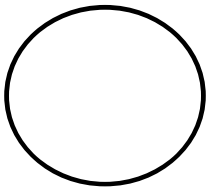
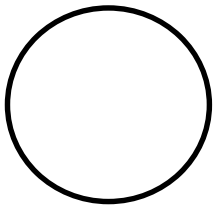
	Atmospheric Pressure 3 Hours Earlier: _____		Atmospheric Pressure 3 Hours Earlier: _____

PART 2 – Constructing & Interpreting Station Model Data

PROCEDURE

1. Create a station model for the two following stations using the measurements given in the chart
   → NO UNITS ON STATION MODELS
2. Record the data on the chart using the information provided in the other two station models
   → units are not required as they are in the heading of the data table

Weather Variable	Station A	Station B	Station C	Station D
Temperature (°F)			30	83
Dew Point (°F)			27	64
Visibility (mi.)			1/2	--
Present Weather			Snow	--
Cloud Cover			3/4	--
Barometric Pressure (mb)			989.4	1032.0
Barometric Trend			-1.0 decreasing	+3.7 increasing
Precipitation			.75	--
Wind Direction (compass direction)			North	SW
Wind Speed (kn.)			35	5

Station A	Station B
	
Station C	**Station D**
	

PART 3 – RECORD & PREDICT

Pick one location that you will report the weather from for the next 4 days. As you collect the data, construct a station model that correctly labels each weather variable. At the end of your data collection, <u>predict</u> the weather for the next <u>two</u> days.

Chosen City, state (or country): _____

Weather Variable	Day 1	Day 2	Day 3	Day 4
Temperature (°F)				
Dew Point (°F)				
Visibility (mi.)				
Present Weather				
Cloud Cover				
Barometric Pressure (mb)				
Barometric Trend				
Precipitation				
Wind Direction (compass direction)				
Wind Speed (kn.)				

Day 1	Day 2
Day 3	**Day 4**

Weather Prediction

Weather Variable	Day 1	Day 2
Temperature (°F)		
Dew Point (°F)		
Visibility (mi.)		
Present Weather		
Cloud Cover		
Barometric Pressure (mb)		
Barometric Trend		
Precipitation		
Wind Direction (compass direction)		
Wind Speed (kn.)		

Prediction Day 1

Prediction Day 2

Analysis:
What can you conclude about the data you collected versus your prediction? Would you need more information – if so, what? How accurate was your prediction? Is there anything you would have done differently?

Summary:
Based on your collection and reading of station models, describe the purpose for using a station model.