

Name: \_\_\_\_\_

East Islip High School Science Department

Summer Assignment

Honors Earth Science

# Honors Earth Science

## Summer Assignment

**CONTACT INFORMATION:**

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# Summer Assignment

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## STUDENT DIRECTIONS:

As you may be aware, taking Honors Earth Science is going to require dedication and a willingness to work hard throughout the year. This class is designed to be more rigorous and will go deeper into topics than other Earth Science classes. To accomplish all of this you will be required to have work over the summer, on weekends and/or during vacations.

This year's summer assignment for Honors Earth Science consists of four procedures and followup discussion questions. Please read each part carefully and follow all directions and procedures. The Summer Assignment will count for one test grade in the first quarter. Students **must** complete the Summer Assignment to be enrolled in Honors Earth Science.

## DUE DATES:

The following chart lists the Summer Assignment due dates with incentives and penalties. Please be sure start early. You will need two [2] weeks of weather data to complete the summer assignment.

Due Date	Incentive / Penalty
September 5	receive five [5] extra points for submitting early
September 20	last day to submit without penalty
September 23 thru October 7	deduct 10 points per school day for late submittals

## EARTH SCIENCE REFERENCE TABLES:

One of the most important tools that you will use in our class is the Earth Science Reference Tables. It contains important measurements, equations, maps, and identification tables. The reference tables will be used during classroom assignments, homework assignments, tests, and lab assignments.

Commonly referred to as the "ESRT" in class, you will be required to visit the following link and download a digital copy of the Earth Science Reference Tables. Be sure to save the link as a "favorite" too. You will begin using some of the charts for your weather watch data collection.

<https://tinyurl.com/y5enhf2a>

- or -

Google: Earth Science Reference Tables

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## INTRODUCTION:

One of the most interesting things about living on Long Island is the weather. This area experiences moderate temperature ranges, but is prone to extreme weather like thunderstorms, snowstorms, nor'easters and sometimes hurricanes. A significant portion of the Earth Science curriculum is devoted to the study of weather and part of your Summer Assignment will familiarize you with the basics.

## PROCEDURE A:

Before you begin your weather watch, it is important that you understand some basic weather terminology. Below you will find a list of relevant vocabulary terms which you will need to define. You may use a dictionary, classroom website or online resource to define the terms. Please write neatly.

Term	Definition
Air Temperature	
Thermometer	
Air Pressure	
Barometer	
Wind Direction	
Weather Vane	
Wind Velocity	
Anemometer	

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Term	Definition
Relative Humidity	
Sling Psychrometer	
Dewpoint	
Hygrometer	
Air Mass	
Source Region	
Cold Front	
Warm Front	
Stationary Front	
Low Pressure System	
Hurricane	
High Pressure System	

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## PROCEDURE B:

For the observation portion of the Summer Assignment, you will record the daily weather data for your hometown over a period of two weeks. The information should be recorded on your “Weather Data Table”. Weather data obtained must be found from a consistent source [ex: weather.com or weatherunderground.com] and be as close to the same time each day as possible. Choose your source carefully and it may be useful to set an alarm on your phone to help you remember each day.

You will be responsible for collecting; temperature, barometric pressure, wind direction, wind speed, relative humidity, dewpoint, cloud cover, visibility, precipitation and present weather conditions.

1. Fill-in all the weather data on the “Weather Data Table”.
  - Using the “Temperature” conversion chart on page 13 of the Earth Science Reference Tables, convert the temperatures recorded from Fahrenheit [°F] to Celsius [°C] to the whole number.
    - Do not use online apps to convert data. This is a skill you will need to know.
  - Using the “Pressure” conversion chart on page 13 of the Earth Science Reference Tables, convert the pressures recorded from inches of mercury [in of Hg] to millibars [mb].
    - Do not use online apps to convert data. This is a skill you will need to know.
    - Be sure to estimate your millibars converted answer to the nearest tenths place.
  - To convert wind speeds from miles per hour [mph] to knots, multiply by 0.87 and round your answer to the nearest 5 knot interval [e.g. 14 mph → 12.18 knots → 10 knots].
  - For “Wind Direction”, use abbreviations [e.g. Northwest → NW].
  - For “Cloud Cover”, use only the percentages from the chart below [when in doubt... look outside]:

Cloud Cover	Percentage
clear / sunny	0%
mostly sunny / scattered clouds	25%
partly cloudy	50%
mostly cloudy / broken clouds	75%
overcast / cloudy	100%

- For “Present Weather”, write in the correct present weather from the chart below. If the weather is not one of the options, just leave it blank for the day.

Present Weather				
none	rain	freezing rain	snow	fog
drizzle	rain showers	sleet	snow showers	haze
	thunderstorms	hail	smog	

**Weather Data Table**

Source: \_\_\_\_\_

Approximate Time of Day: \_\_\_\_\_

Day	Date	Temperature [°F]	Temperature [°C]	Dewpoint [°F]	Barometric Pressure [in of Hg]	Barometric Pressure [mb]	Wind Speed [mph]	Wind Speed [knots]	Wind Direction	Relative Humidity [%]	Cloud Cover [%]	Visibility [miles]	Precipitation [inches]	Present Weather
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														

Please Note: Values for weather data in cells that are "grey" need to be converted using the Earth Science Reference Tables.

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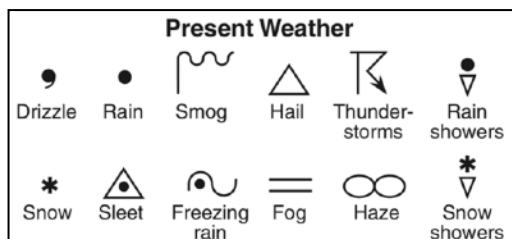
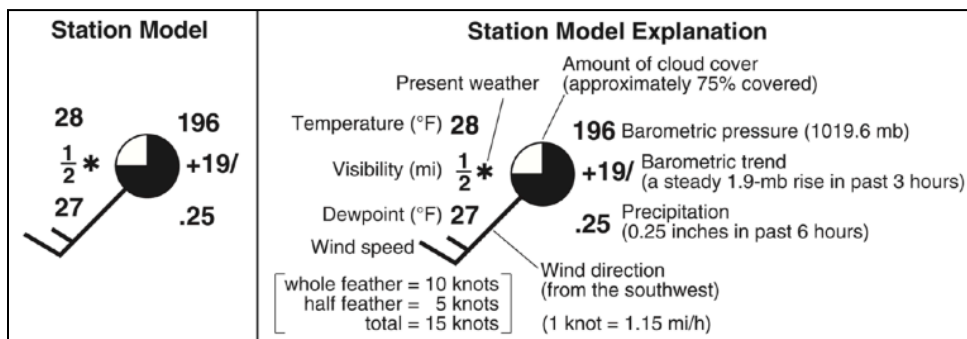
## PROCEDURE C:

Another way to report weather observations is through the use of station models. Station models are a symbolic way to abbreviate information which allows meteorologists to consolidate many of the weather variables used in forecasting onto a small uniform symbol.

An example of a station model is shown below and should be use to help guide you when you create your station models for the two-week weather watch performed in Procedure B.

- Fill-in the weather data obtained in Procedure B onto each Station Model using the example below [please note that not all of the weather data collected will not be used on the station models].
  - Do not put “Barometric Trend” on your Station Models; observations need to be every three hours to accurately record this data.
  - When converting barometric pressure in millibars to the shorthand form used on a Station Model, remove the “10” or “9” in the front of the number and the decimal point [example: 1008.9 mb → 089 or 989.4 mb → 894].
    - Helpful Link: [www.youtube.com/watch?v=0nFGZl1h2OM](http://www.youtube.com/watch?v=0nFGZl1h2OM)
    - Helpful Link: [www.youtube.com/watch?v=h9pwdHz0S5M](http://www.youtube.com/watch?v=h9pwdHz0S5M)

## KEY TO WEATHER MAP SYMBOLS



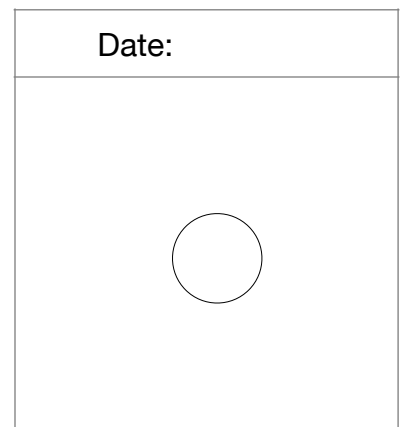
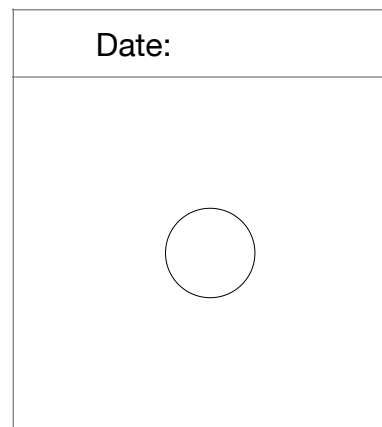
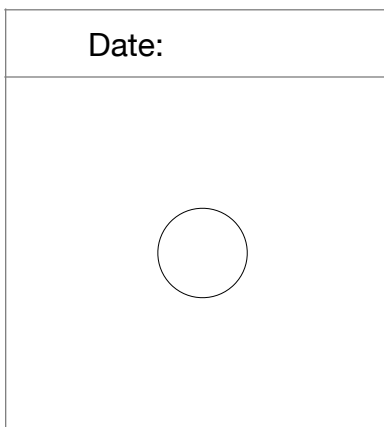
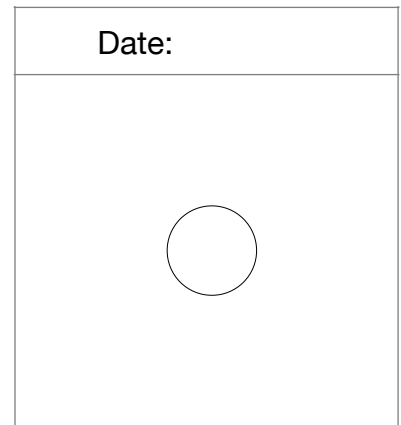
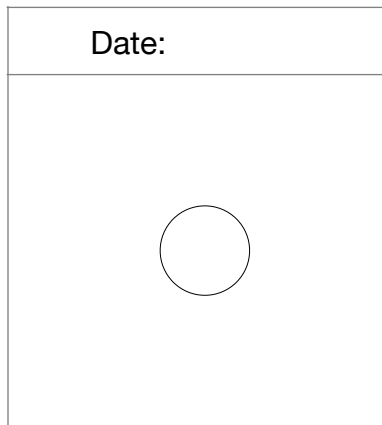
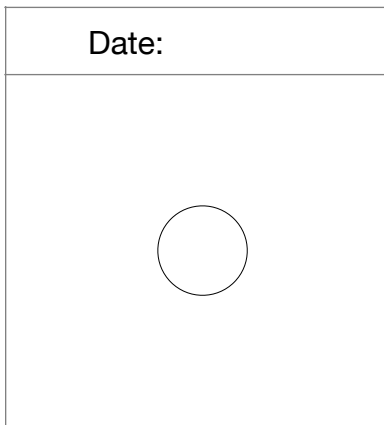
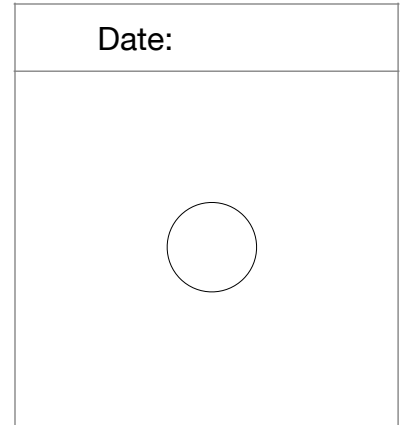
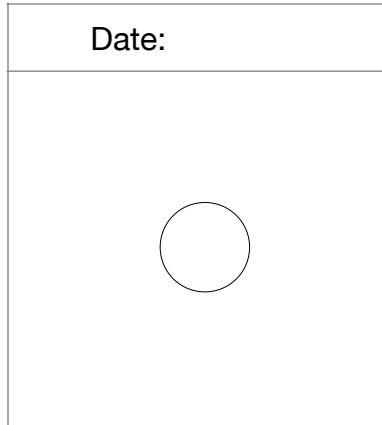
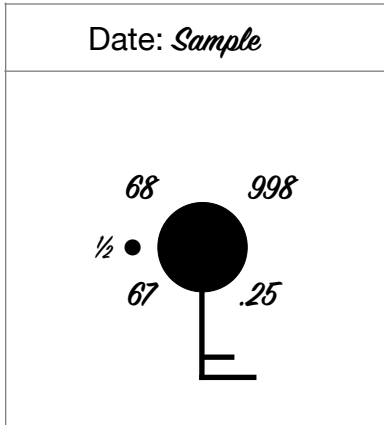
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## STATION MODELS

Week 1






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
# Summer Assignment


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
## STATION MODELS


Week 2


Date:


Date:


Date:


Date:


Date:


Date:


### PROCEDURE D:

After completing two weeks of weather observations and constructing station models, it is time to compile your data and to look for relationships and trends.

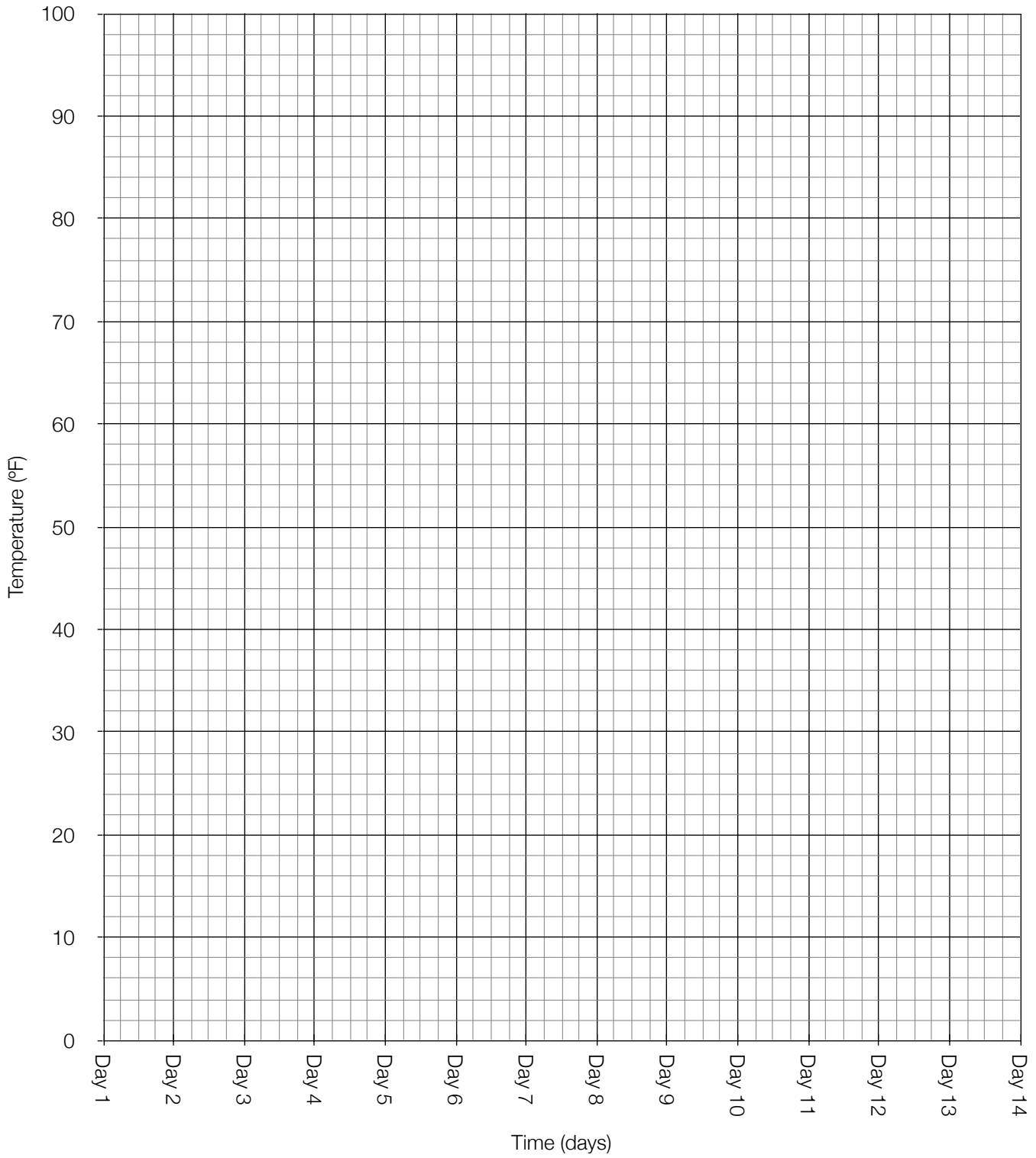
1. Construct line graphs using the following information on the graphs provided:
  - Temperature and Dewpoint [double line graph - use two colors and include a key]
  - Barometric Pressure
  - Wind Speed

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## TEMPERATURE AND DEWPOINT

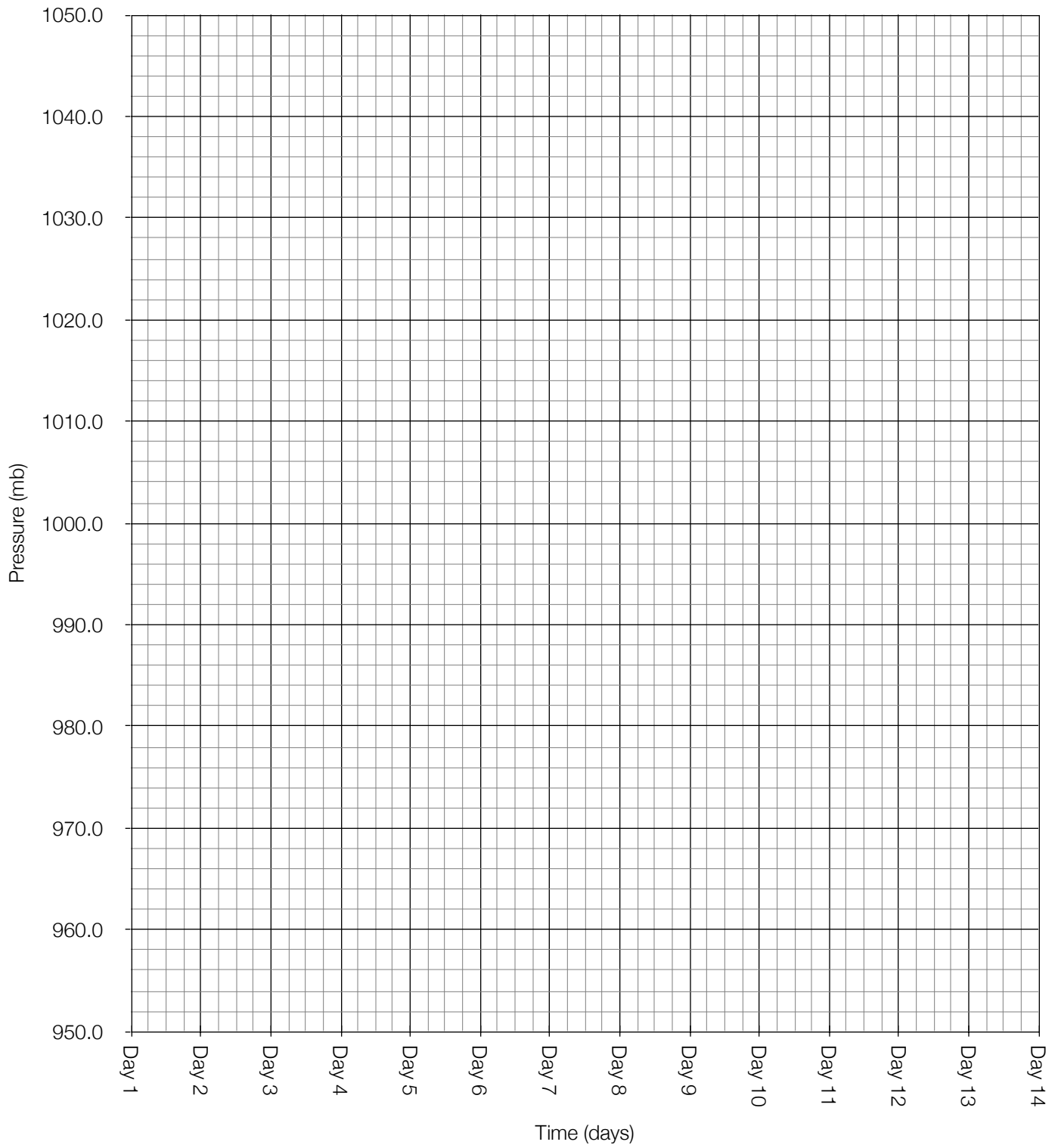


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## BAROMETRIC PRESSURE

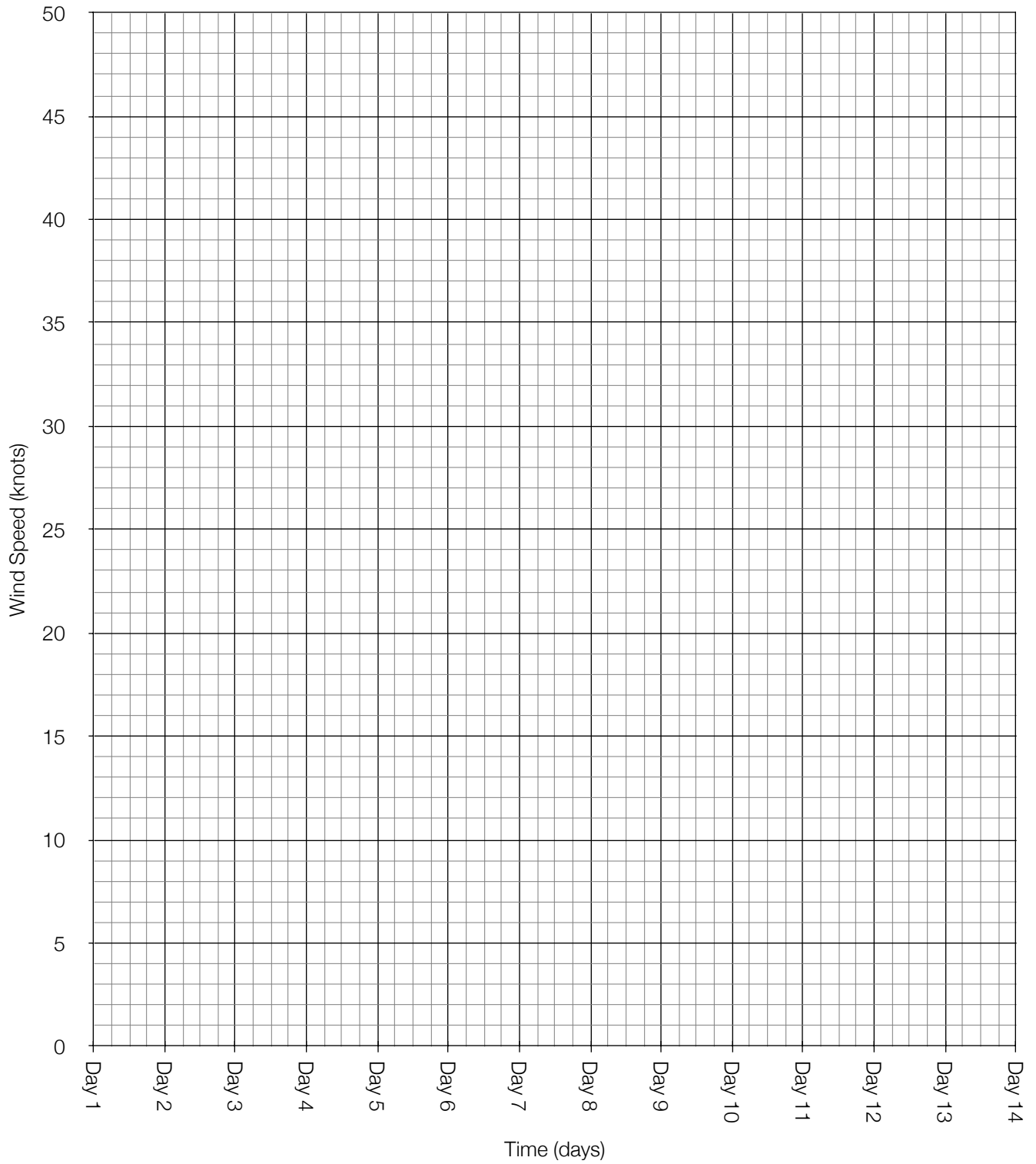


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# Summer Assignment

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## WIND SPEED



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# Summer Assignment

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## SUMMER ASSESSMENT SUMMARY:

At the end of any scientific experiment or observation, it is time to analyze the data.

Below are the discussion questions that are designed to summarize the important findings of your observations and help you describe any patterns, trends, or relationships your results show.

Type your answers on a separate piece of paper and affix it to the back of your Summer Assignment Packet. All answers must be in your own words and in complete sentences. Please note that questions 8 and 9 cannot be thoroughly answered in 1-2 sentences. Be sure to provide a complete response.

## DISCUSSION QUESTIONS:

1. Which dates had the highest and lowest temperature?
2. Which dates had the highest and lowest air pressures?
3. Describe the weather on the days with the lowest barometric pressure.
4. Describe the weather on the days with the highest barometric pressure.
5. Use your graph of temperature and dewpoint to describe the humidity on days when the temperature and dewpoint values were similar.
6. Use your graph of temperature and dewpoint to describe the humidity on days when the temperature and dewpoint values were far apart.
7. Based on your answers to 5 & 6, explain what happens to humidity as the difference between the temperature and dewpoint increases.
8. Check the news and describe a significant weather event occurring somewhere in the world.
9. In the event of a weather emergency your family should have a prepared plan in place should they be displaced. Create an emergency preparedness plan along with a list supplies you might need should such an event occur. Your plan should include measures taken before and after the event. Please provide different plans for tornadoes, floods, hurricanes, blizzards, and ice storms.

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## SUMMER ASSIGNMENT RUBRIC:

Below is the Summer Assignment Rubric. Each category has their associated weights. Please note that the "Overall Presentation" of your summer assignment does influence your grade. Be sure to staple your pages in order, write legibly, and type all sections that are required.

Name: \_\_\_\_\_ Summer Assignment  
Date: \_\_\_\_\_ Period: \_\_\_\_\_ Honors Earth Science

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## Rubric: Summer Assignment

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Summer Assignment	Available Points	Earned Points
Overall Presentation	5	
Comments:		
Procedure A: Vocabulary	10	
Comments:		
Procedure B: Data Collection	30	
Comments:		
Procedure C: Station Models	28	
Comments:		
Procedure D: Graphing	12	
Comments:		
Discussion Questions	15	
Comments:		
Bonus: Submitted Early	5	
Deduction: Submitted Late	-10 / per day	
Final Score		