Week of: June 8 – June 12

Grade: 7 **Content:** Science

Greetings Scientists! We hope you are safe and well with your families!

Your teachers should have been reaching out to you via your BPS email address. If you were not aware you had a BPS email address, or do not know how to access your BPS email, please follow these instructions:

Accessing Office 365 from home

1. Using Google Chrome, go to www.bpsma.org
2. Click on the **BPS EMAIL** located at the top right of the page.
3. Enter in your username, which will look something like this: 123456@bpsma.org. A BPS username is the student's 6-digit number plus @bpsma.org. You may also refer to it as your lunch number.
4. Enter in your password. The password that you enter to login to your computer at school. If you do not know it, please email us at PARENTHD@BPSMA.ORG.

You can email your teachers and/or principal, assistant principal, associate principal, and guidance counselors by following this link: https://www.bpsma.org/schools/learning-at-home/contact-us. Scroll to the bottom of the page. All BPS teachers are listed alphabetically by last name. You can also type in the last name of the person you are trying to email to make searching easier.

Logging into Clever for Amplify Science access: You can log into Amplify Science through Clever, just as you would in your science class.

Accessing Clever from Home

1. Click here to go to Clever.
2. Enter your username, which will look something like this: 123456@bpsma.org. Your BPS username is your 6-digit number plus @bpsma.org. Your number is also referred to as your lunch number.
3. Enter your password. The password that you enter is the same one you use to log in to your computer at school. If you do not know your password, please email us at cleversupport@bpsma.org or call our support (774) 539-8217

Grade 7 students in Brockton were working in one of the following units:

- Chemical Reactions
- Phase Change
- Plate Motion
- Populations and Resources
- Rock Transformations

If you have any questions, please email Dr. Michele Conners, Middle School Science Content Lead, at micheleconners@bpsma.org. Please include your child's first and last name and the name of the middle school he/she attends.

The week of June 8-June 12, Grade 7 students will complete a lesson focused on the following Massachusetts Science standard: *Apply scientific principles of energy and heat transfer to design, construct, and test a device to minimize or maximize thermal energy transfer.*

Before clicking on the link to the Discovery Ed Explorations for this week, **using Google Chrome,** please **log into Clever** and **go to Discovery Ed**. Leave Discovery Ed open in your internet browser. Once you are logged into Discovery Ed, click on the link below to take you to this week's lesson.

Use this link to access the Discovery Ed lesson. Heat and Energy

Use this **Data Chart** for the **Hot and Not so Hot** Exploration. You can copy the chart onto notebook paper if you'd like.

Beaker A	Beaker B	
	Low	High
Low		
High		

The week of June 1-June 5, Grade 7 students will complete a lesson focused on the following Massachusetts Science standard: *Use scientific evidence to argue that fields exist between objects and mass, between magnetic objects, and between electrically charged objects that exert force on each other even though the objects are not in contact.*

Before clicking on the link to the Discovery Ed Explorations for this week, **using Google Chrome,** please **log into Clever** and **go to Discovery Ed**. Leave Discovery Ed open in your internet browser. Once you are logged into Discovery Ed, click on the link below to take you to this week's lesson.

Use this link to access the Discovery Ed lesson. It's Electric!!

Use this **Data Chart** for the **Do Opposites Attract** Exploration. You can copy the chart onto notebook paper if you'd like.

Second Object	First Object	
	Balloon	Wool Sock +
Cotton Handkerchief 0		
Balloon —		
Wool Sock +		

The week of May 26-May 29, Grade 7 students will complete a lesson focused on the following Massachusetts Science standard: *Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that matter and energy are conserved through these processes.*

Before clicking on the link to the Discovery Ed Explorations for this week, **using Google Chrome,** please **log into Clever** and **go to Discovery Ed**. Leave Discovery Ed open in your internet browser. Once you are logged into Discovery Ed, click on the link below to take you to this week's lesson.

Use this link to access the Discovery Ed lesson. Biomes

The week of May 18-May 22, Grade 7 students will complete a lesson focused on the following Massachusetts Science standard: *Develop a model to describe that matter and energy are transferred among living and nonliving parts of an ecosystem and that matter and energy are conserved through these processes.*

Before clicking on the link to the Discovery Ed Explorations for this week, **using Google Chrome,** please **log into Clever** and **go to Discovery Ed**. Leave Discovery Ed open in your internet browser. Once you are logged into Discovery Ed, click on the link below to take you to this week's lesson.

Use this link to access the Discovery Ed lesson. Ecosystems: Interactions, Energy, and Dynamics

The week of May 11-May 15, Grade 7 students will complete a lesson focused on the following Massachusetts Science standard (continued from last week): *Construct an explanation based on evidence for how Earth's surface has changed over scales that range from local to global in size.*

Before clicking on the link to the Discovery Ed Explorations for this week, **using Google Chrome,** please **log into Clever** and **go to Discovery Ed**. Leave Discovery Ed open in your internet browser. Once you are logged into Discovery Ed, click on the link below to take you to this week's lesson.

Use this link to access the Discovery Ed Explorations. Dance of the Plates.

Use this **Data Chart** for the **Dance of the Plates** Exploration. You can copy the chart onto notebook paper if you'd like.

Type of Boundary	Crust Types		
	Both Continental	Both Oceanic	Continental & Oceanic
Convergent	Notes:	Notes:	Notes:
	Example:	Example:	Example:
Divergent	Notes:	Notes:	Notes:
	Example:	Example:	Example:
Transform	Notes:	Notes:	Notes:
	Example:	Example:	Example:

The week of May 4-May 8, Grade 7 students will complete a lesson focused on the following Massachusetts Science standard: *Construct an explanation based on evidence for how Earth's surface has changed over scales that range from local to global in size.*

Before clicking on the link to the Discovery Ed Explorations for this week, please **log into Clever** and **go to Discovery Ed**. Leave Discovery Ed open in your internet browser. Once you are logged into Discovery Ed, click on the link below to take you to this week's lesson.

Use this link to access the Discovery Ed videos and learning experiences. Exploring the Earth's Surface

The week of April 27 – May 1, ALL grade 7 students can follow the three part lesson on *Future of Food: Our Food Story,* adapted from the Aquarium of the Pacific and PBS Learning. Families can choose to print out pages 2-7 and complete the work on the worksheets, or students can record their responses on notebook paper or in a Word document. **All links are active and safe. Learning experiences from March 30-April 17 begin on page 10.**

Future of Food: Our Food Story

Students will:

- Be introduced to the food system
- Understand how our food choices have an impact on resources such as water
- Describe how climate change and population increases will impact our food availability in the future
- Analyze how much water was needed to produce a plate of food

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Vocabulary:

- ***Agriculture*:** the science or practice of farming, including cultivation of the soil for the growing of crops and the rearing of animals to provide food, wool, and other products.
- ***Food system:*** the people, activities, and resources involved in getting food from farms, ranches, oceans, and other sources to consumers' plates.
- ***Groundwater:*** water held underground in the soil or in pores and crevices in rock.
- ***Livestock:*** farm animals regarded as an asset.
- ***Surface water:*** fresh water that collects on the surface, including water in streams, rivers, lakes, reservoirs, and wetlands.
- ***Sustainable:*** able to meet the needs of the present without compromising the ability of future generations to meet their own needs.
- ***Virtual water:*** the "hidden" water cost embedded in the production of consumer products. When exporting these products, we are exporting a portion of a local water supply.

Part 1

***Future of Food*| *Our Food Story* Video (5 minutes)** **Our Food Story**

Meet Dr. Steven Davis, Associate Professor of Earth System Science at the University of California, Irvine. He researches environmental problems like climate change, and how food, energy, and water are connected. In this episode, he will be discussing the importance of California's agriculture and how climate change affects food production.

3-2-1

- List 3 interesting facts from this video.

- Name 2 thoughts about the food you eat that came to mind while watching this video.
- What is 1 way climate change might impact how much food we will have available in the future?

Food Systems

Growing food requires large amounts of land and water. Using these resources are a challenge as our global population continues to grow. Changing climate is another challenge to how we grow our food, due to droughts and water shortages. Making food choices that consider how much land and water we use will be key when planning for the future.

Background:

- In California, agriculture production is a vital part of the economy, supplying ⅓ of the nation's vegetables and ⅔ of the total fruits and nuts. In 2015, farmers and ranchers collectively made $60 billion in annual revenue.
- California also plays an important role in the world food economy, and global food and nutrition security. California exports approximately 28% of its agricultural production.

  We grow over 80% of the world's almonds.

A. First, think about what you had for dinner last night OR breakfast this morning OR lunch this afternoon. Write out your meal in the space below:

B. The activities, resources, and steps in getting your food from the farm to your plate is called the food system. What do you think were the steps involved to get your meal to your plate? Take a few minutes to brainstorm/map out where your food started and all the steps it took to get it to your plate. Be as detailed as possible.

C. Visit the Industrial Food System Map from Nourish. What do you notice? How does your map above (B) compare to the Industrial Food System Map? Respond to the following prompts

- How does the Industrial Food System map compare to the system you mapped out?
- Let's focus on the **growing** portion of the food system. What resources are needed to grow food?

Part 2:

How Much Water are you Eating?

Let's take a closer look at the resources used to produce our food. Have you thought about how much water is used to grow the food you eat? The goal of the activity is to help you understand how our food choices have an impact on resources such as water. You will do this by calculating how many gallons of water were needed to grow a plate of food.

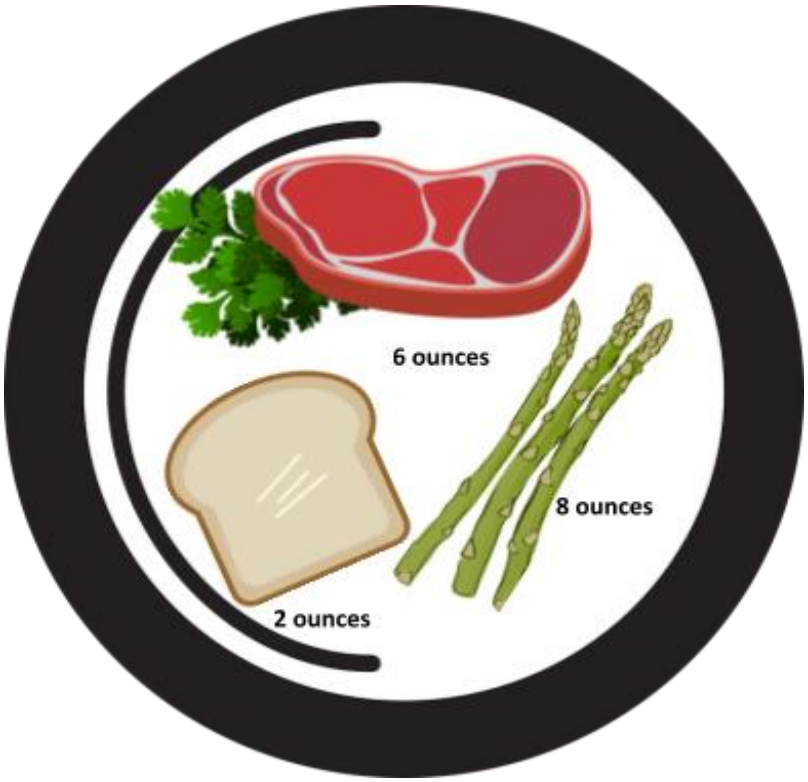
Background Information

- In California, 41% of the water supply is used for agriculture. When we think about how much water we use daily, we often don't consider how much of this resource used to produce and prepare our food.

Instructions:

Many people don't realize how much "invisible" water we use through the food we eat and the things we buy.

1. Make a prediction: how many total gallons of water do you think were needed to make all the food on this plate of a piece of steak (beef), a slice of wheat bread, and some asparagus? _____



2. Use the tables and data sheet to calculate the amount of water needed to produce the food on the plate.

	Fruits/Veggies	Gallon/oz
	Apples	3.34
	Asparagus	20.32
	Avocado	9.05
	Banana	5.71
	Broccoli	2.44
	Carrots	0.93
	Kale	2.26
	Lettuce	0.85

	Protein	Gallon/oz
	Beef	106.28
	Chicken	16.61
	Pork	41.25
	Eggs	11.73
	Garbanzo Bean	76.07
	Soyburger	21.84

	Starch	Gallon/oz
	Rice	16.26
	Pasta	16.60
	Wheat bread	14.41
	Potatoes	2.98

Measurements used

1 gallon

1 ounce = 3 dice

16 ounces = 1 pound

Gallons of water needed to produce each oz of food:

Food	Ounces on the plate	Gallons/ounce from the table above	Total
Bread		x	=
Beef		x	=
Asparagus		x	=

Gallons of water needed to produce your whole meal: _____

3. How close was your prediction in question 1 to the total above?

4. Which food item needs the most amount of water to make? Why do you think that is?

5. What's one thing you would change on this plate to use less water?

6. Are you surprised by how much water it took to create this meal? Why or Why not?

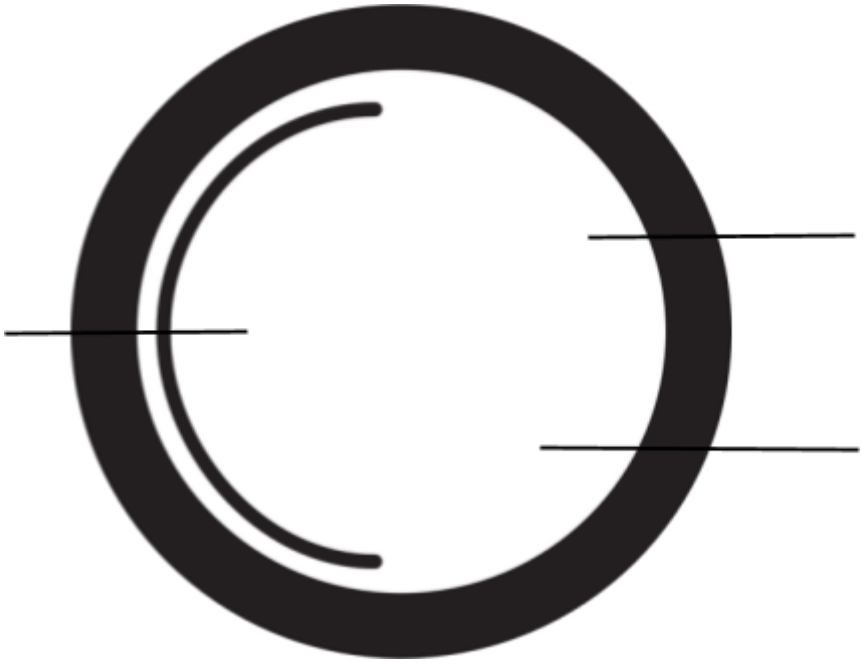
Part 3

Background Information:

- Water, packaging, land use, and both animal and human welfare are all factors that contribute to a food's level of sustainability. ***FoodPrint*** looks at all these factors to determine the "foodprint" or impact a food has on the environment. Use the ***FoodPrint*** encyclopedia to learn more about your lunch items.
- Water is needed to produce everything we eat and consume in our society. By recognizing how much water is needed for production, we can begin to make changes on the individual and community level to what products we consume. Look through the **Water FoodPrint product gallery** to learn how much water these common goods take to produce.
- Buying in-season, locally sourced food, limits environmental impact by reducing the need to ship long distances and requires less energy to grow food out of season. Use the **Seasonal Food Guide** with data from the National Resource Defense Fund to determine if your food is in season and locally available.

Design your lunch!!!

Let's see how you would design a lunch that uses the least amount of water? Make sure your lunch includes at least one protein and vegetable. Draw or write your lunch choices on the plate below. Include how many gallons of water it takes to grow each food item. Use the table you used to answer question #2 in Part 2 to help you.



Food	Ounces on the plate	Gallons/ounce from the table above	Total
		x	=
		x	=
		x	=

Gallons of water needed to produce your lunch: _____

You can play around with this some more, and choose from a variety of different items, by visiting this website: Food-Water Footprint. This interactive activity from the *Los Angeles Times* in April 2015 lets you experiment with a variety of foods to see how much water is needed to produce your plate of food.

Discussion Questions:

1. What did you consider when planning your lunch?

2. What was challenging about this exercise?

3. How will you apply this information in your day to day life?

Practice Activities:

For any iXL activites presented here: If you are asked to sign in, the username is brocktonscience. The password is conners63.

Chemical Reactions Skills Practice

- The week of **March 30-April 3** you had the opportunity to examine different substances you have around the house and the properties of those substances (this activity is also found below if you didn't get an opportunity to complete it).
- **The week of April 6-10**, you put your skills to work by following this link to practice identifying reactants and products.
- The week of **April 13 – 17**, you will learn more about chemical reactions in your everyday life. Use this link to access the Discovery Ed videos and learning experiences. Chemical Reactions

Phase Change Skills Practice

- The week of **March 30-April 3** you had the opportunity to find examples of substances changing phase around your home (this activity is also found below if you didn't get an opportunity to complete it).
- The week of **April 6 – April 10,** you put your skills to work by following this link to use tables and graphs to identify patterns about kinetic energy.
- The week of **April 13 – 17**, you will examine the difference between chemical changes and physical changes. Use this link to access the Discovery Ed videos and learning experiences. Phase Change

Plate Motion Skills Practice

- The week of **March 30-April 3** you had the opportunity to teach convergent and divergent plate boundaries to family members, collect questions your family members asked you, and describe two ideas you were able to explain to them (this activity is also found below if you didn't get an opportunity to complete it).
- The week of **April 6 – April 10,** you put your skills to work by following this link to practice labeling the earth's layers.
- The week of **April 13 – 17**, you will view a video about plate motion and complete a short reading about Iceland – the Land of Fire and Ice. Use this link to access the Discovery Ed videos and learning experiences. Plate Motion

Populations and Skills Practice

- The week of **March 30-April 3** you had the opportunity to explain how sampling a population helps you estimate how many organisms make up the population. You had the opportunity to investigate the many organisms that live around you. What a great excuse to get outside and explore your surroundings through the eyes of a scientist (this activity is also found below if you didn't get an opportunity to complete it).
- The week of **April 6 – April 10,** you put your skills to work by following this link for practice with populations, communities, and ecosystems.
- The week of **April 13 – 17**, you will view a video about food chains and webs and answer questions about what you learned. Use this link to access the Discovery Ed videos and learning experiences. Food Chains and Webs

Rock Transformations Skills Practice

- The week of **March 30-April 3** you had the opportunity to examine rocks that you find near your house or elsewhere. What a great excuse to get outside and explore your surroundings through the eyes of a scientist (this activity is also found below if you didn't get an opportunity to complete it).
- The week of **April 6 – April 10,** you put your skills to work by following this link to practice identifying rocks and minerals
- The week of **April 13 – 17**, you will view a video about weathering and erosion. After you view the video, you will complete a short activity. Use this link to access the Discovery Ed videos and learning experiences. Weathering and Erosion

CHEMICAL REACTIONS

Family Science Experience: Explaining Properties at Home

Review the substance table below and pick two different substances that you have at home. If possible, select the substances you observed for homework in Lesson 1.3 if your class has completed that assignment. If you have not completed the assignment in Lesson 1.3, that is OK. You can still complete this activity.

wood	plastic	rubber	cotton	wool
water	metal	honey	leather	paper
milk	glass	sugar	clay	soap

Then, using information from the "Atomic Zoom-In" article, explain to a member of your household why those two substances have different properties. You may want to log into your Amplify Science account through Clever to review the article.

- You may work with more than one member of your household.
- You might need to explain a little about what properties are and the different properties the two substances have in order for your household member to be able to work with you.
- You can review your learning by logging into Amplify Science through Clever.
- When you are finished, ask the person what she learned about properties. Record the answer below.

What did your household member learn about properties?

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

PHASE CHANGE

Family Science Experience: Exploring Phase Change at Home

Work with a member of your household to find examples of substances changing phase around your home.

- You may work with more than one member of your household.
- You might need to explain a little about phase change in order for the member of your household to be able to work with you. For example, you might let them know that you have been investigating what is different about substances in different phases and how substances can change phase.
- You can review your learning by logging into Amplify Science through Clever.

Describe and/or draw two phase changes you observed:

_____

_____

_____

_____

_____

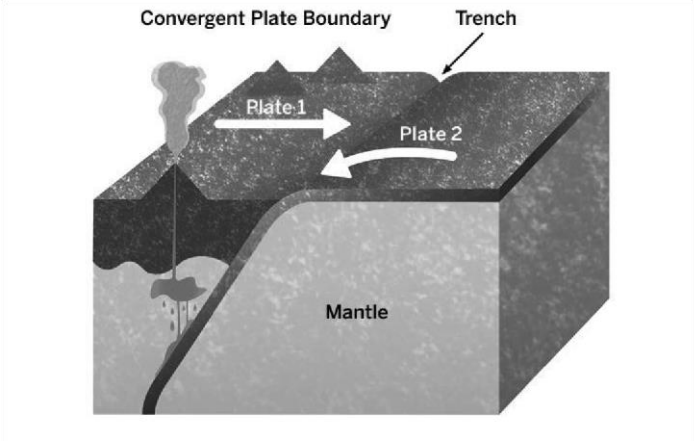
PLATE MOTION

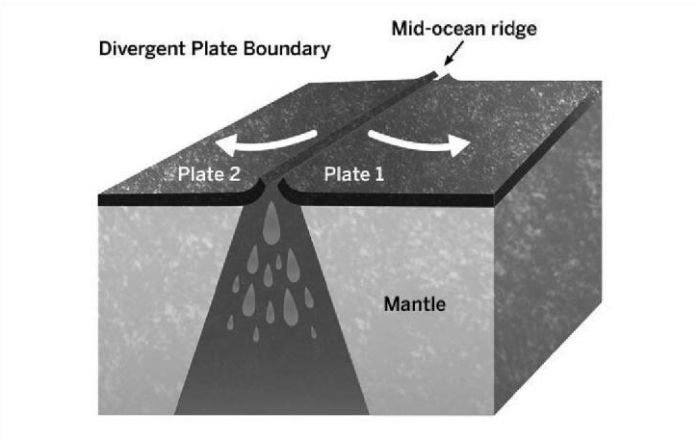
Family Science Experience: Explaining Convergent and Divergent Plate Boundaries at Home

The two cross-section diagrams below show what happens at both convergent and divergent plate boundaries. Use these diagrams to explain to a member of your family what happens at each type of plate boundary, and encourage your family member to ask you questions as well. **You can review your learning by logging into Amplify Science through Clever.**

You may need to explain the following ideas so that your family member fully understands what you are explaining:

- What are Earth's plates?
- What is the mantle?
- What happens at a convergent plate boundary?
- What happens at a divergent plate boundary?





1. What are two questions your family member asked you?

_____

_____

_____

_____

2. What are two ideas you explained to your family member?

_____

_____

_____

_____

POPULATIONS AND RESOURCES

Family Science Experience: Exploring Populations at Home

Work with a member of your household to think about sampling organisms in your area. You may work with more than one member of your household.

Helpful Vocabulary

organisms: living things, such as plants, animals, and bacteria

population: a group of the same type of organism living in the same area

sample: a small part that is meant to show what the whole is like

1. You may have watched a video about how a scientist collects data about the number of jellyfish in a population she studies. If not, you can find this video by logging into Amplify through Clever and going to **Lesson 1.4** in the Populations and Resources Unit.
2. Explain to the member(s) of your household how she samples the jellyfish population in order to estimate how many jellyfish are in the population. Be sure to explain why it is important to not only use a dip net to collect one jellyfish but also to use a larger net for collecting several jellyfish.
3. Make a list of organisms that can be found where you live. Be sure to consider plants, insects, birds, and larger animals.

_____

_____

_____

_____

_____

_____

_____

_____

ROCK TRANSFORMATIONS

Family Science Experience: Exploring Rocks at Home

Work with a member of your household to examine rocks that you find near your house or elsewhere. Find two rocks that look different from each other. Discuss each rock with your family member and work together to describe what it looks and feels like. Then, think about how each rock you chose might have been formed. Explain to the member of your household how you think it might have been formed and describe what evidence you are using to decide how each rock might have been formed. Use the chart below to put down a few notes about your conversation.

- You may work with more than one member of your household.
- You might need to explain a little about how rocks are formed in order for the member of your household to be able to work with you.

You can review your learning by logging into Amplify Science through Clever.

Describe what you observed:

	Description of the Rock:	How do you think it was formed? What is your evidence?
Rock #1		
Rock #2		