

# Introduction to GRASPS Weather Forecast

## Introduction

This assessment utilizes a performance task that provides students an opportunity to demonstrate what they know and are able to do concerning a given concept. The components of the framework for the performance task are outlined in the acronym GRASPS. The **goal** states the purpose of the task; the **role** explains student involvement in the scenario; the **audience** identifies the people the students address; the **situation** explains the scenario; the **product** is the tangible evidence of student understanding; and the **standards/criteria** describe how students can complete the task successfully.

## **GRASPS:**

### **GOAL:**

Provide a statement of the task.

Establish the goal, problem, challenge, or obstacle in the task.

### **ROLE:**

Define the role of the students in the task.

State the job of the students for the task.

### **AUDIENCE:**

Identify the target audience within the context of the scenario.

Example audiences might include a client or committee.

### **SITUATION:**

Set the context of the scenario.

Explain the situation.

### **PRODUCT:**

Clarify what the students will create and why they will create it.

### **STANDARDS and CRITERIA [INDICATORS]:**

Provide students with a clear picture of success.

Identify specific standards for success.

Issue rubrics to the students or develop them with the students.

# GRASPS Weather Forecast

## Assessment

This assessment utilizes the GRASPS model, which is explained in more detail below. (For a more generic explanation of GRASPS, [click here](#).) The assessment is separated into three Tiers, which are based on a quick assessment. The rubric that is included is created to work with all three Tiers.

**Goal:** Work as a part of a team to deliver an accurate weather forecast.  
Students will understand how to analyze and interpret weather data.  
Students will understand the role that weather forecasting plays in their life.

**Role:** You play the role as the meteorologist that interprets data and makes forecasts about upcoming weather.

**Audience:** The target audience is television viewers.

**Situation:** You will be provided with a number of maps depicting current weather situations including temperatures for the region, satellite views, isobars, wind speed and direction, and front information. You must work with your weather team to analyze and decipher the data in order to present your forecast for the region.

**Product:** Your team must present an accurate weather forecast to the audience. The forecast will include a written forecast, a weather map, current conditions, and a three day forecast. Your terminology, use of weather symbols, and data analysis must be accurate.

**Standards:** The audience expects a forecast that is precise and correct as many people either work outdoors, they may be traveling, or planning outdoor activities based on the information you give them. Some weather conditions may pose a hazard and your forecasting abilities must be trusted by the audience or they will not “tune in”. A rubric will be provided.

# GRASPS Weather Forecast

## Tiers

**Students may be grouped accordingly after evaluating the Pre-Assessment. You may use different names for the groups, such as colors – Red Tier (Tier 1), Blue Tier (Tier 2), and Green Tier (Tier 3). Groups may comprise of 2-4 students.**

**Tier 1 – Missed 3-6 of the questions on the Pre-Assessment**

**Tier 2 – Missed 1-2 of the questions on the Pre-Assessment**

**Tier 3 – Missed no questions on the Pre-Assessment**

**Tier 1** – Students will be provided with a number of maps depicting current weather situations including temperatures for the region, satellite views, isobars, wind speed and direction, and front information. Students will use “skeletons” of the products due to organize their data. Completed products include a map depicting the weather data, a 3-5 day forecast poster, a current conditions poster, and a written forecast. Students may choose to use poster boards, construction paper, and/or transparencies.

**Tier 2** – Students will be provided with a number of maps depicting current weather situations including temperatures for the region, satellite views, isobars, wind speed and direction, and front information. Students must work their weather team to analyze and decipher the data in order to present their forecast for the region. Using a graphic organizer, students will create a forecast with the data supplied. Completed products include a map depicting the weather data, a 3-5 day forecast visual, a current conditions diagram, and a written forecast. Students may choose to use PowerPoint, poster boards, construction paper, and/or transparencies.

**Tier 3** – Students will be assigned a section of the United States. Students must research the information for the forecasts on websites given by the teacher. Students must work with their weather team to analyze and decipher the data in order to present their forecast for the region. Using a graphic organizer, students will create a forecast. Students are to compile their information into a Prezi and videotape their forecast.

Other Internet websites that could be integrated are

- Voki – an avatar “presents” the information. There are time limits to the presentation. ([www.voki.com](http://www.voki.com))
- Glogster – an online poster maker (<http://edu.glogster.com/>)

As an extension for all students, the information from the forecasts could be added into a class blog for sharing with others. This is a great opportunity for students to collaborate with students across the nation, as well as community members or scientists.

**Correlated Literature (with Lexiles) (Audio capable)**

*(All literature can be found on the Galileo website unless otherwise noted.)*

Rippey, B. (2004). Weather watch April 2004. *Weatherwise*, 57(4), 68. (1180) (Audio capable)

D'Alto, N. (2012). SHOULD WE PUT THE CAT IN HER CARRIER?. *Odyssey*, 21(3), 11. (1100) (Audio capable)

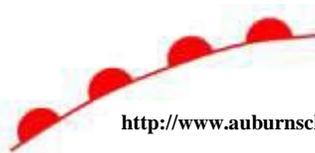
Brookes, T. (2005). Fire and Rain. *National Geographic*, 207(6), 90. (1090) (Audio capable)

Shepherdson, N. (2009). Be a Weather Wizard. *Boys' Life*, 99(3), 36. (950) (Audio capable)

Court, P. (2003). Weather Folklore. *Boys' Life*, 93(2), 14. (960) (Audio capable)

## GRASPS Weather Forecast Pre-Assessment

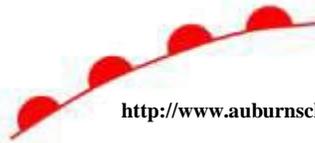
1. A low pressure system is more likely to produce a nice, sunny day.
  - A. True
  - B. False**
  
2. How is an isobar used?
  - A. Used to identify low and high pressure areas**
  - B. Used to identify low and high temperatures
  
3. A cold front is defined as the leading edge of a cooler mass of air, replacing (at ground level) a warmer mass of air. It is usually represented as



<http://www.auburnschools.org>

- A. True
- B. False**

4. A warm front is defined as the leading edge of an advancing mass of warm air; it separates warm air from the colder air ahead. It is usually represented as

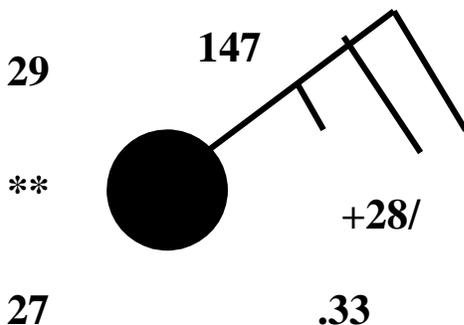


<http://www.auburnschools.org>

- A. True**
- B. False

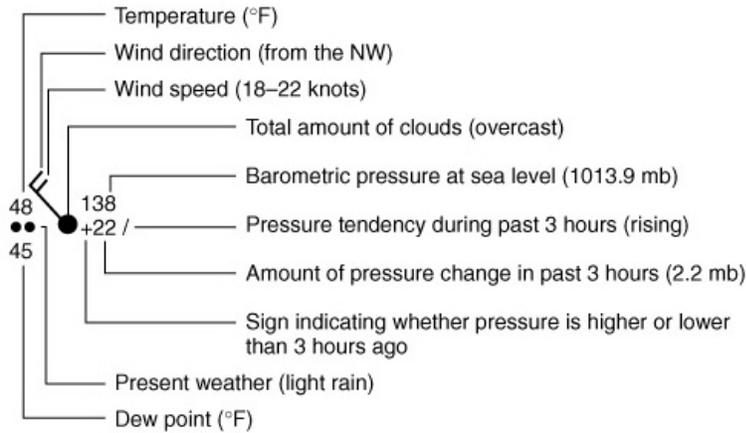
5. The temperature outside is 29° outside. There is a cold front moving in from a large body of water. You should
  - A. wear shorts to school – the weather is fine.
  - B. wear a light jacket – it could be windy.
  - C. wear sandals - 29° isn't that cold.
  - D. wear a large coat – snow is a possibility.**

6. Use the key to interpret the following station model.



- A. No cloud cover, winds at 20 knots, snow falling
- B. Total cloud cover, winds at 25 knots, snow, current temperature is 29°, the dewpoint is 27**
- C. Some cloud cover, winds at 25 knots, temperature is 27, barometric pressure is falling
- D. Total cloud cover, winds at 20 knots, snow, current temperature is 29°, the dewpoint is 27

### Simplified surface station model



### Total sky cover

- No clouds
- Less than one-tenth or one-tenth
- Two-tenths or three-tenths
- Four-tenths
- Five-tenths
- Six-tenths
- Seven-tenths or eight-tenths
- Nine-tenths or overcast with openings
- Completely overcast
- Sky obscured

### Wind entries

	Miles (statute) per hour	Knots	Kilometers per hour
	Calm	Calm	Calm
	1–2	1–2	1–3
	3–8	3–7	4–13
	9–14	8–12	14–19
	15–20	13–17	20–32
	21–25	18–22	33–40
	26–31	23–27	41–50
	32–37	28–32	51–60
	38–43	33–37	61–69
	44–49	38–42	70–79
	50–54	43–47	80–87
	55–60	48–52	88–96
	61–66	53–57	97–106
	67–71	58–62	107–114
	72–77	63–67	115–124
	78–83	68–72	125–134
	84–89	73–77	135–143
	119–123	103–107	144–198

### Pressure tendency

- Rising, then falling
  - Rising then steady; or rising, then rising more slowly
  - Rising steadily or unsteadily
  - Falling or steady, then rising; or rising, then rising more quickly
  - Steady, same as 3 hours ago
  - Falling, then rising, same or lower than 3 hours ago
  - Falling, then steady; or falling, then falling more slowly
  - Falling steadily, or unsteadily
  - Steady or rising, then falling; or falling, then falling more quickly
- Barometer now higher than 3 hours ago
- Barometer now lower than 3 hours ago

### Common weather symbols

- Light rain
- Moderate rain
- Heavy rain
- Light snow
- Moderate snow
- Heavy snow
- Light drizzle
- Ice pellets (sleet)
- Freezing rain
- Freezing drizzle
- Rain shower
- Snow shower
- Fog
- Haze
- Smoke
- Thunderstorm
- Hurricane



# Current Conditions



**Temperature** \_\_\_\_\_

**Barometric Pressure** \_\_\_\_\_

**Wind Speed** \_\_\_\_\_

**Wind Direction** \_\_\_\_\_

**Dewpoint** \_\_\_\_\_

**Humidity** \_\_\_\_\_

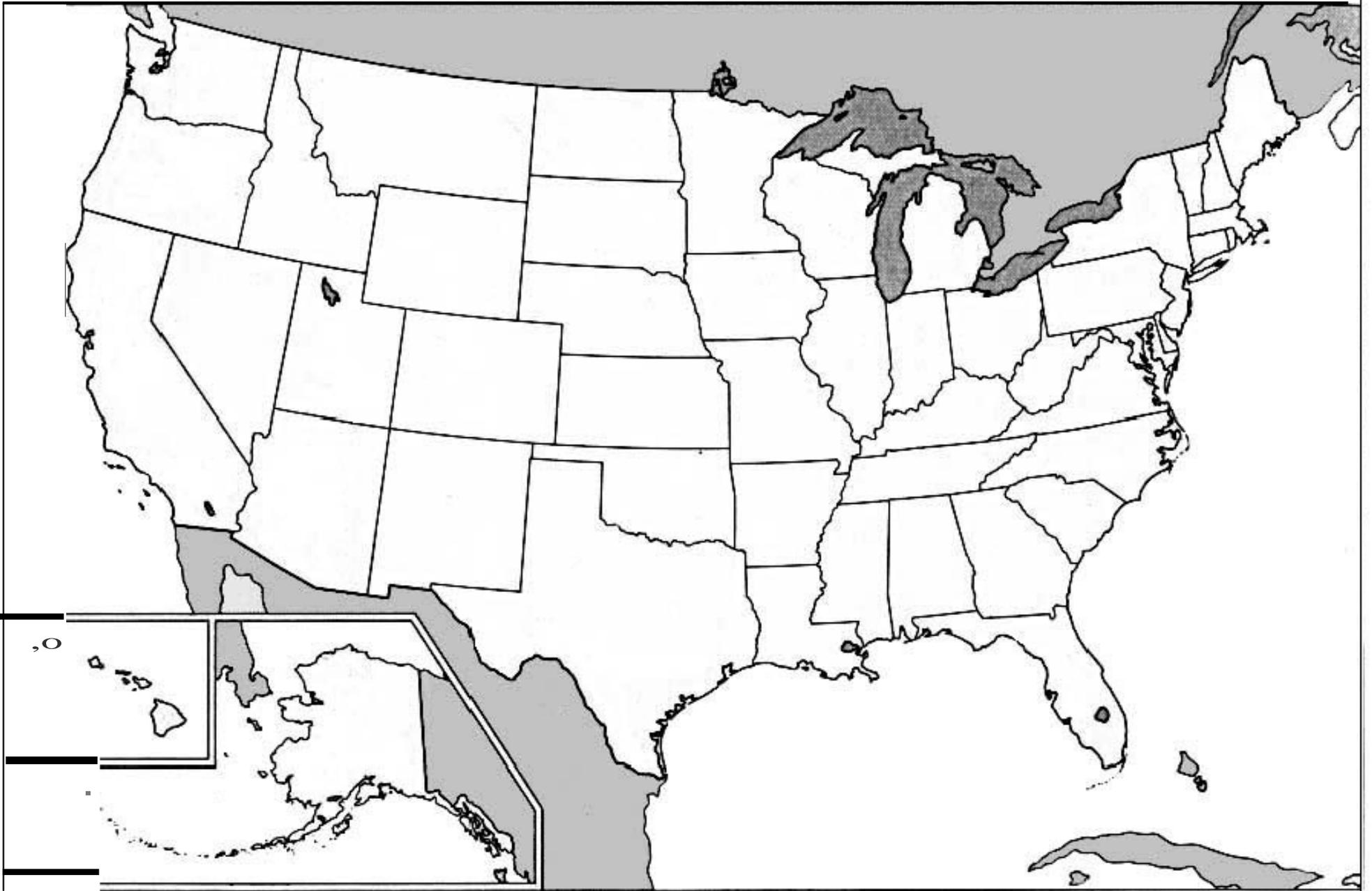
## GRASPS Weather Forecast

Good \_\_\_\_\_. This is \_\_\_\_\_ and \_\_\_\_\_ reporting from \_\_\_\_\_. It's been \_\_\_\_\_ today, with \_\_\_\_\_ cloud cover and \_\_\_\_\_ precipitation. We are looking forward to \_\_\_\_\_ (types of precipitation or none). Current conditions are \_\_\_\_\_ (temperature), \_\_\_\_\_ (barometric pressure), \_\_\_\_\_ (wind speed and direction), \_\_\_\_\_ (dewpoint), and \_\_\_\_\_ (humidity). Looking at the satellite map, there are \_\_\_\_\_ fronts moving in from \_\_\_\_\_. This is causing \_\_\_\_\_ (rain, sunshine, etc.) for this area. Also, we have another front coming from \_\_\_\_\_. We expect \_\_\_\_\_ to occur. Now, let's look at the three day forecast. For tomorrow, we are looking at \_\_\_\_\_.

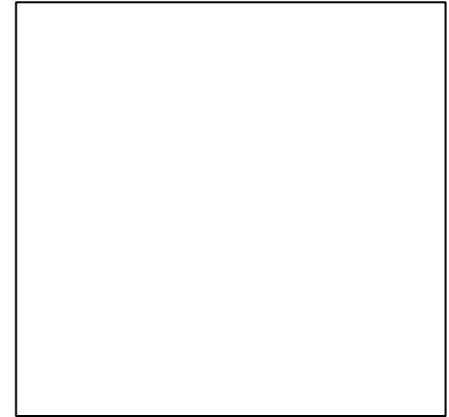
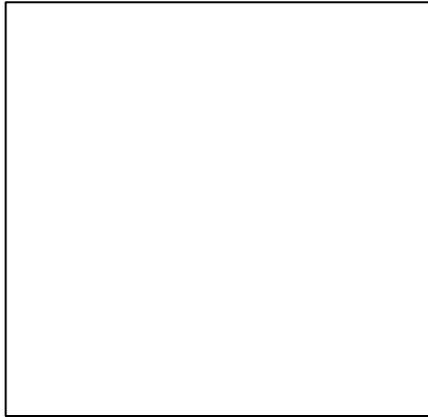
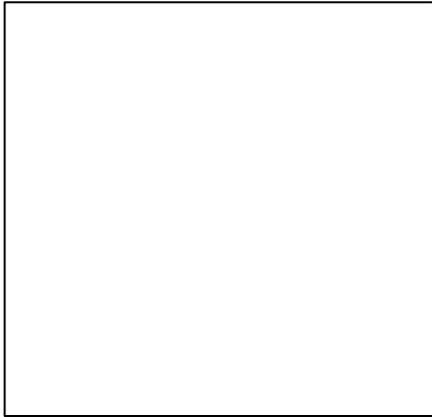
For \_\_\_\_\_ (day of the week), we are looking at \_\_\_\_\_.

\_\_\_\_\_ The next day, \_\_\_\_\_, the weather will be \_\_\_\_\_ because of \_\_\_\_\_.

This has been \_\_\_\_\_ and \_\_\_\_\_ of Channel \_\_\_\_\_ News and Weather reporting. Now, to Sports.



# Three Day Forecast



Low Temperature

Low Temperature

Low Temperature

High Temperature

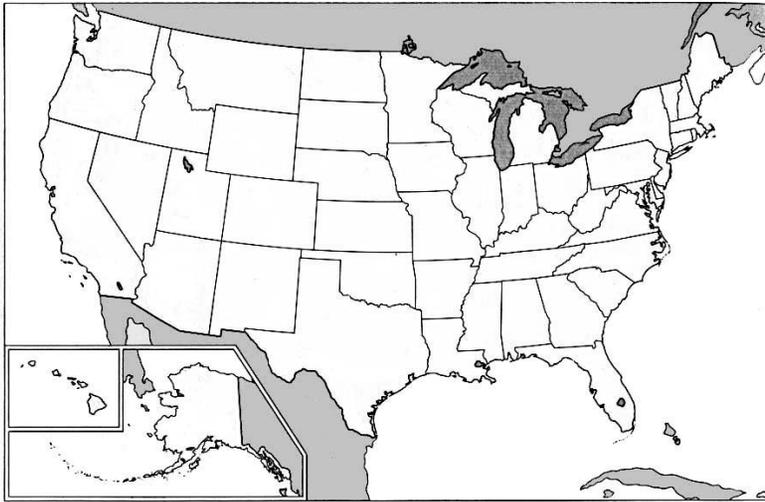
High Temperature

High Temperature

Chance of Precipitation

Chance of Precipitation

Chance of Precipitation



Resource - <http://mapofusa50states.com/>

Current Conditions for \_\_\_\_\_

Temperature \_\_\_\_\_

Wind Speed \_\_\_\_\_

Wind Direction \_\_\_\_\_

Barometric Pressure \_\_\_\_\_

Humidity \_\_\_\_\_

Precipitation \_\_\_\_\_

Fronts \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_

### **Three Day Forecast**

\_\_\_\_\_ (day) Temperature (Low) \_\_\_\_\_ (High) \_\_\_\_\_

Precipitation \_\_\_\_\_

\_\_\_\_\_

Conditions Explanation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (day) Temperature (Low) \_\_\_\_\_ (High) \_\_\_\_\_

Precipitation \_\_\_\_\_

\_\_\_\_\_

Conditions Explanation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_ (day) Temperature (Low) \_\_\_\_\_ (High) \_\_\_\_\_

Precipitation \_\_\_\_\_

\_\_\_\_\_

Conditions Explanation \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

# GRASPS

## Weather Forecast Rubric

Student Name \_\_\_\_\_ Period \_\_\_\_\_

CATEGORY	4	3	2	1
<b>Research</b>	Group researched the data and integrated all factors (wind speed/direction, temperature, cloud cover, precipitation, and chance of severe weather) into their newscast. Evidence indicates contextual factors were taken into consideration. Several components indicate high order thought.	Group researched the data and integrated most (4+) factors (wind speed/direction, temperature, cloud cover, precipitation, and chance of severe weather) into their newscast. Evidence indicates contextual factors were taken into consideration. At least one indication of high order thought demonstrated.	Group researched the data and integrated some(3+) factors (wind speed/direction, temperature, cloud cover, precipitation, and chance of severe weather) into their newscast.  Evidence indicates few contextual factors were taken into consideration.	Group did little/ no research and integrated little/no (2-) factors (wind speed/direction, temperature, cloud cover, precipitation, and chance of severe weather) into their newscast.  No evidence of contextual factors were taken into consideration.
<b>Accuracy of Facts</b>	All supportive facts are reported accurately (6 of 6).	Almost all facts are reported accurately (4 of 6).	Some facts are reported accurately (3 of 6).	No facts are reported accurately OR no facts were reported.
<b>Graphics</b>	Graphics are clearly related to the material being presented and accurately portray all factors of the forecast. Indications of creative thought present.	Graphics are clearly related to the material being presented and accurately portray 5 of 6 factors of the forecast. Indications of some creative thought present.	Graphics are clearly related to the material being presented and accurately portray 3-4 of 6 factors of the forecast. Indications of little creative thought present.	Graphics are not related to the material being presented.
<b>Speaks clearly</b>	Speaks clearly and distinctly all of the time and mispronounces no words.	Speaks clearly and distinctly all of the time but mispronounces 1 or more words.	Speaks clearly and distinctly most of the time and mispronounces no words.	Speaks unclearly and most of the time and mispronounces many words.
<b>Posture and Eye Contact</b>	Stands or sits up straight and looks confident and relaxed. Establishes eye contact with audience during most of newscast.	Stands or sits up straight. Establishes eye contact with audience during most of newscast.	Slouches or appears too casual but establishes good eye contact with audience during most of newscast.	Slouches or appears too casual AND establishes little eye contact with audience during newscast.
<b>Group Work</b>	The group functioned exceptionally well. All members listened to, shared with and supported the efforts of others. The group (all members) was always on task.	The group functioned exceptionally well. All members listened to, shared with and supported the efforts of others. The group (all members) was almost always on task.	The group functioned fairly well but was dominated by one or two members. The group (all members) was almost always on task!	Some members of the group were often off task AND/OR were overtly disrespectful to others in the group AND/OR were typically disregarded by other group members.

Points earned \_\_\_\_\_ out of 24                      Grade \_\_\_\_\_

## **Common Core**

**L6-8WHST2:** Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

- a. Introduce a topic clearly, previewing what is to follow; organize ideas, concepts, and information into broader categories as appropriate to achieving purpose; include formatting (e.g., headings), graphics (e.g., charts, tables), and multimedia when useful to aiding comprehension.
- b. Develop the topic with relevant, well-chosen facts, definitions, concrete details, quotations, or other information and examples.
- c. Use appropriate and varied transitions to create cohesion and clarify the relationships among ideas and concepts.
- d. Use precise language and domain-specific vocabulary to inform about or explain the topic.
- e. Establish and maintain a formal style and objective tone.
- f. Provide a concluding statement or section that follows from and supports the information or explanation presented.

**L6-8RST1:** Cite specific textual evidence to support analysis of science and technical texts.

**L6-8RH2:** Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions.

## **Georgia Performance Standards**

**S6CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.**

- a. Observe and explain how parts are related to other parts in systems such as weather systems, solar systems, and ocean systems including how the output from one part of a system (in the form of material, energy, or information) can become the input to other parts. (For example: El Nino's effect on weather)
- b. Identify several different models (such as physical replicas, pictures, and analogies) that could be used to represent the same thing, and evaluate their usefulness, taking into account such things as the model's purpose and complexity.

**S6E3. Students will recognize the significant role of water in earth processes.**

- a. Explain that a large portion of the Earth's surface is water, consisting of oceans, rivers, lakes, underground water, and ice.
- b. Relate various atmospheric conditions to stages of the water cycle.

**S6E4. Students will understand how the distribution of land and oceans affects climate and weather.**

- a. Demonstrate that land and water absorb and lose heat at different rates and explain the resulting effects on weather patterns.
- b. Relate unequal heating of land and water surfaces to form large global wind systems and weather events such as tornados and thunderstorms.
- c. Relate how moisture evaporating from the oceans affects the weather patterns and weather events such as hurricanes.