Week of: June 8-June 12

Grade: 6 **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 6 students in Brockton were working in one of the following units:

- Metabolism
- Thermal Energy
- Traits and Reproduction

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 8-12, Grade 6 students will complete a lesson focused on the following Massachusetts Science standard: *Use a particulate model of matter to explain that density is the amount of matter (mass) in a given volume. Apply proportional reasoning o describe, calculate, and compare relative densities of different materials.*

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. Everything Matters

Use this **Data Chart** for the ***Sink or Float?*** Exploration**.** You can copy the chart onto notebook paper if you'd like.

	0.8 alcohol	0.9 cooking oil	1.0 pure water	1.5 honey	1.8 saturated sugar water
Measurements	mass: volume:	mass: volume:	mass: volume:	mass: volume:	mass: volume:
Greater density - object or fluid?					
Did object sink or float?					
Measurements	mass: volume:	mass: volume:	mass: volume:	mass: volume:	mass: volume:
Greater density - object or fluid?					
Did object sink or float?					

The week of May 26-May 29 AND the week of June 1-5, Grade 6 students will complete a lesson focused on the following Massachusetts Science standard: *Construct an argument supported by evidence that the body systems interact to carry out essential functions in life.* **This lesson compilation is lengthy and is meant to be completed over TWO weeks. Students should not feel obligated to complete all lesson components in one week.**

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. Biologically Speaking: Systems of the Human Body

The week of May 18-May 22, Grade 6 students will complete a lesson focused on the following Massachusetts Science standard: *Develop and use a model to describe how parts of cells contribute to the cellular functions of obtaining food, water, and other nutrients from its environment, disposing of wastes, and providing energy for cellular 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. The Mighty Cell

The week of May 11-May 15, Grade 6 students will complete a lesson focused on the following Massachusetts Science standard: *Analyze and interpret maps showing the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence that Earth's plates have moved great distances, collided, and spread apart.*

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 6 students will complete a lesson focused on the following Massachusetts Science standard: *Develop and use a model of the Earth-Sun-Moon system to explain the causes of lunar phases and eclipses of the Sun and Moon.*

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. A Spin Around the Solar System

The week of April 27 – May 1, ALL grade 6 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.

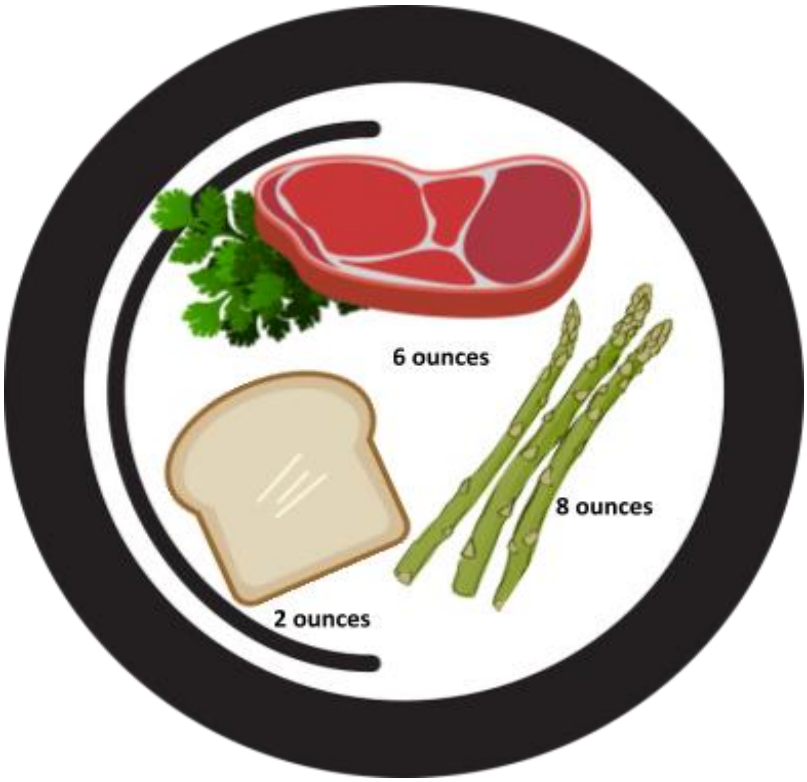
Background Information

- 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?

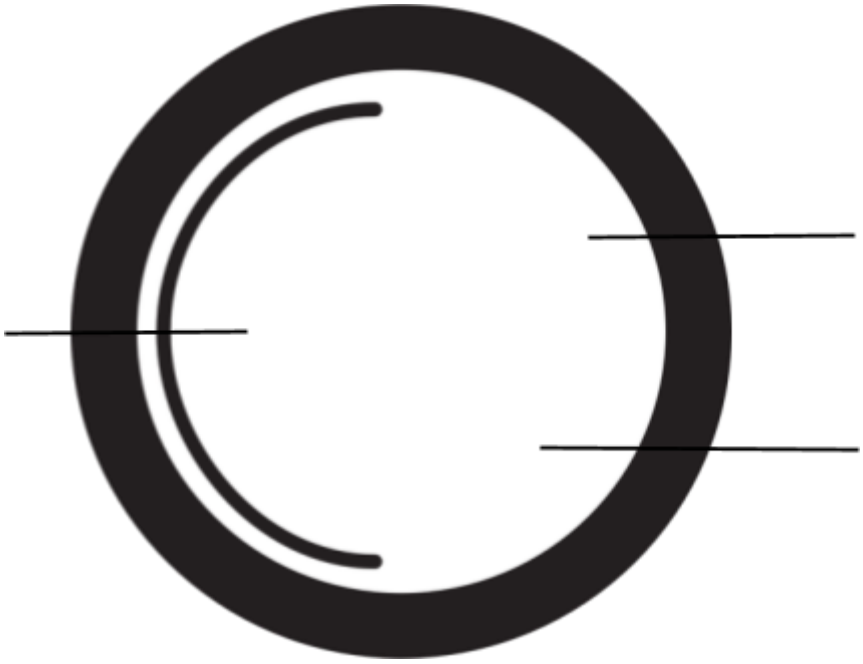
Part 3

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.

Metabolism Skills Practice

- The week of **March 30-April 3** you had the opportunity to examine how our bodies use food (this activity is also found below if you didn't get an opportunity to complete it). You may have taken the opportunity to visit the Metabolism Sim in Amplify Science for this practice with members of your family.
- The week of **April 6 – April 10,** you put your skills to work by following this link to explore the process of digestion.
- The week of **April 13 – 17**, you will examine the digestive system and gain a better understanding of what happens to the food you eat every day. Use this link to access the Discovery Ed videos and learning experiences. The Digestive System
    - Keep track of what you eat during the day. Record how certain foods make you feel after you eat them. What are some things you notice about the different foods you eat and how the effect how your body feels?

Thermal Energy Skills Practice

- The week of **March 30-April 3** you had the opportunity to explore thermal energy by observing and describing energy transfer while holding a cup of warm water (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 predict heat flow and temperature changes.
- The week of **April 13 – 17**, you will investigate kinetic energy, review key vocabulary, and observe energy all around you. You may even choose to create a kinetic energy demonstration!! Use this link to access the Discovery Ed videos and learning experiences. Kinetic Energy
    - Try this experiment as well - **Energy Transfer**
      To better understand energy transfer, conduct this simple experiment that demonstrates potential energy (stored) and kinetic energy (moving). Don't forget about momentum, speed and mass!
        1. Bounce a basketball or soccer ball and observe how high it bounced.
        2. Drop a smaller ball, like a tennis ball, making note of its bounce.
        3. Now, hold the smaller ball on top of the larger ball and drop them at the same time.
            a. What did you observe?
            b. How can you explain what you observed using your science vocabulary about kinetic energy? (Hint – think about energy transfer)

Traits and Reproduction Skills Practice

- The week of **March 30-April 3** students had the opportunity to examine the traits of people living in your household and traits of other people you know (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 evidence to determine which human traits are inherited and which traits are acquired.

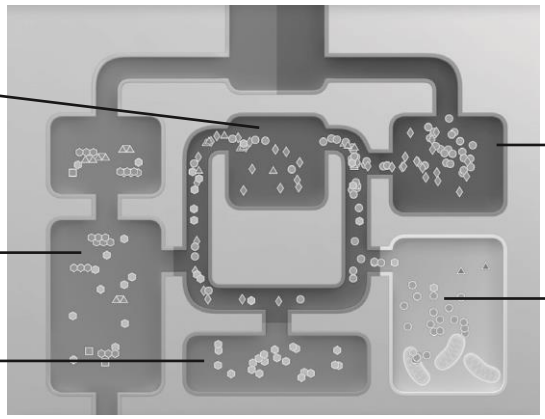
- The week of **April 13 – April 17**, you will learn about genetics and heredity, specifically, how we inherit certain traits from our family through our genes. Use this link to access the Discovery Ed video. Genetics and Heredity
    - Once you finish the video, complete the chart below. Survey your family members, even those that don't live with you. What traits do you share? How many of your family members have the same traits? Based on what you have learned, why doesn't every member of your family share all the same traits?

Dominant/Recessive Traits Survey			
Dominant Trait	**Number of Individuals Displaying Trait**	**Recessive Trait**	**Number of Individuals Displaying Trait**
Freckles		No Freckles	
Free-Hanging Earlobes		Attached Earlobes	
Dimples in Cheeks		No Dimples	
Cleft Chin		No Cleft	
Ability to Roll Tongue		No Tongue Rolling Ability	
Hair on Fingers		No Hair on Fingers	
Curly Hair		Straight Hair	
Widow's Peak		No Widow's Peak	
Straight Thumb		Curved Thumb (Hitchhiker's Thumb)	
Right-handed		Left-handed	

METABOLISM:
Family Science Experience: Explaining How Body Systems Use Food

Choose one or more members of your household and list the food they ate that day. Then explain how their body systems use that food.

- Use the image from the *Metabolism* Sim to help explain how the body systems use the food they ate.



1. Record what the member(s) of your household ate today:

_____

_____

2. Using the image above, explain how the different body systems use the food:

_____

_____

_____

Invite the member(s) of your household to ask you questions.

3. Record one of their questions:

_____

_____

4. Record your answer to their question:

_____

_____

5. Have the family member summarize what they understood from your explanation:

_____

_____

_____

THERMAL ENERGY

Family Science Experience: Exploring Energy Transfer at Home

Work with a member of your household to observe and describe energy transfer while holding a cup of warm water (or warm beverage of your choice!).

- You may work with more than one member of your household.
- You might need to explain a little about temperature and energy 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 and experienced holding the warm cup:

_____

_____

_____

_____

_____

TRAITS AND REPRODUCTION

Family Science Experience: Exploring Traits at Home

Work with a member of your household to list the traits of the people in your household and other people you know.

- You may work with more than one member of your household.
- You might need to explain a little about traits and variation 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.

Make a list of the people in your household and their traits. You can also add other people, like friends, neighbors, or other family members who do not live with you. Consider traits such as hair color and eye color.

_____

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