

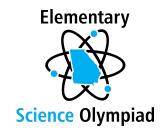
Elementary Science Olympiad

Science Olympiad



Part I: In this section, you will explore air masses, fronts, and weather stations. Use the student sheet to record your answers.

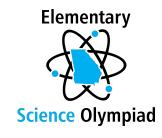
- 1. What is an <u>air mass</u>?
- 2. Describe the temperature, moisture and air pressure associated with a <u>Continental Polar air</u> mass.
- 3. Describe the temperature, moisture and air pressure associated with a <u>Maritime Tropical air mass</u>.
- 4. Describe a high pressure center. What is another name for a center of high pressure?
- 5. Watch this <u>animation</u> on how winds flow around cyclones (pressure lows) and anticyclones (pressure highs) in the Northern Hemisphere. Draw and describe what you observe.
- 6. What is a <u>cold front</u>? Describe the characteristics before, during and after a cold front below.
- 7. Individual surface weather stations use a standard format to report data. Review the <u>weather stations symbols</u> for temperature, weather symbol, dew point, cloud cover, sea level pressure and wind. Draw and label the station symbol in this example.





Part II: In this section, you will explore weather forecasts.

- 1. What is the importance of temperature in the formation of <u>rain</u>, <u>freezing rain</u>, <u>sleet</u> or <u>snow</u>? (draw the diagram shown with freezing rain, sleet, and snow)
- 2. What is a <u>Supercell Storm</u>? What dangerous conditions may develop during supercell storms? What wind and cloud conditions are prevalent in supercell storms?
- 3. What is the "Jet Stream" and at what altitude is the jet stream measured?
- 4. Describe the "<u>trends</u>" method of forecasting. What factors does a meteorologist using the trends method consider?
- 5. If a line of thunderstorms is located 60 miles to your northwest and moving southeast at 30 miles per hour, how long will it take to reach your location? Show your calculation.
- 6. <u>Hurricanes</u> are formed from thunderstorms. What 2 criteria must be met for a hurricane to develop from a thunderstorm?

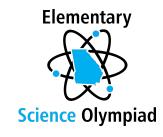




Part III: In this section, you will explore tornadoes and run a tornado simulation.

Click on this link to open the Tornado Simulator.

- 1. You can manipulate the tornado diameter and pressure differential. Which factor has the most influence on the amount of damage done?
- 2. What is the Enhanced Fujita Scale?
- 3. What characteristics constitute a EF3 tornado?
- 4. What is the highest Fujita Scale score you can make with the tornado simulator?





Part IV: In this section, you will explore lightning and run a lightning simulation.

Click on this link to open the <u>Zap Game: Make Your Own</u> <u>Lightning</u>. Use <u>this document</u> to help you play the game.

- 1. What type of precipitation causes charges to separate in clouds?
- 2. What is the difference between cloud to ground and intra-cloud lightning?
- 3. What keeps the precipitation in clouds?
- 4. What is your highest score in the simulation?





Weather Resources: You can explore these weather resources on your own to learn more about weather and weather forecasting.



SciJinks is a fun weather resource from NOAA (National Oceanic & Atmospheric Administration). There are games, videos, and more!



WeatherWizKids is a website for kids fascinated by weather! Its run by a meteorologist especially for children. Loads of info and experiments to try at home!



Climate Kids is a resource from NASA with activities, games, and more! Click on the "mystery" button for a random activity to try.