Science Learning Packet
Grade 6:
Weather Patterns, Lesson 11

science learning activities for SPS students during the COVID-19 school closure.

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While Seattle Public Schools endeavors to only post documents optimized for accessibility, due to the nature and complexity of some documents, an accessible version of the document may not be available. In these limited circumstances, the District will provide equally effective alternate access.

Due to the COVID-19 closure, teachers were asked to provide packets of home activities. This is not intended to take the place of regular classroom instruction but will help supplement student learning and provide opportunities for student learning while they are absent from school. Assignments are not required or graded. Because of the unprecedented nature of this health crisis and the District's swift closure, some home activities may not be accessible.

If you have difficulty accessing the material or have any questions, please contact your student's teacher.

Grade 6 Science Learning Activity

Weather Patterns Unit Instructional Materials

Lesson 11 (Chapter 3, Lesson 3.2)

AmplifyScience

Weather Patterns

Chapter 1: Understanding Rainfall
Chapter 2: Investigating Temperature
Chapter 3: Exploring Wind and Pressure

Hello Families,

We hope you and your family are well and safe during this time. During this unprecedented out-of-school time, the SPS middle school science team will be offering instructional opportunities for students that align with the district's adopted middle school science instructional materials.

This investigation packet is part in a series of district-aligned lessons While Amplify Science lessons are designed to be done in the classroom with peers, there are some activities that students can complete at home. In this packet you will find activities to accompany Chapter 3 of the unit. **Accompanying lesson videos will be aired on SPS TV and posted the SPS webpage under Grade 6**, however this packet can be used with or without the accompanying video.

This investigation packet is part of a series of district-aligned lessons for **Weather Patterns**, a 6th grade life science unit **developed by AmplifyScience** and adopted by SPS in 2019. While Amplify Science lessons are designed to be done in the classroom with peers, there are some activities that students can complete at home. In this packet you will find activities to accompany lessons in the unit. **Accompanying lesson videos are posted on the SPS Science webpage under their corresponding grade level.** These lesson videos, developed in collaboration between SPS teachers, Denver Public Schools teachers, and Amplify Science, feature teachers going through the information in the lessons. **The work in this packet is intended to be completed alongside the viewing of the video of the corresponding videos. To find the correct lesson videos** go to **SPS Science webpage,** scroll to your grade level, find the unit you are looking for, and select the video that matches the lesson you are completing that day.

For students who have access to the internet and the following devices and browsers **may wish to log-in to their AmplifyScience account from home are welcome to do so**. Chrome and Safari are the recommended browsers to use for full functionality of the Amplify digital tools and features.

Sincerely,

The JAMS Gr Science Team & Seattle Public Schools Science Department

Lesson 3.2 Analyzing Data About Storms

WARM-UP: Thinking about sources

Below are descriptions of two different groups, or sources, that collected data about birds. Read about the sources and answer the question below.

Source 1: A blog written by a small hiking club where members regularly report the number of different birds they see.
Source 2: An article in a science journal where biologists report observations they collected about birds during a research study.

Both **Source 1** and **Source 2** are groups of people who collected data about birds and then published their data. Which of these sources do you think would be able to give better evidence? Why do you think that?

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Vocabulary So Far:

AIR PARCEL: An amount of air that moves as a unit

CLOUD: Liquid water droplets suspended in the air

CONDENSATION: The process by which a gas changes into a liquid

ENERGY: The ability to make things move or change

EVAPORATION: to move from one object to another or one place to another

TEMPERATURE: A measure of how hot or cold something is; a measure of the average kinetic energy of the molecules of a thing

TRANSFER: To move from one object to another or one place to another

TROPOSPHERE: the layer of the atmosphere closest to Earth, where weather happens

WATER VAPOR: Water as a gas

WEATHER: Conditions such a rain, clouds, wind at a particular time and place

WIND: The movement of air in a particular direction (from high pressure to low pressure)

Evaluating Weather Data Sources

Before we can analyze data about different rainstorms, we need to decide which data comes from reliable sources. If the information does not come from a reliable source, then we will not want to use it.

Read the Source on each card below. If the source seems like it is from somewhere you can trust to give good data, circle the evidence card below. (circle at least 3) **If the data does not seem to come from a good source, put an "x" through the card below** ("x" at least three)

Card A Source:
The National Weather Service, a government agency

Card A: Long Island, USA **side 2**

On August 13, 2014, a summer storm dumped record-breaking amounts of rain on New York, flooding the streets and leaving many people stranded and in need of rescue.

Below is weather data for this storm on August 13, 2014.

	High Temperature	Humidity (water vapor)	Max Wind Speed	Total Rainfall
August 13, 2014	27°C (81°F)	78%	33 mph	34 cm (13.4 in)
Average for Month of August	28°C (82°F)	68%	7 mph	11 cm (4.5 in)

Card B Source:
A cartoon show on television about animals that live in Prairieville, Texas. The main character is a groundhog meteorologist.

Card B: Prairieville, USA **side 2**

The meteorologist groundhog informed the other animals that the temperature was going to be very high in Prairieville. It was going to be very humid and windy so they should expect a severe storm.

Card C Source:
The classroom blog from a 6th grade class studying the weather. The students shared data with three other classrooms in nearby towns.

Card C: Los Angeles, USA

side 2



Weather data from Mrs. Felipe's grade 6 class:
Monday, October 10: cloudy and windy.

Weather data from Mrs. O'Brien's grade 6 class:
Wednesday, October 12: cool weather. Rained all day yesterday. We found 14 cm of rainwater in the rain canister we put outside.

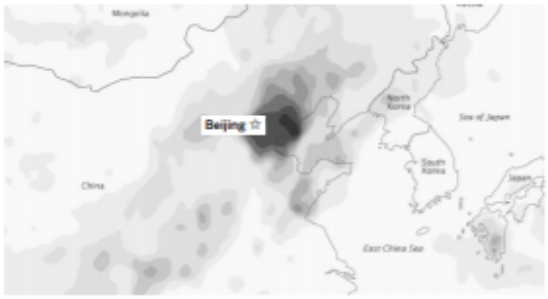
Weather data from Mrs. Park's 6 grade class:
Friday, October 14: sunny weather. No rainfall after giant storm on Tuesday!

Card D Source:
A government website focused on weather across the world

Card D: Beijing, China

side 2

On July 21, 2012, a massive rainstorm hit Beijing, China, breaking a 60-year record and causing dangerous flooding all over the city. In a single day, Beijing received 46 cm (18 in) of rain. In the case of the Beijing rainstorm, temperatures in the area had been unusually high during July. The highest temperature leading up to the storm was 34°C (93°F). The average humidity (a measure of water vapor) that day was 92%, and the pressure in Beijing was low, surrounded by an area of high pressure.



Levels of Rainfall: Beijing July 21–22, 2012

less rainfall — more rainfall

Beijing Weather Facts
Average high temperature in July: 31°C (88°F)
Average rainfall in July: 17 cm (7 in)

Card E Source:
Notes taken during a huge rainstorm in South Dakota in 2012. This person regularly takes measurements of temperature and rainfall and sends them to local meteorologists.

Card E: Sioux Falls, USA

side 2

Rainfall was heavy all day. There were very few breaks in the rain. It was also windy and warm outside. The empty jar I put out this morning at 6 a.m. contained 12 cm of rainwater in it by 6 p.m. that evening.

Before Storm: 6 a.m.	After Storm: 6 p.m.
0 cm of water in jar	12 cm of water in jar

Time	10 a.m.	2 p.m.	4 p.m.
Temperature	20°C (68°F)	22°C (72°F)	21°C (70°F)

Card F Source:
Published research article written by scientists.

Card F: Mumbai, India

side 2

India often has heavy rainfall during the summer because warm air with high water vapor travels to coastal cities from the Indian Ocean. Usually the total rainfall in Mumbai for the month of July is 74 cm (29 in).

On July 26, 2005, there was a record breaking amount of rainfall that triggered deadly floods in Mumbai. This day had a typical high temperature and high water vapor, but in a **single day** the rainfall totaled 94 cm (37 in).

This storm was different because of an unusual area of low pressure that was surrounded by an area of higher pressure north of Mumbai. This caused air parcels full of water vapor to be moved high up into the troposphere by wind.

Map showing high and low pressure in and around Mumbai on July 26, 2005.

Card G Source:
A retired scientist who studied whales and dolphins but decided to begin studying weather for fun. She keeps a journal with notes about the weather at her house.

Card G: Lima, Peru **side 2**

The retired scientist observed two storms and recorded the following data:

Storm: April 20
Rainfall: 10 cm
Wind: moderate
Highest Temperature: 18°C (64°F)

Storm: May 6
Rainfall: 15 cm
Wind: strong
Highest Temperature: 20°C (68°F)

Evaluating Weather Data:
Look at the information on the cards you thought were from the top three or four sources. You do not need to look at information from any low-quality cards.

- Look for which storms were the largest and what conditions led to these large storms
- Try to determine what all of these large storms have in common

What do all of the big storms have in common?

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Does wind seem to be a factor that leads to larger storms?

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Do you think the larger storms lost more or less energy than the smaller storms?

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Lesson 3.2 Wrap-Up

- Some sources provide better information that others.
- Larger storms tend to have higher temperatures and more wind.
- Larger storms will have lost more energy than smaller storms.

Key Concept- Air moving from areas of high pressure to areas of low pressure is wind.
Key Concept- Air parcels can be pushed up into the troposphere by wind.

Up Next: Lesson 3.3

- Look at new data about Galetown's storms
- Create a claim that answers Galetown's question
- Prepare evidence and reasoning for a scientific argument
- Post your work on a Schoology discussion post