

**ADP MAST ACADEMY
PRESENTS**



**MATH AND SCIENCE
IN THE MOVIES**

**2022
SUMMER CAMP
CLINT ISD**



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(M) stands for math-related lessons

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Lesson Plan 1

Name of Lesson: Under Pressure

Learning Objective:

Apply qualitative and quantitative reasoning to observe, analyze, predict, problem solve. Students should be able to identify a relationship between mass and distance on gravitational forces as well as between force, motion, and energy.

Student Outcome: *Students will be able to understand and apply the engineering design process by building a structure that can support weight and calculating the strength to weight ratio.*

Day of the Week and Time (Example: Tuesday, 8:30 am-9:00 am)

Wednesday, 10:15-11:30; Wednesday 12:00-1:30

Total Length of Lesson: 165 min (2hr 45 min)

Materials per student: (include # copies of handouts, paper for foldables, etc.)

- Construction paper
- Glue
- Scissors
- Tape (masking and clear)
- Sticks, toothpicks
- Clay, playdough
- Old water bottles
- Straws
- Balance
- Weights (marbles that are pre weighed (or any other small item that can serve as weight), and 3lb ones, also supply list says random weights ??)

Technology Required: (also put video, website, etc. links here)

- Powerpoint link here: https://docs.google.com/presentation/d/1YT8w2q-n2Pnk2nFsa-ZaKCfD_6htQXjRgdaWqMU9N4g/edit?usp=sharing
- [sa-ZaKCfD_6htQXjRgdaWqMU9N4g/edit?usp=sharing](https://docs.google.com/presentation/d/1YT8w2q-n2Pnk2nFsa-ZaKCfD_6htQXjRgdaWqMU9N4g/edit?usp=sharing)

What needs to be prepared/set up ahead of time: (before camp starts, day before, morning of)

- Example of Luisa
- Lay out the materials that will be used so students can see them during the brainstorm

Day One: 75 minutes

Activity 1: Introduction (Video)

Duration: 5 min

Notes to teacher

The task can be introduced as a challenge for example you can say:

Good morning, class. We have received a special request from Macondo, Columbia that Luisa just lost her super strength. We have been tasked with designing a structure similar to Luisa that must support weight. We will use our understanding of the steps of the

<p>engineering design process to achieve the mission goals. The operation name is "Under Pressure."</p> <p>Your mission, which you must accept, is to design and construct a structure with super strength for Macando that will have a high strength-to-weight ratio. Your design must only use the material provided and meet certain criteria and constraints.</p> <p>As always should any member of your force be caught or killed, the secretary will disavow any knowledge of your actions. This tape will self-destruct in five seconds. Good luck class.</p> <p>Introduce challenge</p> <p>Criteria:</p> <p>The structure must support at least 25g</p> <p>The structure must be at least 10 cm tall</p> <p>Your structure must be no larger than 15cm x 20 cm X 15 cm It must resemble a human in some shape or form standing, laying down etc. As long as you convince us that it is a human you are good to go The structure must be free-standing. It cannot be attached to a surface.</p>	
<p>Activity 2: Do background research(Engineering design process) Duration: 30 min</p> <p>Students will be introduced to the engineering design process through a powerpoint and their task to build a sustainable structure using low fidelity (household items) materials.</p> <p>We will go through each step of the engineering design process explaining what each step means.</p>	
<p>Activity 3: Generate solutions (Brainstorm) Duration: 5 min</p> <p>During this section students will be given time to brainstorm how they can build luisa with the materials given. The brainstorm should be individual and each member should contribute at least 2 ideas. The goal in this step is to have quantity over quality so all ideas are welcome no matter how silly they might seem.</p>	<p>No negative comments are allowed. Encourage wild ideas. All ideas are recorded. Stay focused on topic. One conversation at a time. Build on the ideas of others.</p>
<p>Activity 4: Develop the solution (Plan) Duration: 15 min</p> <p>Students will work in groups of four for the project. Once the students have brainstormed their solutions they will re-group and develop a final solution for their design. Discussing with their group by either selecting the best idea or combining their ideas to make a new one. They must have a sketch of their final design.</p> <p>During this step students will be told they have a budget and they will be given a list of materials with prices.</p>	

<p>They must develop a solution with this in mind as a group. If they finish developing their solutions early they can start building their prototypes</p>	
<p>Activity 5: Build a prototype (Create). Duration: 20 min</p>	
<p>During the prototype section of the project students will start building luisa with the materials provided. Their goal is to build the Luisa with the best strength-to-mass ratio</p>	
<p>Day Two: 90 min</p>	
<p>Activity 5: Build a prototype (Create). 50 min</p>	
<p>During the prototype section of the project students will start building luisa with the materials provided. Their goal is to build the Luisa with the best strength-to-mass ratio</p>	
<p>Activity 6: Test & Analyze (test) 30</p>	
<ul style="list-style-type: none"> ● As a class we will test everyone's prototype and see at what weight their prototype collapses. Once this is done an analysis aka a strength to weight ratio is conducted to figure out who's luisa was the strongest. ● Prior to testing their design students will be asked to weigh them to find the mass. ● Calculate the strength-to-weight ratio: <ul style="list-style-type: none"> ○ You can do this by dividing the breaking load measured in grams by the mass of the prototype also in grams. This ratio serves as one way to measure the performance of the prototype; a high strength-to-weight ratio is preferred since it means the bridge can support a heavy load, but is itself composed of as little material as possible, which reduces the cost of materials and saves money. <p>Have students calculate their teams' strength-to-weight ratio, they will then share it with the rest of the class.</p>	
<p>Activity 7: Reflect and Improve (Improve) 10 minutes</p>	
<p>The students will be given a post project reflection. Have the students reflect on the project.</p>	
<p>Activity 8: Communicate Results</p>	
<p>The students can write a journal reflection describing their bridge, what they liked about it etc.</p>	

Lesson Plan 2

Name of Lesson: Creative Stop

Learning Objective:

Understand, identify, and perform transformations of figures in a two dimensional plane using coordinate notation.

Student Outcome: *Students will be able to identify different types of transformations by creating their own stop motion.*

Day of the Week and Time (Example: Tuesday, 8:30 am-9:00 am)

Wednesday, 1:30-2:15; Thursday 8:30-9:45

Total Length of Lesson: 120 min (2 hours)

Materials per student: (include # copies of handouts, paper for foldables, etc.)

- Graph Paper
- Foldable Template
- StoryBoard template
- Thaumatrope guide
- String
- Scissors

Technology Required: (also put video, website, etc. links here)

- Google Slides Presentation
- Google Slides animation template
- Flippity randomizer: <https://www.flippity.net/ra.php?k=1tz26nc91GRkLV-6EwNcqp4gitzw-rENBG9thvgL7CiM>
- Video guide for stop motion
- Padlet link: <https://padlet.com/citlalirey/jw14lev1y95frfsw>
 - Tinyurl padletlink <https://tinyurl.com/h2nduv5t>

What needs to be prepared/set up ahead of time: (before camp starts, day before, morning of)

- Example of a stop motion
- Example of thaumatrope
- Create a padlet for your class

How to accommodate lesson for students who are English Language Learners or have trouble focusing

- Translations have a lot of cognates that can help students.

Day one: Introduction to Animations

Duration: 60 min

Intro: Graphing points on a coordinate plane

15 min

Notes to teacher

Create your own Thaumatrope

The eye retains an image for a split second after it has actually been shown this is called the persistence of vision. The persistence of vision is what makes animations work. Glue or tape the back sides together with the pencil in between to form the thermatrope.

Students can create their own by using the template provided they will simply draw something coming out of the

	box in one of them
<p>Transformation intro and Foldable</p> <p>Students will be introduced to the different types of transformations; the basics will be notes in the form of a foldable. We will go over the foldable while doing the powerpoint presentation.</p> <p>Transformation (Foldable).pdf</p>	30 min
<p>Generate the story</p> <p>Tell the students they will now be placed into pairs. We will use a random generator to choose what story they are to animate.</p> <p>As a class we will give each group a set of three words to build their animation after. Link to random scenario generator: https://www.flippity.net/ra.php?k=1tz26nc91GRkLV-6EwNcqp4gitzw-rENBG9thvgL7CiM</p> <p>Show the students how to create their own using google slides. Either by showing the video or guiding them through a step by step tutorial Here is a quick video tutorial I made https://youtu.be/G1_WzQhqlGc</p>	5 min generator 10 How to tutorial
<p>Day 2: Stop Motion Creation Duration: 60 min</p>	5 min
<p>Warm up: Have students demonstrate different types of transformations with their bodies to recall them from the day before.</p> <ul style="list-style-type: none"> • It can be as a class or individual for example you can ask a student to show a translation to the right with their eyes closed and they can move to the right to demonstrate it. • Then you can ask the whole class to show a dilation etc. 	
<p>Animation</p> <p>Students will go into project work time to create their animations.</p> <p>Once the students are in groups they will then have to identify what transformations they want to include into their animation. They must identify the transformation, how it moved, and have one of each: translation, rotation, dilation, and reflection.</p> <p>Students will be given the remainder of the time to work on the animation. Animation should be 10-15 seconds long</p> <p>Share this link with them and it will make a copy. https://docs.google.com/presentation/d/1d48jK1vHviiXOXbyrUkvffGGM6b_ZZeZ14gdKQcmTrk/copy</p> <p>Here is a quick video tutorial I made https://youtu.be/G1_WzQhqlGc</p>	55 min

Here is an example I made using Google Slides [powerpoint](#).

Publish to web

Change 1000 to 75

It is about 10 slides per second or 10 frames per second

Mine about 4 sec -38 slides

Everyone will share their animation by adding it to a padlet identify which transformations where present

If time allows have them vote for the best motion picture

To differentiate for higher learners you can have them do the math behind the transformation with the coordinate points. Here is a link for a foldable with that information.

Lesson Plan 3

Name of Lesson: Dinos through time

Learning Objective:

Understand and analyze the relationship of natural selection to specified adaptations and the development of diversity among species.

Student Outcome: *Students will be able to... create a diorama of a biome as well as identify traits of organisms in that biome*

Day of the Week and Time *(Example: Tuesday, 8:30 am-9:00 am)*

Monday 10:30 am

Total Length of Lesson: 1 hour

Materials per student: *(include # copies of handouts, paper for foldables, etc.)*

- 1 piece of construction paper
- Markers(1 per student)
- Colored pencil (1 per student)
- Blank sheets of copy paper (2 per student)
- Scissors

Technology Required: *(also put video, website, etc. links here)*

- Google(they must do research)
- <https://www.dkfindout.com/us/dinosaurs-and-prehistoric-life/dinosaurs/>
- [istoric-life/dinosaurs/](https://www.dkfindout.com/us/dinosaurs-and-prehistoric-life/dinosaurs/)

What needs to be prepared/set up ahead of time: *(before camp starts, day before, morning of)*

- Prepare list of 15 dinosaurs
- Make sure materials are gathered

How to accommodate lesson for students who are English Language Learners or have trouble focusing

- There is going to be a lot of visuals in this lesson but there will also be a translation from english to spanish for key words that aren't cognates

Activity 1:

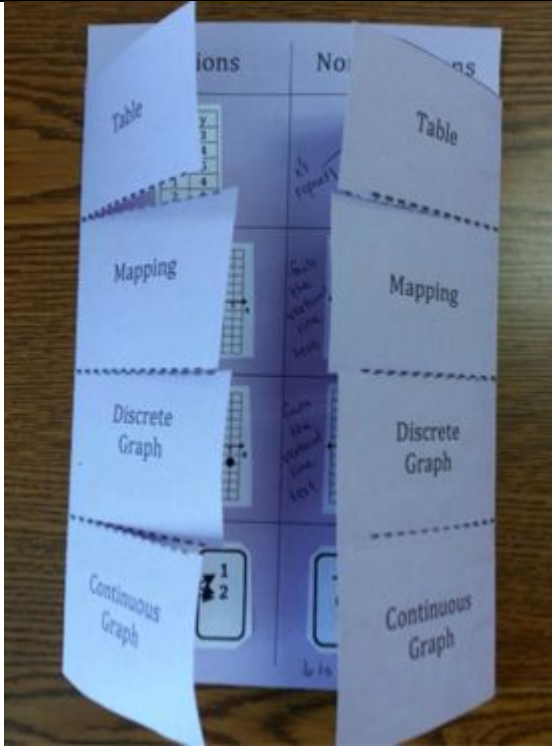
Duration: 15 minutes

Notes to teacher

Presentation

Teacher will be going over 6 biomes as well as common traits of the animals. Before presenting, have the students pull out the paper we decide to use for the trifold. Please be careful as the students are young and may be more prone to getting hurt than others.

Don't copy the definition but do go over them thoroughly
Once the trifold has been made to create a scene, this is one of the first activities. Even though some



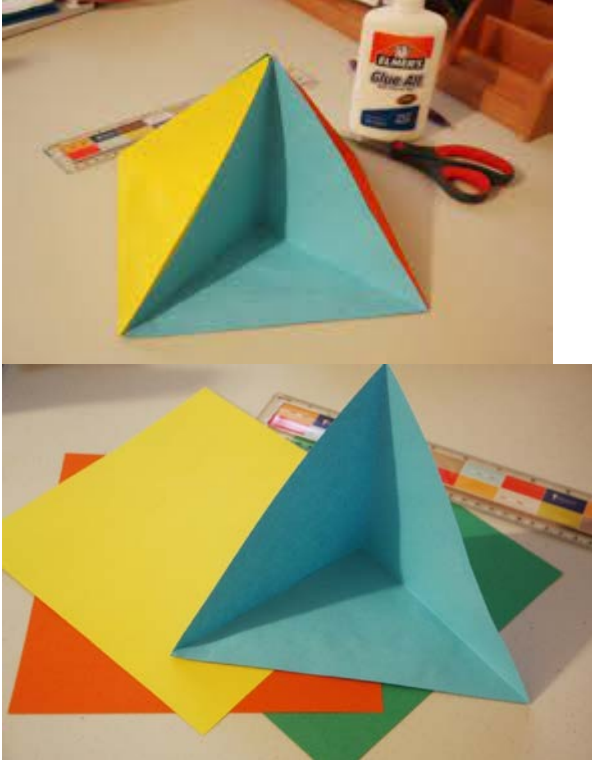
In this powerpoint

[Dinos through time.pptx](#)

people may have not seen Jurassic Park or it's sequels, the theme should be similar to a savannah exploration. Take some time with each slide, as each slide will represent a flap/side for the students to copy Please instruct the students in folding the paper into a trifold and cut the flaps out. The students will then write out the information into the corresponding biome. Until you reach the slide that allows for choices you would then split into the class their corresponding biomes. (You may split them equally however you would like). For the slide mentioned "Imagine" create a scenario that puts the dinosaurs into our real world such as imagine a velociraptor being used as hunting dogs or horses. Or imagine seeing a pterodactyl out in the beach fighting a seagull for food.

Activity 2:

Duration: 10 minutes

<p>Split and Research: 10 minutes</p> <p>Students will be separated into groups of 4 and each group will be assigned a specific biome. Each group will have an equal number of students and be assigned their dinosaur. The students will be required to research the traits of their dinosaurs and write about the differences their dinosaurs must overcome in order to live in their new environment. The student must choose their own dinosaur but as long as the dino is not repeated in their biome that is okay as in it is not okay for there to be two students in the desert biome to design a t rex but it is okay for a two students from different biome to do research on the same dinosaur.</p>	<p>When assigning the biome if you want to create a random They will use DK find out to compare and contrast the traits of the dinosaurs and theorize how their dino would adapt into their corresponding biome</p>
<p>Activity 3: Duration: 25 minutes</p>	
<p>Design your biome: 25 minutes</p> <p>The students will draw their dino and paste in the foldable presented in the bottom of this section as well as include various plants and animals that live in the biome. The explanation of their dinosaur will be written in an index card and taped to the bottom of the diorama. After each biome is done they will tape each of their dinos as well as their environment together</p> <p>Link for the foldable: https://youtu.be/-tXSC1edlvs</p> 	<p>The design of the biome would be the dinosaur in their adapted form. Have the student color and be as creative as possible please. (Make paper a square)</p> <p>At the end of their designing they will tape the 4 triangle dioramas just as presented in the picture on the left. Use tape rather than glue as we need a more immediate adhesive</p> <p>I would study the video prior to teaching so that they the students look at you but if you prefer to watch the video as a class that's okay</p>
<p>Activity 4: Duration: 10 minutes</p>	
	<p>IF there is little</p>

<p>Presentations: 10 minutes</p> <p>Students will each have a turn to present their biome and dinosaurs and explain their reasoning behind every adaptation trait as well as the specific trait of the biome that led them to this decision.</p>	<p>time you can pick a couple biomes to present but I still encourage all teams to present</p>
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Lesson Plan 4

Name of Lesson: Geometric Outfit

Learning Objective:

The student is able to identify geometric shapes and how to calculate the area.

Student Outcome: *Students will be able to... create an outfit about a movie using only geometric shapes while getting the area.*

Day of the Week and Time *(Example: Tuesday, 8:30 am-9:00 am)*

Tuesday, 1:00 pm-2:15 pm

Total Length of Lesson:

1 hour and 15 minutes

Materials per student: *(include # copies of handouts, paper for foldable, etc.)*

Per 1 class of 25 students:

- 20 crepe paper (white, black, blue, red, yellow, pink, brown)
- 6 scotch tapes
- 6 of the 60-inch tape measure
- 6 scissors
- 6 black sharpies
- 6 notebooks
- 6 pencils

1 kit per group of 3 to 4 students

- 3 crepe paper
- 1 scotch tape
- 1 60-inch tape measure
- 1 scissors
- 1 black sharpie
- 1 notebook
- 1 pencil

Technology Required: *(also put video, website, etc. links here)*

- **Powerpoint presentation:** [Geometric Outfit.pptx](#)

What needs to be prepared/set up ahead of time: *(before camp starts, the day before, the morning of)*

- Each kit should be already prepared before the activity so one student can go and pick it up.
- A figure has to be already measured and cut to make a demonstration in front of the students.
- There is a paper that has the name and an image of the movies. Each square should be cut and folded for students to choose from in Activity 2.

Activity 1: Introduction	Duration: 10 min	Notes to Teacher:
<ul style="list-style-type: none"> • Begin the lesson by asking “How can you tell the difference between a Star Wars character from a Harry Potter one?” • Show them the images of these two outfits and explain a little bit how important the costume is for a movie. • Follow up with figures they will be using and their areas. • Finally explain a little about the activity, show them the example and the rules. • As you show the images in the presentation make a demonstration using the tape measure by using in your arm or wherever you feel more comfortable. • Ideally you will have a figure with you (square, circle, etc.) that you will paste into your body to make a demonstration in front of the students. 		<p>-The shapes should not take long to explain are only for them to remember not so much about an explanation.</p> <p>-At the end of the PowerPoint, there will be links to the trailers for some of the movies.</p>
<p>Activity 2: Sketch outfit</p> <ul style="list-style-type: none"> • A member of the group will come forward and pick up a piece of paper that has the name of the movie. • Another member will get the kit. • The students will begin to design the outfit for the movie. The sketch of the outfit should be in the notebooks they have. 	<p>Duration: 10 min</p>	<p>-Just to be careful about the movies because many of them may not know the movie.</p> <p>-The link to the trailers is the last three slides of the PowerPoint.</p>
<p>Activity 3: Cut shapes and tape them</p> <ul style="list-style-type: none"> • They will begin to measure one of their classmates and start getting the shapes out from the paper crepe. 	<p>Duration: 45 min</p>	<p>-Here is to help them with any concerns about getting the area.</p>

<ul style="list-style-type: none"> ● As well as recording the areas from each one of the shapes and how many they are using. ● The last 5 to 10 minutes will be used to tape. 	
Activity 4: Fashion show	Duration: 10 min
<ul style="list-style-type: none"> ● Finally, each team will present their character, say the shapes they use and the total area. ● The students will be voting for their favorite costume. 	<p>-Here the students are not allowed to vote for their own outfits.</p> <p>-They are allowed to vote more than once.</p>

Lesson Plan 5

Name of Lesson: Running Supplies

Learning Objective:

Student should be able to understand and explain the relationships between time and distance and use them to calculate speed.

Student Outcome: *Students will be able to...* find the speed on each trial and manage their supplies.

Day of the Week and Time (Example: Tuesday, 8:30 am-9:00 am)

Tuesday, 9:30 am – 10:30 am

Total Length of Lesson:

45 min - 1 hour

Materials per student: (include # copies of handouts, paper for foldable, etc.)

Per 1 class of 25 students:

- 6 Notebook
- 6 Pencil
- 2 Dice
- 6 Stopwatch
- 6 Cone
- 6 Glue
- 6 Scissors
- 25 color papers
- 25 print papers on the “concept of running supplies”

Technology Required: (also put video, website, etc. links here)

- Powerpoint presentation: [Running supplies.pptx](#)

What needs to be prepared/set up ahead of time: (before camp starts, the day before, the morning of)

- This activity should be outside or in the gym.
- have the cone already installed and have already measured the distance that the student will be running. The ideal distance should be 20 to 25 meters from each cone.
- there should be enough space between each track so students won’t collide with each other while running.

How to accommodate lessons for students who are English Language Learners or have trouble focusing

- Ideally is for every student to run but if they are not able to run then a new category will be created. Called the “Captain” they are the only ones that will manage the supplies, get the velocities, track time, and has the last decision on whether to participate in the last race.

Activity 1: Introduction

Duration: 10 - 15 min

Notes to Teacher:

- Here can be begun by asking “who likes zombies movies?”
- Then follow with the question “what is the most important thing to survive in a zombie world?”
- After the students share their answers, explain a little bit about the importance of the supplies and the velocity in a zombie world.
- Hand out the paper color and the print paper before giving examples of the velocity and speed. They should cut the concepts and paste them into the colored paper.
- The velocity and speed slide has the formulas and pictures from Cielo Vista to Las cruces. The idea here is for you to explain what the units mean, if they travel at a speed of 50 miles per hour then they reach Las Cruces in one hour. Speed is the average pace in the whole trajectory.
- In the same slide velocity will be used here to talk about the direction.
Now you can use velocity because they cannot travel 50 miles per hour on the whole freeway. There will be some curves that will change their direction so changing also velocity.
- The next slide is about distance and displacement. Here, begin by asking them how much distance and to where is traveling the person. After getting some answers then ask if he moves from the origin. It can be seen that the move was 12 meters but did he displace from its origin?
- The next is not in a slide but you will use the cones to demonstrate how to get the speed. Place the cones separately by two or three-meter and start walking to the other cone or ask a student to do the walk. Tell to the students to count the seconds they take in reaching the other cone. Finally, with this information plug everything into the formula and solve the equation with the help of the students.

Speed is a scalar quantity, “how fast an object is moving. Has no direction so is not a vector.

Velocity is a vector quantity, “the direction in which the object is moving”.

Distance is a scalar quantity, “how much ground an object has covered”.

Displacement is a vector quantity, “how much the object has moved from its origin”.

You do not have to follow all these examples, you can change as you may like.

<p>Activity 2: Running Duration: 15 min</p> <ul style="list-style-type: none"> ● Before moving the students to the designated area for the activity you have to show them the rules. The first set of rules talks about respecting each other and doing no harm to other students The fifth slide of the PowerPoint has the rules and you have to disqualify the team if they do not follow the “respect rules”. ● The sixth slide has a set of rules about the activity. Explain to them the rules and allow them to write the rules if they want to. ● Each team has its track to run freely and not cause any accidents. ● Before beginning with the activity you need to practice one or two times for the students to understand the game. ● The students will select who will run first, second, and so on. ● The students will need to record the time and the number of supplies gotten on each trial. ● You will need to run from one cone to the other. Back and forward. As well you need to touch the cone to demonstrate you reach the goal. ● Each trial will consume a supply from the inventory of each team so before beginning the race each team will begin with one supply. ● The dice will be thrown by the runner who finishes first, then second, and so on until everyone has done it. ● The dice will say the number of supplies that each member will get. 	<p>-There has to be one professor at the end of the track and the other at the beginning.</p> <p>-The last race is optional for the teams to participate because they need to think if they have enough supplies to participate. Do not say this rule until the first three trials are over.</p> <p>There will be a handout with the rules for you. The activity will be held outside the class so the handout will help a lot to remember the rules.</p> <p>The last race is optional for them to participate.</p> <p>One teacher is at the beginning of the track while the other teacher is at the other end so he or she can check they touch the cone with their hand. If they do not touch it they have to come back and touch it.</p>

<ul style="list-style-type: none"> ● Although the amount of supplies each team will get depends on their luck, the race will give extra points in the end. ● Finding the velocity is essential because we will fill a table with the velocities and the points. ● Finally, in the last race each team will select their fastest runner and the winner will double the points given by the dice. A zombie world has its punishment so the runner who ends last will lose 5 supplies 	
Activity 3: Finding the variable	Duration: 15 min
<ul style="list-style-type: none"> ● The students will calculate their velocities on each trial and add all the supplies they have. <p>A table on the PowerPoint will be used to fill all the velocities and points. All the points will be added to get a total and get a winner.</p>	<p>Here is just to check the procedure is correct.</p> <p>For example, Let's say that there are four teams. The velocities are already filled for the first trial so the points will be given from 1 to 4 depending on who got the higher velocity. This means the higher will get 4 points.</p>

Lesson Plan 6

Name of Lesson: Ice cream

Learning (TEKS) Objective: 7.6A: Distinguish between physical and chemical changes in matter

Student Outcome: *Students will be able to... change matter from liquid to solid by changing the temperature*

Day of the Week and Time (Example: Tuesday, 8:30 am-9:00 am)

June Tuesday 14 1:15-2:15

Total Length of Lesson: 1hr

Materials per student: (include # copies of handouts, paper for foldables, etc.)

- Ziplock bags size pint
- Ziploc gallon size
- half & half if lactose intolerant soy milk option
- Sugar
- Salt
- Ice
- Vanilla extract
- Spoons
- Thermometer
- Cups
- Tablespoons
- Lab worksheet
- Paper Towels

Technology Required: (also put video, website, etc. links here)

- <https://www.youtube.com/watch?v=x49BtB5dOwg>
- Powerpoint presentation:
https://www.canva.com/design/DAE9acbKGhw/9joIX6kafelDOKwQUhOQXg/view?utm_content=DAE9acbKGhw&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton#6

What needs to be prepared/set up ahead of time: (before camp starts, day before, morning of)

- Printed out handouts
- Cards cut out and ready to hand out
- Materials in a bin ready to go so students can just pick them up

How to accommodate lesson for students who are English Language Learners or have trouble focusing

- Visuals
- Sentence stems

Activity 1: Review physical and chemical changes
Duration: 10 min aprox because they are writing down info

Notes to Teacher:

<p>Students will watch the video and write down chemical and physical changes https://www.youtube.com/watch?v=x49BtB5dOwg</p>	<p>Stop Video at 0:54 have them write down definition of physical change Write down three examples Stop Video at 3:13 write down the definition of a chemical change Write down three examples Stop Video at 4:30 have them write down how to tell a chemical change occurred Stop Video at 4:51 have them write down how to tell a physical change occurred</p>
<p>Activity 2: Card Sorting of chemical and Physical changes Duration: 10-15 minutes</p> <p>Students will work in pairs and sort the cards into chemical or physical changes https://www.lcps.org/cms/lib4/VA01000195/Centricity/Domain/3522/PhysicalandChemicalChangesSCOOT.pdf</p>	<p>Walk around and check</p>
<p>Activity 3: Make Ice Cream Duration: 30 minutes</p> <ol style="list-style-type: none"> 1. In the small zip lock, pour $\frac{1}{2}$ cup of half and half (dairy free option 1 cup soy milk), $\frac{1}{4}$ teaspoon of vanilla extract and 1 tablespoon of sugar. Seal the bag and mix well. Set the bag aside. 2. Open the large zip lock and add 4 cups of ice cubes inside. Take the temperature of the bag. 3. Add $\frac{1}{2}$ cup of salt to the bag of ice. Leave the bag open. What do you think the salt will do to the ice? 4. Place the sealed small zip lock into the zip lock with the salt and ice cubes. Seal the large zip lock tightly. What do you think will happen to all the ingredients over time? 5. Grab the paper towels to shake the bag. Do not touch the ziplock with your bare hands. (VERY COLD) Take the temperature of the ice/salt mixture What do you observe? Why do you think this is happening? How long did it take for the ice cream to form? 6. When you are happy with the consistency of your ice cream pour into a cup and enjoy. 7. Clean up and dispose of any trash into the bin. Wipe down tables. Return any materials. 	<p>Explain the instructions have one person from each group come up and get the materials for their table. Students will be recording observations as they go</p>

Activity 4: post lab questions	Duration: 15 minutes	Students work to answer questions from their lab sheet if time allows have a discussion about their results
Students will complete some lab questions and record their observations. Questions for Discussion on lab sheet		

Lesson Plan 7

Name of Lesson: Snack Tectonics

Learning Objective:

Understand plate tectonics, the different types, and landforms they create.

Student Outcome: *Students will be able to identify each different type of plate boundary and the effects that follow them.*

Day of the Week and Time *(Thursday the 16th 12:00 pm-1:00 pm)*

Total Length of Lesson: 1 hour

Materials per student: *(include # copies of handouts, paper for foldables, etc.)*

- 2 graham cracker squares (Continental plates)
- 2 squares of fruit roll-ups (Oceanic plates)
- 1 cup of 2oz water
- RedFrosting (Magma)
- 1 popsicle stick
- 1 plate
- Gloves
- Scissors
- Clorox wipes
- Pitcher for the water

Technology Required: *(also put video, website, etc. links here)*

- **Powerpoint presentation:** https://www.canva.com/design/DAE-uVD3JBE/7Etlc9s1Y-AIBkN900 Frw/view?utm_content=DAE-uVD3JBE&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton
- **Worksheet:** [Movie-Michelle-Snack Tectonics Worksheet-FrontBack-Long Edge\(30\)-white](#)

What needs to be prepared/set up ahead of time: *(before camp starts, day before, morning of)*

- Cut fruit roll-ups in half
- Prepare graham crackers

●

Activity 1:

Duration: 15 minuets

Notes to Teacher:

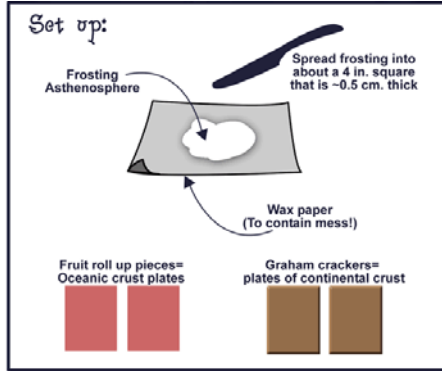
Present the lesson on quizzz. Have the students join the quizziz so they can answer the question.

The lesson is already on the link. All you have to do is press Start.

Activity 2:

Duration: 5 minutes

Snack tectonics, the students will demonstrate what they just learned by creating their own plate boundaries using snack.



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[SnackTectonicsLab.pdf](#)

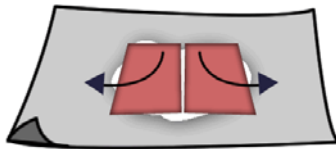
This activity is still done on the quizziz. On the set up picture, it shows a wax paper, but we will be using plates instead.

Activity 3:

Duration: 30

Divergent plate boundary

1. Place the two plates of oceanic crust (fruit roll up pieces) side by side lightly on the frosting asthenosphere.
2. Press down slowly on the oceanic plates (because they are dense and will sink a bit into the asthenosphere) as you slowly push them apart about half a cm.

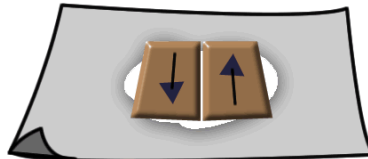


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Transform plate boundaries

1. Pick the two crackers up off the frosting and turn them around so that two dry edges are next to each other.
2. Push one cracker past the other to simulate a transform plate boundary like the San Andreas fault!

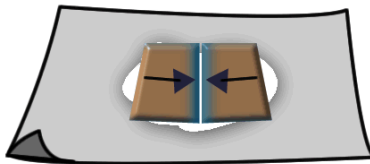
Final step: Eat all remaining model materials (except, of course, wax paper and plastic utensils!)



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Continent-continent collision

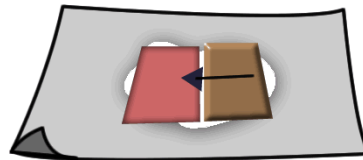
1. Remove both the cracker and fruit roll up from the frosting asthenosphere.
2. Place one edge of both crackers into the glass of water for just a few seconds.
3. Place the crackers onto the frosting with wet edges next to each other.
4. Slowly push the graham crackers towards each other.



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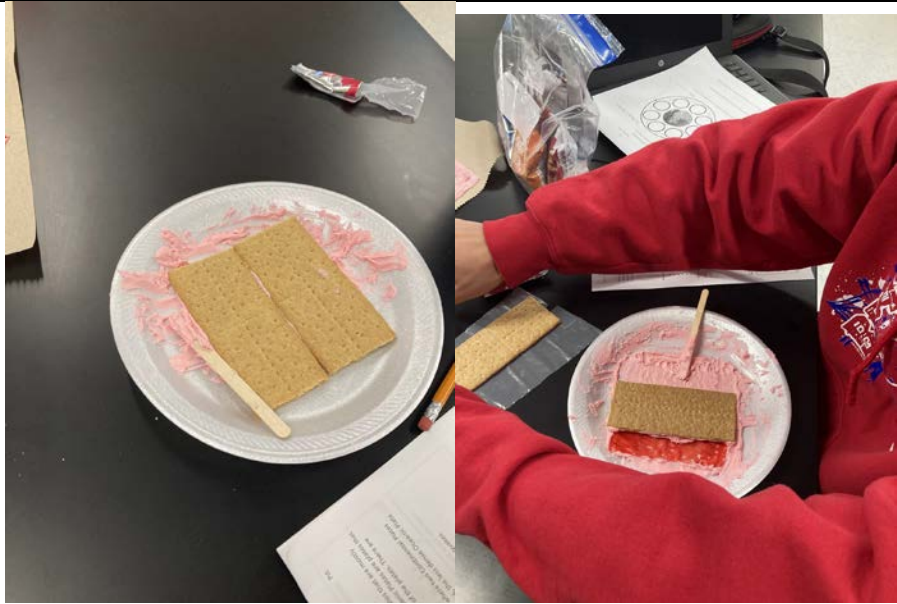
Continental-oceanic collision

1. Remove one of the fruit roll ups from the frosting.
2. Place one graham cracker lightly onto the frosting asthenosphere next to the remaining fruit roll up. Continental crust is less dense than oceanic crust. It floats high on the asthenosphere so don't push it down.
3. Gently push the continent (graham cracker) towards the ocean plate (fruit roll up) until the two overlap and the graham cracker is on top. The oceanic plate has been subducted!



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We will first do divergent boundary, then continental-oceanic, transform, and finally continental-continental, so it is less messy. The students will be filling out the worksheet.



Activity 4:

Duration: 10

Kids eat/ clean-up

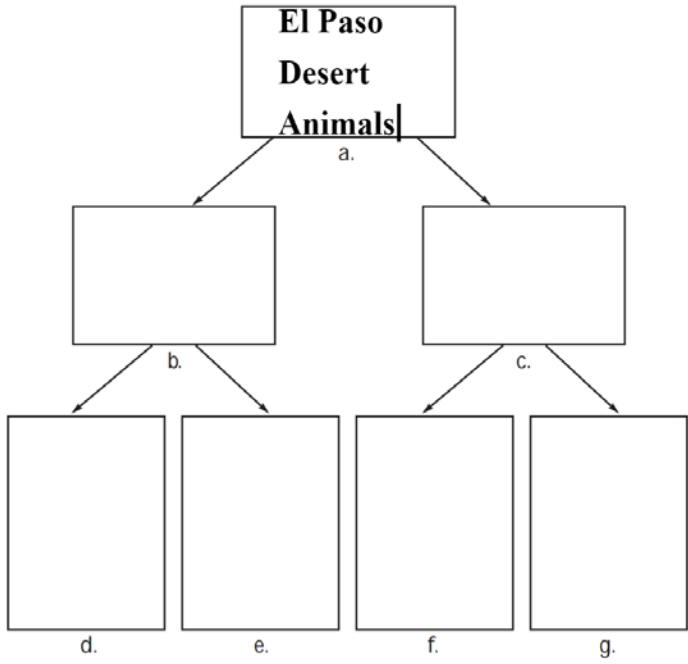
Lesson Plan 8

Name of Lesson: Sort your familiar		
Learning Objective: Students will be able to create their own dichotomous keys using character traits from organisms		
Day of the Week and Time (<i>Monday June 13, 12pm-1pm</i>)		
Total Length of Lesson: 1 hour		
Materials per student: (<i>include # copies of handouts, paper for foldables, etc.</i>)		
<ul style="list-style-type: none"> ● Pencils ● Colors ● Ruler ● worksheet 		
Technology Required: (<i>also put video, website, etc. links here</i>)		
<ul style="list-style-type: none"> ● Powerpoint Presentation: https://www.canva.com/design/DAE76irVrSo/troRILS60G67CtTjeZIOYA/view?utm_content=DAE76irVrSo&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton ● Worksheet: Movie-Michelle-Harry Potter Teambuilder/Worksheet-long edge(30)-white.docx 		
What needs to be prepared/set up ahead of time: (<i>before camp starts, day before, morning of</i>)		
<ul style="list-style-type: none"> ● N/A 		
Activity 1: Canva Presentation	Duration: 10	Notes to Teacher:
Present presentation		In slide 5 make sure to go over the picture so they can see how Dichotomous keys are classified.
Activity 2: Classify together	Duration: 20	Notes to Teacher:
As a class classify the house animals; lion, serpent, badger, and eagle.		Use slide 7 to write the characteristics of the animals that you come up with. I would use the whiteboard and project the presentation so you can write on this slide. Or if we have a smart board present it there. Use slide 8 to graph the dichotomous keys that you have created together as a class.
Activity 3: Classify with their groups	Duration: 30	Notes to Teacher:
minutes		The students will create their own dichotomous keys. Every group

The students will create their own dichotomous keys using local El Paso animals.

might have different classifications and that is okay.

Dichotomous Keys



Lesson Plan 9

Name of lesson: Exploring Ocean Tides

Learning Objective: Students will relate the positions of the Moon and Sun to their effect on ocean tides and identify the effects of the Moon and Sun on tides.

Activity 1 Description: The class will start with an introduction video on moon phases

[Phases Of The Moon](#) | [Why Does The Moon Change Its Shape?](#) | [Space](#) | [Dr Binocs Show](#) | [Peekaboo Kidz](#)

Then pass out art pads, markers and oreos to each student.

Post the image of the moon phases and instruct students that they need to create their own model of the lunar cycle by biting a piece off of the moon and labeling each correct moon.

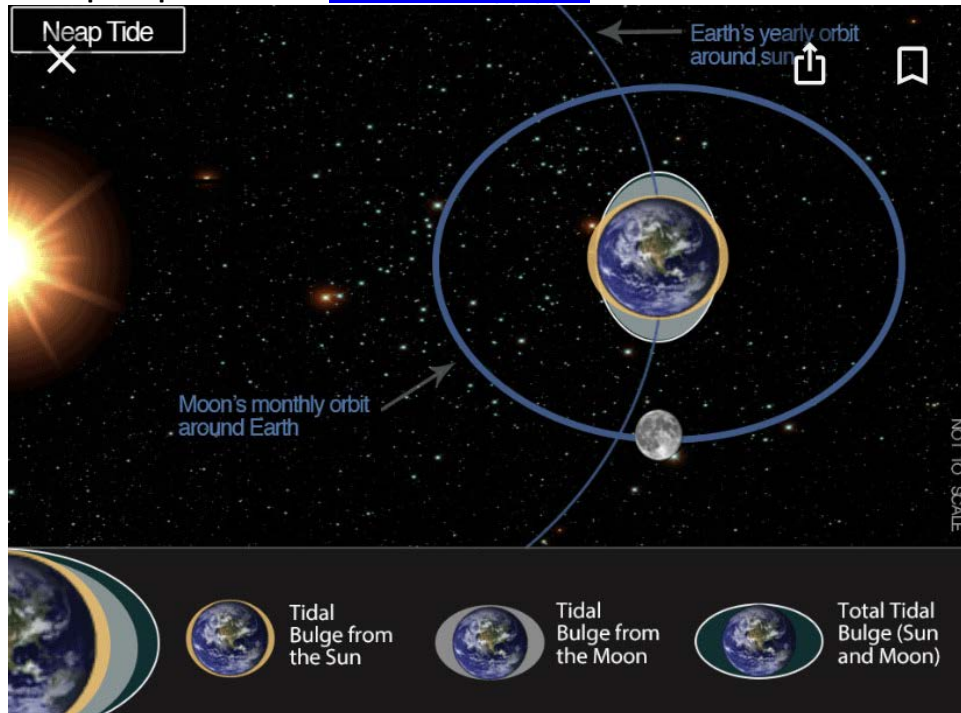
Total Length of Lesson: 60 minutes

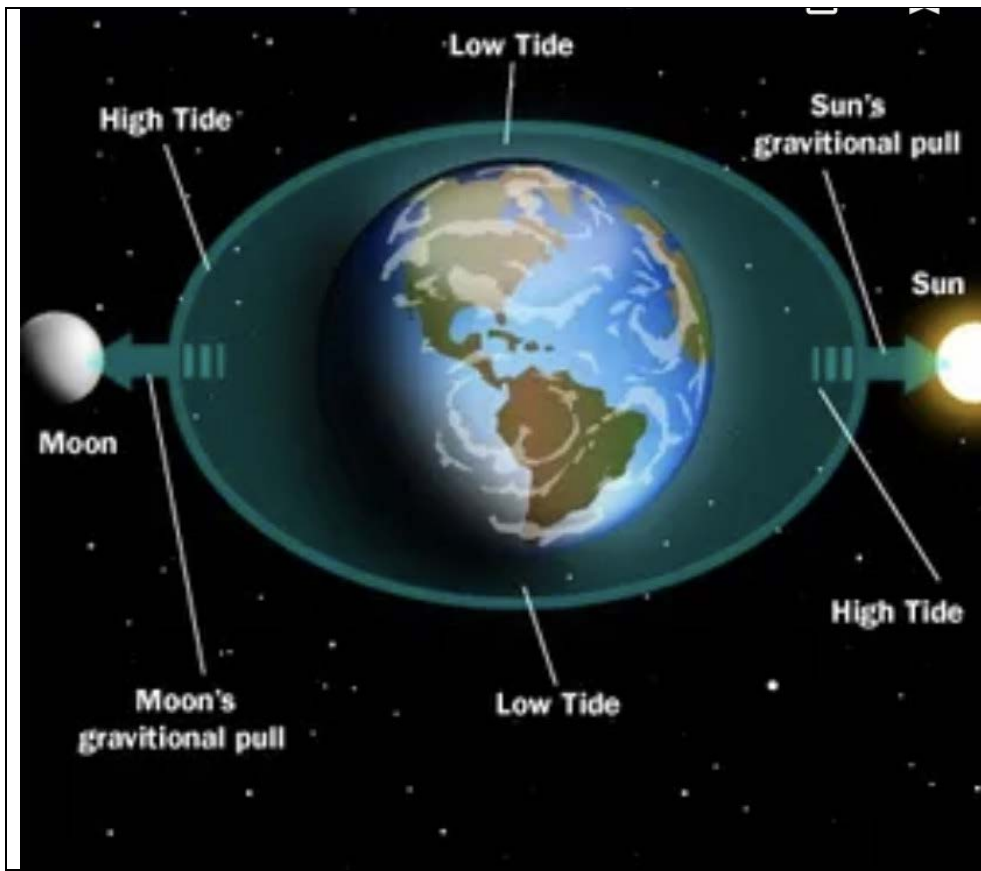
Materials per student:

- 2 packs of oreo thins
- Art pads
- Markers
- 6 Aluminum trays
- Sand
- Water
- Rocks
- Sea shells
- Blue water coloring

Technology Required: (also put video, website, etc. links here)

Powerpoint presentation: [Ocean tides pp.pptx](#)





Lesson Plan 10

Name of Lesson: Divergent Factions w/ Anatomy

Learning Objective: Students will be able to identify the main concepts of what anatomy are and they will be able to understand the main functions and parts of all anatomical systems.

Day of the Week and Time (Example: Tuesday, 8:30 am-9:00 am)
Wednesday 8:30am -10:00am

Total Length of Lesson: Tuesday: 1 hour and 30 mins, Wednesday: 1 hour and 30 mins, Total: 3 hours

Materials per student: (include # copies of handouts, paper for foldables, etc.)

For Stations:

- 1 Foldable
- Pencil
- Computer or Ipad

For T- Shirt:

- Markers
- Paper Tshirt
- Pencil
- Ruler
- Computer or Ipad
- Colored Pencils

Technology Required: (also put video, website, etc. links here)

Stations #1:

- Computer
- <https://serpmedia.org/scigen/l6.3b.htm>

Station #4:

- Computer
- <https://thehumanbodygame.co.uk/#pages/digt/info-digestion-intestine>

Station #3:

- Computer
- Projector
- <https://create.kahoot.it/share/anatomy-mast/f1766de4-eb50-442d-913e-1c3dbf76d7b0>

Worksheet: [Movies-Sarah-Systems Worksheet-FrontBack-Long Edge \(30\)-White.docx](#)

What needs to be prepared/set up ahead of time: (before camp starts, day before, morning of)		
<ul style="list-style-type: none"> ● Print out all the foldable before camp ● Make foldables before camp ● Organize Stations the day before and if did not finish morning of ● Set up projector and laptop for kahoot morning of ● Get prizes for kids before camp ● Print & Set up signs that say Station #1 and have the name of the 3-4 systems that belong in the group day before 		
How to accommodate lesson for students who are English Language Learners or have trouble focusing		
<ul style="list-style-type: none"> ● Doing hands-on learning is good for children who struggle with focusing. I as well can sit down with them on the side if getting overwhelmed or stressed. ● For those who are English Language Learners, I would gladly translate both the instructions and the written text to the correlating language just in case. I can print paperwork in said language as well. 		
Activity 1: Stations	Duration: 50 mins	Notes to Teacher:
<p>8:30am- 9:20am</p> <p>The stations to start should be set up the morning before. Students need to take notes and fill out foldables so don't forget to pass out foldables. Students should get in their previously assigned groups/factions. The groups will randomly be placed in a station. Explain how the stations work BEFORE you start.</p> <p>Through the stations there is a set time. At 8:35am they should be in their stations already starting.</p> <p>They will rotate in a clockwise direction. When beginning each group of students have 8 mins to do the activity and 2 mins to write down their facts. They must write a fun fact that they learned or know on the systems that are in that group.</p> <p>For example, if they are in station #1 that has the nervous, respiratory, and reproductive system, then they need to write a fact in all 3 sections. In the foldable, there are only 8 bodies, but there are a total of 11 systems, one of the bodies may have 2 or 3 facts, they must make it clear which system they are talking about.</p> <p>Time for the stations: Rotation #1: 8:35-8:45 Rotation #2: 8:45-8:55 Rotation #3: 8:55- 9:05 Rotation #4: 9:05: 9:15 From 9:15-9:20 should be a transition period to the next activity</p> <p>- Station #1 will be the "Candor" Station, students will learn about the Endocrine, Urinary, and Reproductive Systems. Let's think like a Candor!</p>		<p>In the morning before 8:30 when they walk in, give them the foldable. Tell them to get in their groups the moment they walk in. Before class you should randomly tell them which group goes where, as well, students should be told what is going to happen and how the stations are going to work before 8:30 so as they are coming in. Can briefly explain when giving them their foldables. Tell students to take out their I pads or Laptops. Tell them about</p>

Students will use their laptops in this station, they will be asked to go to this website link: [Interactive: Organ Systems at Work | Slide B \(serpmedia.org\)](#) They will be in their groups but individually work on this, they will look at these 3 systems in this website and they will, get a sheet of paper, and write down what they see, what organs are in the system, and what would they see if they combined other sections. They will do this for 8 mins and write facts in a foldable for 2 mins.

- Station #2 will be the "Amity" Station, students will learn about the Digestive and Lymphatic systems. Amity works together and helps one another! Students will work together in their groups in this station, they will try to match the vocabulary word to the picture. Students should mix everything together and take their time and put matching pairs. They will do this for 8 mins and write facts in a foldable for 2 mins.

- Station #3 will be the "Dauntless" Station, students will focus on the Nervous, Circulatory, and Respiratory system but this kahoot contains all information on the systems. They have to race to first place and a dauntless would!
Students will be with the teacher in this station doing a Kahoot, they also will use their computers in this station
the kahoot is: <https://create.kahoot.it/share/anatomy-mast/f1766de4-eb50-442d-913e-1c3dbf76d7b0>
(20-30 sec per question, 20 questions), and #1 winner gets a prize. They will do this for 8 mins and write facts in a foldable for 2 mins.

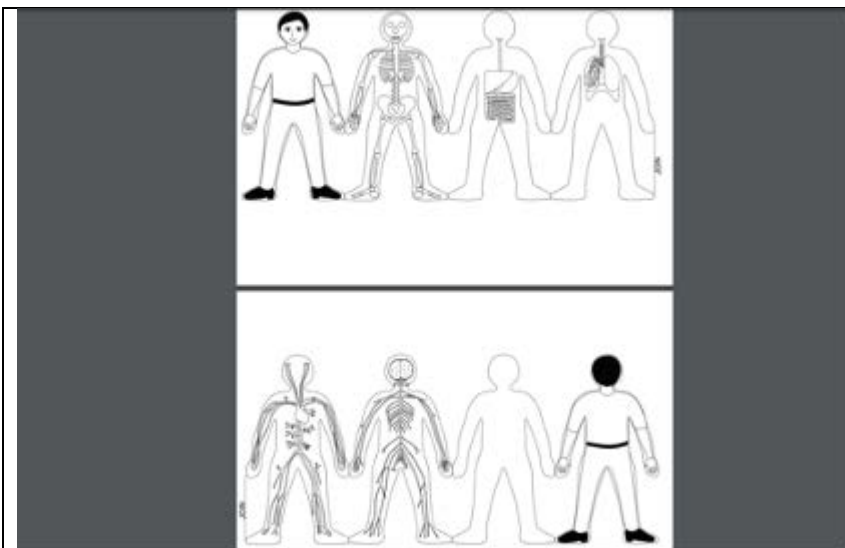
- Station #4 will be the "Erudite" Station, students will learn about the muscular, Integumentary, and skeletal system. They have to use their knowledge as an erudite would!
Students will use their computers in this station, they will be in their groups but work individually in this section. They will need to go to this website link: <https://thehumanbodygame.co.uk/#pages/digt/info-digestion-intestine>
Or they will watch either of these videos: <https://youtu.be/gEUu-A2wfSE>
Or <https://youtu.be/uBG12BujkPQ>
They will read and go through the section on the website or watch videos and learn about the systems. They will do this for 8 mins and write facts in a foldable for 2 mins.

the prize in station #3

Let students know about the 8 bodies in the foldable.

Start the timer right away every 10 mins.
Make sure to always tell them to stop their activity at 8 mins!

During the 2 mins see if the students are correctly doing the stations and see if they matched the picture and name correctly



This is the foldable that they will do. I did both the complete cut out and square cut out; we are able to make copies of the foldable that I already colored and labeled. The square one is faster and easier to cut and pass out.

When finished with the stations when we are transitioning to the next activity, in order to get their t-shirt everyone in the group must show they have a total of 11 facts.



These are the pictures and vocabulary words that I created.

The whole activity took 1 hour and 10 mins giving us around an extra 20 mins.

Activity 2: Finish T-Shirt	Duration: 20 mins	Put a timer for 9:50 in order to know that you have 10 mins left till the next lesson.
9:20am- 9:40am Students will continue within their groups in order to get the t-shirt that they were making. They need to be able to show that they listed 11 facts from the last station. Students will finish getting their facts and completing the shirt because they will present. Have them clean up 5 mins before the next activity.		
Activity 3: Presentations	Duration: 15 mins	If there is time left, ask them what they learned and they have any questions.
9:40am- 9:55am Students will present their group project (the t-shirt) and give a 1-3 min presentation on at least 2 things they learned on that system, and 3 fun facts about the system and what organs are on the system t-shirt in front of the class. Only one member has to speak but all have to be standing. Since there are 4 groups there should be around 10 mins of presentation total. That should leave you with enough time to clean up. There is no paper or notes needed for the presentation but can if they choose so.		
Activity 4: Clean up	Duration: 5 mins	

9:55-9:40

Have students clean up and get ready for the next lesson.

Lesson Plan 11

Name of Lesson: Protein for the Incredible Hulk!

Learning Objective: Students will be able to recognise that different cell part are used to produce protein from genetic information in the DNA

Day of the Week and Time: Thursday, 9th (9:30-11:30 am)

Total Length of Lesson: 2 hours

Materials per student: *(include # copies of handouts, paper for foldables, etc.)*

- **30 Flowchart papers for notes:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>
- **1 copy of DNA codes with correct amino acid sequence:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>
- **4 copies of amino acid cards:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>
- **4 copies of cellular clip art with labels:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>

Technology Required: *(also put video, website, etc. links here)*

- **Projector for presentation**
- **[Transcription and Translation: From DNA to Protein](#)**(Stop at 4:10)
- **<https://youtu.be/udKE1ksKWDE?t=98>** (Stop at 2:05) **When the sequence is correct**
- **[All Bruce Banner Funny Moments - Avengers: Infinity War \(2018\) Movie Clips HD](#)** (Stop at 0:49) **When the sequence is incorrect**
- **Powerpoint Presentation:** [From DNA to Proteins](#)

What needs to be prepared/set up ahead of time: *(before camp starts, day before, morning of)*

- **Papers with cellular parts images and names need to be set up throughout the class**
- **Masking tape on the floor to section off parts of the cell (nucleus, cytoplasm, ribosomes)**

Activity 1: Intro presentation and notes	Duration: 30 min	Notes to Teacher:
<p>We will watch a video on transcription and translation to introduce the concept. Afterwards, a power point will be given to further elaborate the topic. Students will use a flowchart sheet to take notes. This initial presentation will focus on the general process of transcription and translation from the DNA to protein. Students will also know the significance of codons and how they code for specific amino acids.</p>		<p>Main points for students to understand are on the attached powerpoint.</p>
Activity 2:	Duration: 1 hour 30 min	Have students who are assigned to amino acid role also complete the code alongside the volunteers.
<p>For Bruce Banner to transform into the Hulk, his cells must rapidly produce lots of proteins. Across the classroom will be different stations with cellular clipart.</p> <ol style="list-style-type: none"> 1. The order for the clipart is: nucleus, nuclear membrane, cytoplasm, and ribosomes. Have the “DNA” student stand at the nucleus. They will transcribe the initial code into the “codon”. The “codon” will be handed to the student assigned the “mRNA” role. 2. The “mRNA” student will translate the “codon” into the “anticodon”. Then they will hand their “anticodon” to the student assigned the “ribosomes” role. 3. The “ribosomes” student will be standing next to the ribosomes clipart in the cytoplasm to simulate the movement of codes from the DNA to protein 		

synthesis. The “ribosomes” student will then take the “anticodon” and use the amino acid chart to develop the protein chain

4. The other students will be provided with extra copies of amino acid charts and DNA codes so that they can complete the protein chain alongside the students assigned roles
5. Place the amino acid cards into a big unorganized pile for students to sort through. To build their protein chain, the teams must have the correct order of amino acid cards
6. Break the class into teams of two. Three students from each team will take on the role of DNA, mRNA, and ribosome to translate the code into the correct amino acid chain. Have other students assist with finding amino acid cards or also translating the code. Teams can only submit one chain option when they are ready.
7. Play the corresponding Hulk video clips to show whether the students’ code is correct or incorrect
8. Explain that if they are correct, Bruce Banner will be able to build the muscle mass needed to become the Hulk. And if incorrect, then there was an error in the Hulk’s protein synthesis

Lesson Plan 12

Name of Lesson: The Taxonomic Riddle

Learning Objective: Students will be able to use traits of an organism to classify them into system of hierarchy as well as recognizing the differences in characteristics of various taxonomic groups

Day of the Week and Time: Wednesday, 8th (1:15-2:15 pm) & Thursday, 9th (8:30-9:30 am)

Total Length of Lesson: 2 hours

Materials per student: *(include # copies of handouts, paper for foldables, etc.)*

- **30 Kingdoms Organizer paper for notes:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>
- **30 Favorite animal classification papers:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>
- **30 Taxonomy Riddle Organizer paper:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>
- **1 copy of kingdom riddles (located in powerpoint presentation)**
- **1 copy of taxonomy riddles (located in powerpoint presentation)**
- **6 copies of Kingdom descriptions:**
<https://drive.google.com/drive/u/0/folders/1XoZgi3QHYKvyDcDn3byJmLF2Kedxvh9v>

Technology Required: *(also put video, website, etc. links here)*

- **Video for notes:** [Classification](#) (Stop at 6:49)
- **Powerpoint Presentation:** [Taxonomy: the study of classifying organisms](#)

Activity 1: Introduction to taxonomy and classification Duration: 1 hour

Notes to Teacher:

1. Students will watch a video that introduces the taxonomic system used by biologists, along with a power point presentation.
2. Afterwards, the teacher will have students form into groups of 5 and provide each group with an article that describes the 6 biological kingdoms.
3. The groups of students will cover the article by assigning reading roles (each student reads a kingdom description). Students will use the info to fill out a bubble sheet on the 6 kingdoms. The teacher can choose whether to have students fill out the provided bubble graph sheets as individuals or have the teams assign a presenter role for students to fill out a bubble graph on poster paper as a class
4. Have the students solve the kingdoms riddle sheet following the bubble graph activity **(ANSWERS ARE ON LAST SLIDE OF POWERPOINT)**

Have students assign reading roles to finish the info faster. Students can either fill out their own worksheet or the class can have recorders from each team come up to the board to add info

Activity 2: The Taxonomy Riddle Duration: 1 hour

The Riddler has taken over Gotham city hall and threatens to leave the mayor in one-of-three rooms with an organism of unknown identity. He has left clues to help identify the organisms in each of the three rooms, but if the mayor is to be saved, all three organisms must be correctly classified.

1. The teacher will present the riddle instructions on the powerpoint slide.
2. The students will get into groups of 3 and attempt to solve the door riddles sheet. They will also have access to the sheet with hints to assist them.

Display the riddles on the board for the class to see. Provide each group with a copy of hints/possible choices paper if kids are struggling. Students can use their chromebooks

<ol style="list-style-type: none">3. The teacher will check each group's answers (ANSWERS ARE ON LAST SLIDE OF POWERPOINT)4. If there is extra time, have the students fill out and decorate the classification chart of their favorite animal /organism using their chromebooks for assistance	<p>to solve the riddle as well</p>
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Lesson Plan 13

Name of Lesson: Super Organelles Comic Creation

Learning Objective:

Students will differentiate between structure and function in plant and animal cell organelles, including cell membrane, cell wall, nucleus, cytoplasm, mitochondrion, chloroplast, and vacuole

Day of the Week and Time (Example: Tuesday, 8:30 am-9:00 am)

Wednesday, June 8th, 2022

8:45 am to 10:15 am

Total Length of Lesson:

Estimated length 90 Minute lesson

Materials per student: (include # copies of handouts, paper for foldables, etc.)

- A packet of color paper/construction paper/ white drawing paper/ white printing paper
- 1 set of markers per student (25 total)
- 1 set of color pencils per student (25 total)
- 25 scissors
- Pencil/pen
- Color pencils (25-30 sets, if we have one-per student)
- 8 whiteboards for (6 groups of students of 4) (Or if possible 1 per student)

Technology Required: (also put video, website, etc. links here)

- [Video](#) showing the similarities and differences ([option 2](#))
- [video](#) on the difference between the two
- [Worksheet](#) to fill in plant vs animal organelles.
- Tinker cad link to [Plant cell](#) and [Animal Cell](#)

What needs to be prepared/set up ahead of time: (before camp starts, day before, morning of)

- **Before the camp starts:** If using the worksheet to fill in the plant vs animal cell there have to be 25-30 copies ready for the lesson. We must check if the Tinkercad program is not blocked on the school internet.
- **Before the lesson:** The projector needs to be set up to show the students the videos. Both the examples of Plant and Animal cells have to be ready to show the students. A pre-made example of the zine or the comic must be made before coming to class.
- On the morning of Make sure, there are copies of the comic book template, and enough paper for students to make the zine. We will need to have a class set of scissors or ensure that we have an extra set of scissors. Students will be needing to color so we must have the markers, colored pencils, and pastels ready for the students to use when they are illustrating their comic-book strips.

How to accommodate lesson for students who are English Language Learners or have trouble focusing

- Utilize visuals and have them demonstrate what they will be doing to you as you will be studying the 3D model.
- Model how to utilize the TinkerCad Program as an entire classroom. Have written instructions and visuals of the controls inside of the tinkercad program.
- Pairing up students with a heterogeneous partner to help them stay focused and on track.

<ul style="list-style-type: none"> If students are having trouble focusing I will make sure to be calling on different students randomly to make sure that students will not be slacking off. I would consider utilizing the pick a stick method or using a sticky to number the seats and then put a digital dice on the screen to pick who will be sharing their responses. 	
Activity 1: Learn to use tinkercad Duration: 15 minutes	Notes to Teacher:
Provide students with this link to tinkercad intro tutorials https://www.tinkercad.com/learn/project-gallery;collectionId=OPC41AJJKIDWDV Have the students pick the place and view the tutorial provided by the link above. Once students do those two they will be able to complete them in 5 minutes they can then explore any of the other tutorials on that page. ****update**** Teacher instructions Tutorial video for Tinkercad	<ul style="list-style-type: none"> Teacher will need to complete all tutorials to be able to help the students navigate the program effectively and efficiently. Remind and inform students that they must complete both of those tutorials to have the basics down of how to use the program. For differentiation: Your more advanced students can complete all the tutorials. You can challenge them to come up with a quick model of an everyday object they use. Tutorial video on youtube 9 Minutes
Activity 2: One Sheet of Paper and video activity Duration: video 5 minutes, One sheet activity 5 minutes Total time: 10 -15 minutes	-teacher will play and pause the video have the kids take notes - Provide a timer on the board for students to be able to write one similarity and one difference.
Show students a video on the differences/similarities between the organelles of plant vs. animal cells. After watching the video have the students Identify and write on their whiteboards One difference between plant/animal cells organelles/ and one Similarity. Students will have to hold up their similarities and difference. **** UPDATE**** Students will work in with a partner or group to fill out their Biomolecules Foldable . This foldable allows students to list differences specific to either an animal or plant cell and things that they both share.	
Activity 3: Exploring the TinkerCad 3-D cells/Simulation and BINGO Duration: 15 mins	-Show students how to get to the 3D simulation

<ul style="list-style-type: none"> - (10 MINUTES) Students will be using this simulation that is simpler and provides definitions of the organelles to fill out their worksheet.**** We will have students do this as we set up for Bingo**** - Students will be provided the link to the plant and animal cell 3-D digital models on tinkercad. - We will be doing the Organelles Bingo- this will replace the worksheets that I had originally planned. (This will take 15 minutes). We will have students pair up there will be a winner they will just have bragging rights/receive a sticker. - Bingo cards 	<p>- Replace the worksheet with a student-made drawing.(Maybe)</p> <p>Bingo words:</p> <ol style="list-style-type: none"> 1. Golgi apparatus 2. Nucleus 3. Endoplasmic-Reticulum 4. Smooth Endoplasmic-Reticulum 5. Rough Endoplasmic-Reticulum 6. Cell Membrane 7. Vacuoles 8. Lysosome 9. Mitochondrion 10. Cytoplasm 11. Cell wall 12. CENTRAL VACUOLE 13. AMYLOPLAST 14. CHLOROPLAST 15. prokaryote 16. Eukaryote 17. DRUSE CRYSTAL 18. microtubules 19. centrioles 20. Turgor Pressure 21. H₂O 22. 10-30 micrometers 23. 10-100 micrometers 24. Circular 25. Square <p>Organelles reference Page</p>
<p>Activity 4: Building a Zine/Comic book Duration: 45 minutes</p>	<p>-Present premade comic from canva or a zine</p>
<ul style="list-style-type: none"> - Students will watch a short 4-minute youtube video on how to build either a zine or utilize the comic strip provided by the instructor (this introduces student choice) - Students will have a rubric to be utilizing on how to create/ bring their Zine or comic to life. - The rubric will have students focus on the Tek(Identify and tell the difference between an animal cell's organelles and a plant's organelles). We will randomly assign them a plant or animal cell and they will then be given an organelle. Students must then be able to conduct research and create a character based on that organelle they will need to find the function, some of the actions that it will be performing as a "hero" inside their respected cell, and then maybe a Villan something that might ruin try to ruin the homeostasis of the cell but they will utilize the comic to come up with a fight scene for the organelle. - We will collect comics and/or zine to display out in the hallway. (can do a gallery) 	<ul style="list-style-type: none"> -Demonstrate how to create a zine model for the students - Do a critical friend's walkthrough to remind the students to make sure to hit one major point they want the reader to take away from their comic or zine - Use autodraw - Cheat sheet for teachers

Lesson Plan 14

Name of Lesson: Superhero Popularity/ HR Diagram

Learning Objective: Students will describe components of the universe, including stars, nebulae, and galaxies, and use models such as the Hertzsprung-Russell Diagram for classification.

Day of the Week and Time (*Example: Tuesday, 8:30 am-9:00 am*)
Monday, 12:30 pm - 2:15 pm

Total Length of Lesson: 1 hour and 45 minutes.

Materials per student: (*include # copies of handouts, paper for foldables, etc.*)

- 1 copy (front and back) Frayer model foldable per student
- Writing utensil per student
- Different colored construction paper (red, orange, yellow, white, and blue)
- White boards per group (6)
- Scissors per student (25)
- Colorful name tags per students (25)
- Dices (as many as possible)

Technology Required: (*also put video, website, etc. links here*)

- Laptops to gain background information of the stars assigned to students
- Powerpoint presentation: [3. 2. HR-Diagrams Superheros .pptx](#)
- Graphic Organizer: [3. Frayer model.docx](#)
- Popularity chart for introduction: [Superheroes diagram .docx](#)

What needs to be prepared/set up ahead of time: (*before camp starts, day before, morning of*)

- Before camp starts: printing material
- Day before: setting up the student center
- Morning of: check technology, pull up powerpoints, be ready.

How to accommodate lesson for students who are English Language Learners or have trouble focusing


- Use visual
- Cognates (example: giants = gigantes)

Activity 1

**Duratio
n**

Notes to Teacher:

<p>Team Building Activity → Team Builder or Team Destroyer</p> <p>Instructions:</p> <ul style="list-style-type: none"> ● You will be randomly placed in 6 groups of 4. ● Superheroes: Your goal is to continue building your city. ● Villains: Your goal is to cause trouble, a destroy the city ● To have your chance, your group must answer a series of questions correctly. 	<p>15 min.</p>	<p>Set up about four layers of blocks as a starter.</p> <p>Set up Jeopardy game</p> <p>Pass out white boards</p>
<p>Activity 2</p>	<p>Duration</p>	<p>Before camp, print out foldable outlines.</p>
<p>A superheroes themed diagram.</p> <ul style="list-style-type: none"> ● Students are assigned a character. Have students come up to the board and place a post-it on where they believe their hero/villain goes on the diagram. <p>As you are going through the examples of the types of stars, ask the students which character they believe the star represents.</p> <p>4 Frayer Models Foldable → Main sequence, Supergiants, Giants, White dwarfs</p> <div data-bbox="142 1115 503 1373" data-label="Diagram"> </div> <p>Fill in the categories as we move through the powerpoint.</p> <ol style="list-style-type: none"> 1. Fill in the name of the star in the center. 2. Take notes under characteristics. 3. Write down the examples mentioned. 4. Draw your own version of the star. 5. Place the star where you believe it goes. 	<p>30 min.</p>	<p>Sections: Characteristics, Examples, Visuals, Location.</p> <p>Students need white boards</p>

<p>Where do the stars go? Within your groups, discuss where these stars types would be displayed on the HR Diagram</p>		
<p>Activity 3</p>	<p>Duration</p>	<p>Set up a student center for students to grab the construction paper and scissors. Students need laptops</p>
<p>A star is born: students are assigned a star then will be given time to quickly research and create it with construction paper based on its size, color, temperature, and luminosity.</p>	<p>15 min.</p>	
<p>Activity 4</p>	<p>Duration</p>	
<p>Relay race: Jeopardy questions. One student from their groups will grab a star then race to place it on the HR diagram on the screen after answering the questions correctly.</p> 	<p>30 mins</p>	<p>Monitor students (safety is important) Check time Display HR Diagram Prepare Jeopardy game from powerpoint information.</p>
<p>Activity 5</p>	<p>Duration</p>	
<p>Class discussion:</p> <ul style="list-style-type: none"> ● What is a red giant? ● What is a supergiant? ● What is white dwarf? ● What is the main sequence? <p>Post it feedback.</p>	<p>15 mins</p>	<p>Pick up.</p>

Lesson Plan 15

Name of Lesson: Unbalanced vs Balanced Forces

Learning Objective: Students will demonstrate and calculate how unbalanced forces change the speed or direction of an object's motion.

Day of the Week and Time (*Example: Tuesday, 8:30 am-9:00 am*)
 Wednesday, 12:00 pm - 1:30 minutes

Total Length of Lesson: 1 hour and 30 minutes

Materials per student: (*include # copies of handouts, paper for- foldables, etc.*)

- Paper (printer and construction)
- print handouts per student (25)
- popsicle sticks per student (25)
- Name tags (25)
- Color pencil
- Markers
- Crayons
- Pencils
- Laptops (10)
- Post it
- White boards
- Paper clips

Technology Required: (*also put video, website, etc. links here*)

- Powerpoint Presentation for introduction: [2. 2. Power point Unbalanced vs Balanced Superheros.pptx](#)
- Powerpoint presentation for stations: [Summer camp- Stations detailed.pptx](#)
- Fill in the blank: [unbalanced force fill in the blank .docx](#)
- Stations worksheet: https://drive.google.com/drive/u/0/folders/1CBic9hUGe_s5bu4SNIB_6GME-eRK6pHm
- Laptops
 - <https://www.youtube.com/watch?v=YyJSlclbd-s>
 - [Forces and Motion: Basics \(colorado.edu\)](#)

What needs to be prepared/set up ahead of time: (*before camp starts, day before, morning of*)

- Print handouts

Activity 1	Duration	Notes to Teacher:
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<p>Team Building Activity →</p> <ul style="list-style-type: none"> ● Two groups: superheroes vs villains. ● Superheroes on the right side and villains on the left. ● Groups will be completing famous superheroes quotes ● After answering correctly, one member of your group will attempt to tug on the rope until it meets the tape on the table. ● Answering the question correctly will allow you to move the object to the next step. 	10 min.	<p>Read the quotes</p> <p>Monitor students</p>
<p>Activity 2</p>	<p>Duration</p>	<p>Monitor students</p> <p>One person from each group come up to get the paper.</p>
<p>Creation of superheroes or villain airplanes.</p> <ul style="list-style-type: none"> ● You will be creating a themed airplane ● One person from each group will be responsible for coming up to collect the paper for the entire group. ● Students can research an airplane design. ● Students will decorate their airplane 	10 min.	
<p>Activity 3</p>	<p>Duration</p>	<p>Popcorn read around</p> <p>Students need white boards.</p>
<p>Fill in the blank activity while doing popcorn reading</p> <p>Popcorn reading</p> <ul style="list-style-type: none"> ● One person will start the class off by reading the first sentence. ● Then that person will be able to choose a different student, who will then read the next sentence. ● We will continue the pattern until we have read everything. ● As we read together, fill-in-the-blank on your handout. ● Then we will answer a few questions on our white boards. <p>Warm up of introduction by asking two questions that the student will answer of the white board.</p> <ol style="list-style-type: none"> 1. Which could be an example of a balance force? <ol style="list-style-type: none"> a. Thor is spinning his hammer at a constant speed b. Hulk’s car is accelerating from a stop sign c. Iron is falling from the sky d. Wanda taking off flying. 2. Which could be an example of an unbalanced force? <ol style="list-style-type: none"> a. Peter Parker sitting on a dining room chair b. Doctor strange standing at the top of a hill c. Captain marvel orbiting the Earth at a constant speed d. Captain America’s shield that has been thrown to winter soldier. 	20 min.	

Activity 4	Duration	45 min.
<p>Stations</p> <p>Stations (each around 7 minutes): (everyone will have roles)</p> <ul style="list-style-type: none"> ● Station #1 watch it - Balanced & Unbalanced Forces Forces & Motion Physics FuseSchool - YouTube <ul style="list-style-type: none"> ○ Each member of the group will go to the website listed on task card #1. ○ Complete the task cards in order. ○ Every student will answer the questions from the task cards on the lab sheet in the Watch it! section of the lab sheet. ● Station #2 Explore it <ul style="list-style-type: none"> ○ One member of the group will read the task cards in order. ○ The group will be responsible for completing each of the tasks that are being read. ○ Each member of the group will then write their conclusions down on the lab sheet in the Explore it! section. ● Station #3 research it <ul style="list-style-type: none"> ○ Forces and Motion: Basics (colorado.edu) ○ Each member of the group will go to the website listed on task card #1 ○ Complete the task cards in order ○ Every student will answer the questions from the task cards on the lab sheet in the Research it! section. ● Station #4 Organize it <ul style="list-style-type: none"> ○ Two columns balance vs unbalanced ○ Put each of the cards into either the balanced or unbalanced category ○ On your answer document list two examples of balanced forces and two examples of unbalanced forces. ○ Please mix up the cards again before the next group arrives at this station. ● Station #5 Illustrate it <ul style="list-style-type: none"> ○ Draw a picture on your lab sheet that demonstrates your knowledge of balanced and unbalanced forces <ul style="list-style-type: none"> ■ Include the following: <ul style="list-style-type: none"> ● An object that is balanced ● An object that is unbalanced ● Station #6 demonstrate it (paper planes) <ul style="list-style-type: none"> ○ Make your favorite paper airplane. ○ Each member will have a chance to throw the paper airplane without any added weight <ul style="list-style-type: none"> ■ Next, add one paper clip and then throw the plane again. 		<p>Monitor students</p>

<ul style="list-style-type: none"> ○ Each member will be responsible for recording their observations. <ul style="list-style-type: none"> ■ What did you notice? ■ Who's went farthest? Why? 	
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Activity 5	Duration	5 min.
<p>Jeopardy game In groups of five, you will answer questions on STAAR released questions.</p> <p>Post-It</p> <ul style="list-style-type: none"> - List one thing you liked - List one thing you did not like - List one thing you would improve - After place it on the walls 		<p>Monitor students</p>

Lesson Plan 16

Name of Lesson: Superhero Base

Learning Objective:

Students will solve problems involving the calculation of volume for various 3-D shapes such as rectangular prisms, triangular pyramids, cones and spheres

Student Outcome:

Students will review how to calculate volume from different shapes, such as rectangular prisms, triangular pyramids, cones, etc. Through the review, students will create an online version of their superhero base, as well as their own custom superhero logo.

Day of the Week and Time (*Tuesday June 7, 10:45 am-2:15 pm*)

Total Length of Lesson: 3 hours

Materials per student: (*include # copies of handouts, paper for foldables, etc.*)

- Superhero Base packet along with the Superhero Base Layout page
- Volume Foldable
- Ruler & pencil (sketch & design)
- Markers, crayons, colored pencils
- Printer paper (superhero logo)

Technology Required: (*also put video, website, etc. links here*)

- Laptop
- TinkerCad
- Canva Slides
https://www.canva.com/design/DAE-EzSeIRc/bbkELQUTi0DK6x_qleoEw/edit?utm_content=DAE-EzSeIRc&utm_campaign=designshare&utm_medium=link2&utm_source=sharebutton
- Volume notes organizer: <https://drive.google.com/drive/u/0/folders/1ZoQ1VC-blGNQEc-9jhjQVdVnJySQ1tce>
- Superhero base instruction packet: [Superhero-Mariah-VolumePacket-FrontBack-ShortEdge\(30\)-WhitePaper.docx](#)

What needs to be prepared/set up ahead of time: (*before camp starts, day before, morning of*)

- Foldable
- Superhero base packet
- Printer paper

How to accommodate lesson for students who are English Language Learners or have trouble focusing

- Translate slides
- Pair student with someone who is focused
- Ask students to repeat instructions

Activity 1: Volume Canva Presentation

Duration: 20-30 minutes

Notes to Teacher:

<ul style="list-style-type: none"> ● Students will then create their final product on TinkerCad/Minecraft. It must accurately resemble the drafts in their packets. Ex: If a student wants a certain room to be 8x6, then their online base must also include a room that is 8x6. ● Students can be as creative as they want in order to have their base look nice. 	
<p>Activity 4: Superhero Logo Duration: 20-30 minutes</p>	
<ul style="list-style-type: none"> ● When students complete their superhero base, they will be given a sheet of printer paper to create a superhero logo. Students will have full creative control on this activity. 	<p>Students will create their logos with printer paper</p>

Lesson Plan 17

Name of lesson: Spiderman cures

Learning Objective: Students will recognize the differences between chemical and physical changes and identify which type of reaction occurs, given an example.

Activity 1 Description: Introduce the lesson by starting a discussion on atoms and compounds.

- Discussion sheet: [Discussion Questions](#)
- [Types of Matter: Elements, Compounds, and Mixtures](#)
- Have them fill in a foldable.
- Student copy of foldable: <https://drive.google.com/drive/u/0/folders/1QRZ-DQHdbFeXQ8FZ7WzSYjDVmJcnCdx5>
- Teacher copy of foldable: <https://drive.google.com/drive/u/0/folders/1QRZ-DQHdbFeXQ8FZ7WzSYjDVmJcnCdx5>
- Assign students into groups of 5
- The materials will be handed to the students.
- Show them a video to give them an overview of the experiment. <https://youtu.be/bcfzUOdM8lg>
- The instructor will go over the procedures and safety.

Total Length of Lesson: 80 minutes

Procedures:

1. In the plastic bag, thoroughly mix 1/2 C water, 1/2 C glue, and a few drops of food coloring.
2. Add 1/2 tsp baking soda and mix completely.
3. Add 1 tbsp contact lens solution and stir vigorously until the mixture starts pulling away from the edges of the bowl.
4. Use your hands to knead the slime (fold it, squeeze it, and roll it) for 5–10 minutes until its texture stops changing.
- 5.
6. Repeat steps 1–4 two more times, first using 2 tbsp and then 3 tbsp of contact lens solution. When you are done, you should have three batches of slime.
7. Take your first batch of slime (with 1 tbsp contact lens solution) and play with it with your hands. What does it feel like? Is it stretchy? Squishy? Sticky? Rubbery? Write down your description in your notebook

Materials per student: (include # copies of handouts, paper for foldables, etc.)

- Washable PVA school glue (like Elmer's®)
- Water
- Baking soda
- Contact lens solution (must contain both boric acid and sodium borate in ingredients)
- Food coloring
- Plastic Spoons
- Plastic cups
- Resealable plastic bags

- Notebook

Activity 2 Exit Ticket: Ask students to answer the following questions

- What is matter?
- What are the three states of matter?
- What is a compound?
- What is an example of a chemical change?
- What is an example of a physical change?
- What is the difference between a heterogeneous and homogenous mixture?

Lesson Plan 18

Name of lesson: Beak Watch

Learning Objective: The students will compare the variation and adaptations of organisms living in different ecosystems

Activity 1 Description: Set up groups of 4 and identify the importance of the human thumb as part of an adaptation needed for everyday usage. Time each student into the amount of time it takes to do certain activities. This requires tape (any type) in order for the teacher to tape the student's hand. 1-2 students per group will be taped across their hand in order to prevent the thumb from moving. The remaining group members will time the different tasks the group members will be doing. **At the end the class will discuss the importance of the human thumb.**

Activity 2 Description: Students will work in groups to gather beans and rice into a cup using different sets of tools that mimic bird beak adaptations

Total Length of Lesson: 45 minutes

Procedures:

1. Choose a bird beak. These may NOT be traded among birds. In other words, once you are a spoonbill bird, you may not evolve into a tweezer-bird.
2. The teacher will handle the timer. On the teacher's signal, each student will pick up ONE food item at a time with their beak (**NO HANDS –that's cheating**) and "swallow it" by putting it in their cup, aka stomach. The cup must remain flat on the table. No "flinging" or "dragging" prey. If you drop it, the prey returns to the environment – and not your stomach!
3. Each round lasts **30 seconds**. (Use the stopwatch to time each round) At the end of each round, count and record the number of food items gathered by each student
4. The food items that were used in previous rounds are used again for the rest of the rounds.
5. Repeat steps 2-4 until all of the food is gone or until all the birds have died. **If a bird gets less than 3 pieces of food in a round, that bird dies of starvation and is out of the game.**
6. At the end of the simulation, stack all plastic cups together and place the beaks, cups, and "food" back to their original position (Before the game started)

Materials per student: (include # copies of handouts, paper for foldables, etc.)

(Per group of 2-4 students)

1. Bird beak types:
 - Spoon (aka Batman)
 - 2 skewers/chopsticks (aka Superman)
 - Tweezers (aka Hulk)
 - Test tube clamps (aka Captain America).
2. Sunflower seeds, rice or beans (Use generous portions at each table so the seeds do not run out).
3. Stopwatch.
4. Posters. (Color markers to draw the angry bird characters in the poster).

Technology required:

- Powerpoint presentation: [Copy of Super Angrybird Powerpoint.pptx](#)