Science Learning Packet
Grade 6:
Weather Patterns, Lesson 5

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.
Weather Patterns

*Amplify Chapter 1, 1.6

Student Name:__________________________________________________________

School:________________________________________ Grade:____________________

Science Teacher:____________________________________________________________________

Date:____________________________________________________________________

Gr 6 Weather Patterns Lesson 5 , JAMS Science Team - Gr 6 team, SPS, 4-2020
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 of a series of district-aligned lessons about 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 Grade 6. 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 “6th Grade”
- Find the “Weather Patterns” videos section
- 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 Jane Addams Grade 6 Science Team & Seattle Public Schools Science Department

Gr 6 Weather Patterns Lesson 5, JAMS Science Team - Gr 6 team, SPS, 4-2020
Lesson 5 (1.6) – Explaining Surface Water and Rain in Galetown

Students will evaluate claims and analyze data in order to answer the investigation question- Does surface water impact the severity of the storms?

Unit Question:
Why do some rainstorms have more rain than others?

Vocabulary:
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
WATER VAPOR: Water as a gas
WEATHER: Conditions such as rain, clouds, wind at a particular time and place

Warm-up: Based on what we have learned so far, what claim do you support? What evidence have we gathered to support your claims?
Pick a claim and write one piece of evidence.

What caused Galetown to have more severe rainstorms?

**Claim 1:** The lake that was built near Galetown caused it to have more severe rainstorms.

**Claim 2:** Warmer weather caused Galetown to have more severe rainstorms.

**Claim 3:** Stronger winds caused Galetown to have more severe rainstorms.

Let’s check back in with Dr. Kenji. He’s gathered some data for us to analyze.

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**From:** Dr. Kenji Emerson  
**To:** Student Meteorologists  
**Subject:** Data About the Rainfall in Galetown

We’ve put together this data table for you. It has data about the amount of rain from Galetown’s recent rainstorms. It also includes information about the amount of surface water in Galetown. Remember, local surface water is all of the water that is at the surface and that can evaporate, including water from the lake.

<table>
<thead>
<tr>
<th>Weather Event</th>
<th>Local Surface Water</th>
<th>Amount of Rain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm 1 (before lake)</td>
<td>low</td>
<td>mild, 6 cm (2.4 in)</td>
</tr>
<tr>
<td>Storm 2 (after lake)</td>
<td>high</td>
<td>moderate, 12.7 cm (5 in)</td>
</tr>
<tr>
<td>Storm 3 (after lake)</td>
<td>high</td>
<td>severe, 20.3 cm (8 in)</td>
</tr>
<tr>
<td>Storm 4 (after lake, July of this year)</td>
<td>high</td>
<td>very severe, 30.5 cm (12 in)</td>
</tr>
</tbody>
</table>

What patterns do you notice?
Goal: Show how the amount of surface water caused different amounts of rain in Galetown. Use the words high or low for temperature and amount.

- Label your model Storm 1 or Storm 2

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• Show the temp inside the air parcel and the temp of surrounding air
• Show the amount of water vapor
• Show the direction of energy transfer, use an arrow
• Show the amount of liquid water inside the air parcel
• Show the amount of rain
• Show the amount of surface water

<table>
<thead>
<tr>
<th>Weather Event</th>
<th>Local Surface Water</th>
<th>Amount of Rain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Storm 1</td>
<td>low</td>
<td>mild, 15 cm (6 in)</td>
</tr>
<tr>
<td>Storm 2</td>
<td>high</td>
<td>moderate, 38 cm (15 in)</td>
</tr>
</tbody>
</table>

Use evidence you were given today about Galetown to write a short explanation to support the claim: The lake that was built near Galetown caused it to have more severe rainstorms. Use the words in the word bank to build your argument.

**Word Bank**

<table>
<thead>
<tr>
<th>air parcel</th>
<th>cloud</th>
<th>condensation</th>
<th>energy</th>
<th>evaporation</th>
<th>transfer</th>
</tr>
</thead>
<tbody>
<tr>
<td>water vapor</td>
<td>weather</td>
<td>temperature</td>
<td>stability</td>
<td>change</td>
<td></td>
</tr>
</tbody>
</table>

(If you don’t believe that the evidence supports this claim, you can make another claim and write an explanation to support it. If you choose to do this, you must include evidence in support of your new claim.)

**Transition phrases:** This piece of evidence shows... Therefore... One piece of evidence is... Because...

___________________________________________________________________
___________________________________________________________________
___________________________________________________________________

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Quick Self-Check for Understanding:

1. I understand how the lake that was built near Galetown can affect the amount of rain in Galetown.

   Yes/Not Yet       Explain your answer choice.

2. I understand how transfer of energy causes water vapor to turn into rain.

   Yes/Not Yet       Explain your answer choice.
3. I understand how warmer weather can affect the amount of rain in Galetown.

Yes/Not Yet   Explain your answer choice.

Chapter One: Check for Understanding

If you have Schoology, please take the “Chapter One: Check for Understanding” on Schoology. This allows your teacher to give you feedback. If you do not have Schoology access, try out the questions below!

Instructions:
Hello! We sure do miss you, and hope you have continued with your science learning! After each chapter you will have a chance to check in with your learning, and for us to give you feedback, too. This does not count towards your grade, but should be a useful "check in" with yourself to see what concepts you have, and which you may need more practice with. This is an important part in learning! Just do the best you can!

Question 1
In order for rain to fall, what must happen?

- Both Evaporation and Condensation. Water must first evaporate. This makes water vapor in the air. Then the water vapor must condense.
- Condensation only. All that matters is that an air parcel loses energy.
- Evaporation only. Rain is just water vapor in the air.
- Rainfall is caused by clouds.
Question 2

If temperatures and conditions were the same at a lake and a dry field, which would most likely produce the most rain?

- The lake. The lake has more surface water, which leads to more water vapor in the air. This water vapor can condense and fall as rain.
- The dry field. The dry field has more condensation because it is cooler.
- The lake and the field have the same, if conditions and temperature is the same, the rain would be the same too.

Question 3

The air parcel below is warm. The surrounding air is cooler. Which way will energy transfer?

- Energy is transferring equally between the two.
- Energy transfers from the cooler surrounding air to the warmer air parcel.
- There is no energy transfer between air parcel and surrounding air.
- Energy transfers from the warmer air parcel to the cooler surrounding air.
Question 4

In the picture below, energy is transferring out of the air parcel. What happens to the **air parcel** when it loses energy to the surrounding air?

![Diagram of air parcel with arrows indicating energy transfer]

- The air parcel gets warmer as it loses energy. This causes more water to evaporate.
- The air parcel stays the same.
- The air parcel gets cooler as it loses energy. This causes water vapor in air parcel to condense.

Question 5

Day 1 and Day 2 in Seattle started with the same amount of water vapor in the air parcels there. It rained at the end of Day 2, but it did not rain at the end of Day 1.

![Day 1 and Day 2 images]

What could have happened to the air parcel to cause rain on Day 2?

__________________________________________________________________________________________

__________________________________________________________________________________________

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