**5E Template- Science**

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| **Name: Sarah Parton** | **Date:** |
| **Content Area: Earth Science** | **Grade Level(s): 9 - 12** | **Topic(s): Latitude and Longitude topographic profiles/direction and measurement on a globe or map** |

**Standards (SOL): ES c and d**

 c. direction and measurements of distance on any map or globe; and

 d. location by latitude and longitude and topographic profiles

**Objectives (UKD’s)**

*Students will be able to observe and read a map/globe. They will be able to plot a course and understand how far it is from an origin to their final destination. Furthermore, they will understand how latitude and longitude is used a definite place on a map or globe.*

**Materials & Resources**

Tupperware peeler

Oranges

Markers

Crayons

Glue

Foam balls

Maps

Scissors

Worksheet with 10 latitude and longitude

Pyramid

Sticky notes

**Safety Considerations**

*Scissors – should be safety scissors, Orange peeler – make certain they are not playing with them so no one gets hurt. They are not sharp; however, they still can cut through the rind of the orange.*

**Engage – Time Estimate: 10 minutes**

*The teacher will have 2 oranges. The teacher will hold up the oranges and ask the class how the oranges could be represented as Earth and how could we find a particular section of the earth.*

**Explore – Time Estimate: 10 minutes**

*The teacher will then have students pair up with 2 oranges, and then let each pair decide how to divide their oranges up if it were the Earth. The teacher will also provide a tool for scoring. Allow the students to make their own patterns on each orange.*

**Explain -- Time Estimate: 15 minutes**

*The teacher will then go into how latitude and longitude lines are used on the globe or a map, and also go over the vocabulary.*

 *Latitude – horizontal lines*

 *Longitude – vertical lines*

1. 35° 43’ 9” = 35 degrees, 43 minutes, 9 seconds (NOT UNITS OF TIME)
2. Equator – goes through the middle and is the longest latitude line
3. The poles at 90° north and 90° south of the equator; the lines shrink to being a point for north and south poles.
4. Meridian – middle day or noon (AM or PM) now
5. International Date Line – Each calendar day begins and runs north to south through the Pacific Ocean. The line passes through the Bering Strait between Alaska and Siberia. It is 180° opposite the prime meridian.

**Extend -- Time Estimate: 45 minutes**

*Each student will receive a map of the world and a foam ball. First each student will cut and apply their map onto the foam ball. Second they need to draw in their oceans onto the ball, Third draw in the lines of latitude, longitude, equator, prime meridian, and International Date Line. Furthermore, they will explain what each term is and means on the map. The teacher will provide each student with a list of 10 latitude and longitude points, and they will have to find what city or town is located on their globe. If the globe is correct, the students should be able to find each location.*

**Evaluate -- Time Estimate: 10 minutes**

*Each student will create their own latitude/longitude pyramid with answers on the pyramid and clues on sticky notes that lie over the answers.*

*Also the globes will be turned in and graded for accuracy.*

**Plans for Diversity**

**Special Needs:**

*Dysgraphia: students will have folded paper where lines need to be placed on their maps, and they will receive marked areas for them to write in.*

Visually Impaired: students will receive a larger globe and a larger map. They will also receive a guide for drawing on their lines and marking their maps. They will have areas marked on the map for their description to go.

Hearing Impaired: students will receive instructions as needed from an interpreter and have a quiet place to converse with the interpreter.

ADHD: students will complete the same assignment as the regular education students, they will need some re-direction to stay focused on their assignment.

LD: students will receive extended time to finish their projects at home but not to exceed into the next day

ID: students will have guidance from the teacher until other students complete their projects. Once a student with more ability has finished, then that student will guide the intellectually disabled student to completion of the project.

ELL: students will receive assistance from the ELL teacher when he/she is present. If the teacher is not present, then the teacher will ask questions of the ELL student for understanding of the project. The teacher will verify the ELL student understands what is expected of him or her.

**Connections**

*Students will understand how they are in Fredericksburg, but it has a latitude and longitude on the map, and how they can find any location on a map with just the latitude and longitude. It could be extended to other countries where places are, and how their time relates to current time on the east coast.*