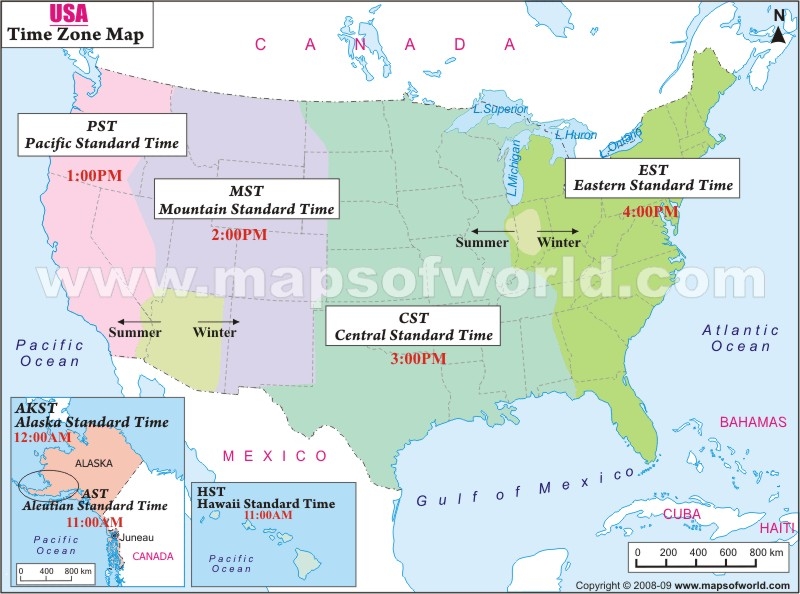
|  |  |
| --- | --- |
| **Measurement** | |
| **Enrichment Investigation #1** | |
| Common Core State Standard(s):  3.MD.1 | Standard(s) for Mathematical Practice:   1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with mathematics 5. Attend to precision 6. Look for and make use of structure 7. Look for and express regularity in repeated reasoning |
| Materials Needed:   * Blackline Masters:   + *Time for Travel*   + *Plan Your Travels*   + *Time Traveling Across the United States*   + *World Traveling* * Harcourt School Publishers Social Studies Intermediate Atlas * Access to Google Earth (optional) * Access to online Atlases ([www.nationalatlas.gov](http://www.nationalatlas.gov)) | |
| Instructions:   1. Students may work independently or in pairs. 2. Provide student(s) with the needed materials. Be sure to provide them with a Harcourt Atlas (Social Studies adoption). 3. Have student(s) decide on an appropriate time for completion and then communicate their plan with you. 4. Decide on a way to share information with teacher, group, and/or class. | |
| Sources:   * Flight times approximated from [www.flightsite.org](http://www.flightsite.org) * U.S. Time Zone Map from [www.mapsoftheworld.com](http://www.mapsoftheworld.com) | |

**Time for Travel**

The Earth is divided into 24 time zones so that everyone in the world can be on similar schedules. The 24 World time zones differ by one hour. In the contiguous United States we have 4 different time zones. Until about 100 years ago, each city set its clocks to local time. Noon was the time when the Sun was at its highest point in the sky. Even neighboring cities needed to set their clocks differently to make this happen. Before modern transportation and communication, this difference didn't really matter. Once railroads were built, this became very troublesome. Train schedules needed to be made using common times that everyone agreed upon, so the U.S. railroad companies adopted the idea of time zones. This was soon needed internationally, with the world being divided into 24 time zones; each zone became a long strip from North Pole to South Pole, about 15 degrees of longitude wide. All the people in one time zone would set their clocks the same way; to the local time in the center of the time zone. Here is a map showing the 4 time zones of the contiguous United States.



Plan your Travels

1. Look at the Atlas provided by your teacher. Pages 46-79 outline the 5 Regions of the United States. Choose a state & city you would like to travel to in *each* of the 5 Regions and complete the table. Use the charts below to find out travel times.

|  |  |
| --- | --- |
| **Northeast** | **Flight Travel Time from Raleigh, NC** |
| Hartford, Connecticut | 1 hour 7 minutes |
| Dover, Delaware | 0 hours 33 minutes |
| Augusta, Maine | 1 hour 26 minutes |
| Boston Massachusetts | 1 hour 18 minutes |
| Concord, New Hampshire | 1 hour 13 minutes |
| Trenton, New Jersey | 0 hours 48 minutes |
| Albany, New York | 1 hour 2 minutes |
| Harrisburg, Pennsylvania | 0 hours 42 minutes |
| Providence, Rhode Island | 1 hour 13 minutes |
| Montpelier, Vermont | 1 hour 26 minutes |

|  |  |
| --- | --- |
| **Southeast** | **Flight Travel Time from Raleigh, NC** |
| Montgomery, Alabama | 1 hour 4 minutes |
| Little Rock, Arkansas | 1 hour 29 minutes |
| Tallahassee, Florida | 1 hour 3 minutes |
| Atlanta, Georgia | 0 hours 45 minutes |
| Frankfort, Kentucky | 0 hours 49 minutes |
| Baton Rouge, Louisiana | 1 hour 44 minutes |
| Annapolis, Maryland | 0 hours 32 minutes |
| Jackson, Mississippi | 1 hour 31 minutes |
| Columbia, South Carolina | 0 hours 24 minutes |
| Nashville Tennessee | 0 hours 59 minutes |
| Richmond, Virginia | 0 hours 17 minutes |
| Charleston, West Virginia | 1 hour 6 minutes |

|  |  |
| --- | --- |
| **Midwest** | **Flight Travel Time from Raleigh, NC** |
| Springfield, Illinois | 1 hour 10 minutes |
| Indianapolis, Indiana | 1 hour 4 minutes |
| Des Moines, Iowa | 1 hour 56 minutes |
| Topeka, Kansas | 2 hours 4 minutes |
| Lansing, Michigan | 1 hour 14 minutes |
| Saint Paul, Minnesota | 2 hours 7 minutes |
| Jefferson City, Missouri | 1 hour 29 minutes |
| Lincoln, Nebraska | 2 hours 13 minutes |
| Bismarck, North Dakota | 2 hours 56 minutes |
| Columbus, Ohio | 0 hours 48 minutes |
| Pierre, South Dakota | 2 hours 44 minutes |
| Madison, Wisconsin | 1 hour 38 minutes |

|  |  |
| --- | --- |
| **Southwest** | **Flight Travel Time from Raleigh, NC** |
| Phoenix, Arizona | 4 hours 4 minutes |
| Santa Fe, New Mexico | 3 hours 17 minutes |
| Oklahoma City, Oklahoma | 2 hours 16 minutes |
| Austin, Texas | 2 hours 14 minutes |

|  |  |
| --- | --- |
| **West** | **Flight Travel Time from Raleigh, NC** |
| Sacramento, California | 5 hours 2 minutes |
| Denver, Colorado | 3 hours 8 minutes |
| Boise, Idaho | 4 hours 24 minutes |
| Helena, Montana | 4 hours 1 minute |
| Carson City, Nevada | 4 hours 49 minutes |
| Salem, Oregon | 5 hours 8 minutes |
| Salt Lake City, Utah | 3 hours 55 minutes |
| Olympia, Washington | 5 hours 7 minutes |
| Cheyenne, Wyoming | 3 hours 8 minutes |

**Time Traveling Across the United States**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Region | Capital City & State being visited | Departure Time from Raleigh, NC  (current time) | Travel Time | +/- Hour(s) for Time Zones | Arrival time in new city, state |
| (1) Northeast  Region |  |  |  |  |  |
| (2) Southeast  Region |  |  |  |  |  |
| (3) Midwest  Region |  |  |  |  |  |
| (4) Southwest Region |  |  |  |  |  |
| (5) West  Region |  |  |  |  |  |

Show how you figured the elapsed time for each by using a number line or clock face.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Using words and pictures, explain how time zones had an impact on finding the elapsed time for traveling from Raleigh, NC to each of the visited cities.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

World Traveling

To continue your virtual travels, research and decide on places you would like to visit on each of the 7 continents! Use [www.flightsite.org](http://www.flightsite.org) to find travel times. Use [www.worldatlas.com](http://www.worldatlas.com) to find time zones for your chosen destinations around the world. Complete the table below using what you know about time zones and elapsed time.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Continent | Destination being visited | Departure Time from Raleigh, NC  (current time) | Travel Time | +/- Hour(s) for Time Zones | Arrival time |
| North America |  |  |  |  |  |
| South America |  |  |  |  |  |
| Africa |  |  |  |  |  |
| Asia |  |  |  |  |  |
| Australia |  |  |  |  |  |
| Europe |  |  |  |  |  |
| Antarctica |  |  |  |  |  |

\*On a separate sheet of paper, show how you figured the elapsed time by using a number line or clock face.

|  |  |
| --- | --- |
| **Measurement** | |
| **Enrichment Investigation #2** | |
| Common Core State Standard(s):  3.MD.1 | Standard(s) for Mathematical Practice:   1. Make sense of problems and persevere in solving them 2. Reason abstractly and quantitatively 3. Construct viable arguments and critique the reasoning of others 4. Model with mathematics 5. Attend to precision 6. Look for and make use of structure 7. Look for and express regularity in repeated reasoning |
| Materials Needed:   * Blackline Masters:   + *Camp Time*   + *Party Time* | |
| Instructions:   1. Students may work independently or in pairs. 2. Provide student(s) with the needed materials. 3. Have student(s) decide on an appropriate time for completion and then communicate the plan with you. 4. Decide on a way to share information with teacher, group, and/or class. | |
| Sources:   * Adapted from *Go Math!* | |

Camp Time!

Imagine that you have to make a schedule for a day at camp. Use the information given below to create a possible schedule. Be sure to include each of the activities listed. Use the number line to show your possible schedule.

* Breakfast starts at 8:00 A.M. and lasts for 30 minutes.
* Lunch lasts 45 minutes and ends at 12:15 P.M.
* The day at camp ends after lunch.
* Outdoor games last 60 minutes.
* Arts and crafts last 45 minutes and begin right after breakfast.
* Fishing lessons last 30 minutes.
* Nature walks lasts 45 minutes and ends before sports.

12:15

8:00

How long is a day at camp? Write the elapsed time.

Can fishing happen before the nature walk? Explain your thinking. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Party Time!

Imagine that you are planning a party for your class. The party starts at 12:15 and must end by 2:45. Make a list of party games/activities such as Heads-Up, Seven-Up, Pin the Tail on the Teacher, etc., and the times allotted for each activity. Record your plans on the chart below.

|  |  |
| --- | --- |
| **Activity/Game** | **Elapsed Time for Activity/Game** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

Show your party plans on the timeline below!

2:45

12:15

Using your understanding of elapsed time, write two word problems that could be solved using the information in your table or on the timeline. Solve your problems.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Camp Time/Party Time Answer Key

Answers will vary

12:15

8:00

How long is a day at camp? Write the elapsed time.

255 minutes, or 4 hours and 15 minutes

Can fishing happen before the nature walk? Explain your thinking.

Explanations will vary. Yes, it is possible for the fishing to happen before the nature walk.

|  |  |
| --- | --- |
| **Measurement** | |
| **Enrichment Investigation #3** | |
| Common Core State Standard(s):  3.MD.2 | Standard(s) for Mathematical Practice:   1. Make sense in problems and persevere in solving them   4. Model with mathematics  5. Use appropriate tools strategically  6. Attend to precision  7. Look for and make sense of  structure |
| Materials Needed:   * Blackline Masters:   + *Is 1 Cubic Centimeter Cube = 1 Milliliter?*   + *What’s the Volume?* * Graduated cylinder(s) * Centimeter cube(s) * Small objects (Ex. Marble, rock, screw, nickel, clay ball, etc.) | |
| Instructions:   1. Students may work independently or in pairs. 2. Provide student(s) with the needed materials. 3. Have student(s) decide on an appropriate time for completion and then communicate their plan with you. 4. Decide on a way to share information with teacher, group, and/or class. | |
| Sources:   * Adapted from *Measuring Volume/Capacity Using the Metric System* Pennsylvania Department of Education; SAS Standards Aligned System | |

**Is 1 Cubic Centimeter Cube = 1 Milliliter?**

C:\Users\michelle_tucker\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\GIOJ072R\MC900013128[1].wmf

Materials Needed:

* Graduated cylinder
* Water
* Centimeter cube

What to do:

1. Fill the graduated cylinder halfway with water. Record the level of the water in the chart below. (\*When reading the water level in a graduated cylinder, you want to be sure to read it in the center at eye level).
2. Carefully drop the centimeter cube into the graduated cylinder. Read and record the water level. Be sure to observe the water level at eye level.

|  |  |  |
| --- | --- | --- |
| Water Level at the start (mL) | Water Level after you put in a centimeter cube  (mL) | Volume of the centimeter cube  (cm3) |
|  |  |  |

What did you learn about volume from this activity? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Brainstorm a list of other objects that you would like to find the volume of using this method.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ 6. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**What’s the Volume?**

\*Use what you learned from *Is 1 Cubic Centimeter Cube = 1 Milliliter?* to complete the following activity.

Materials Needed:

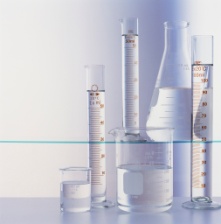
* Graduated cylinder
* Water
* Small objects (Ex. Marble, rock, screw, nickel, clay ball, etc.)

What to do:

1. Fill the graduated cylinder halfway with water. Record the starting water level on the chart below (mL).
2. Record objects collected to measure in the chart below. Estimate the volume of each object and record on the chart below. Be sure to predict which object will have the greatest volume.
3. Carefully drop one object in the graduated cylinder. Record the new water level. Be sure to read the measurement at eye level.
4. Remove the object, refill the graduated cylinder and repeat until all objects have been measured.

\*Before you begin, which object do you predict will have the greatest volume? \_\_\_\_\_\_\_\_\_\_\_\_ Why? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Object | Water level at the start (mL) | Estimated Volume of the object (cm3) | Water level after dropping the object (mL) | Volume of the object (cm3) |
| 1. |  |  |  |  |
| 2. |  |  |  |  |
| 3. |  |  |  |  |
| 4. |  |  |  |  |
| 5. |  |  |  |  |
| 6. |  |  |  |  |

**What’s the Volume? Continued…**

Was your prediction of the object with the greatest volume correct? YES NO

Which object had the greatest volume? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ How do you know? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Is this what you expected? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

If you wanted to find the volume of a baseball, how could you use the same method of dropping the object into water to determine the volume since the baseball will not fit in the graduated cylinder? Explain using words and pictures.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer Key

|  |  |  |
| --- | --- | --- |
| Water Level at the start (mL) | Water Level after you put in a centimeter cube  (mL) | Volume of the centimeter cube  (cm3) |
| Answers will vary | Answers should be 1 mL greater than water level at the start | 1 cm3 |

What did you learn about volume from this activity?

Answers should include explanation that displacement of water will indicate volume of the object.

If you wanted to find the volume of a baseball, how could you use the same method of dropping the object into water to determine the volume since the baseball will not fit in the graduated cylinder? Explain using words and pictures.

Possible answer might be to use a larger container. Measure the water before dropping the baseball into the container and again after. The difference will be the volume of the baseball.

|  |  |
| --- | --- |
| **Measurement** | |
| **Enrichment Investigation #4** | |
| Common Core State Standard(s):  3.MD.2  3.MD.4 | Standard(s) for Mathematical Practice:   1. Make sense in problems and persevere in solving them   4. Model with mathematics  5. Use appropriate tools strategically  6. Attend to precision  7. Look for and make sense of  Structure |
| Materials Needed:   * Blackline Masters:   + *Try Your Hand at Measuring Crayons!*   + *Handy Measurements* * 8 different colored crayons * Inch ruler with ½ and ¼ inch markings | |
| Instructions:   1. Students may work independently or in small groups/pairs. 2. Provide student with the needed materials. 3. Have the student decide on an appropriate time for completion and then communicate the plan with you. 4. Decide on a way to share information with teacher, group, and/or class. | |
| Sources:   * Adapted from *Go Math!* | |

Try Your Hand at Measuring Crayons!

1. Measure 8 crayons to the nearest ½ inch.
2. Record your data in the data table.
3. Complete the line plot. Mark an *X* for each length.

|  |  |
| --- | --- |
| Crayon Color | Crayon Length |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |

1 1 ½ 2 2½ 3 3½ 4 4½

Describe any patterns you see in your line plot.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

C:\Users\michelle_tucker\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\649BCXXM\MC900297935[1].wmfHandy Measurements!

Try your hand at measuring to the nearest ¼, ½, or 1 inch!

1. Trace your hand below.
2. Measure and label the length of each finger measured to the nearest ¼ inch.
3. Complete the line plot. Mark an *X* for each length.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |  |  |  |  |  |  |

1 1¼ 1½ 1¾ 2 2¼ 2½ 2¾ 3 3¼ 3½ 3¾ 4

Handy Measurements Continued…

If your classmates measured their fingers, how do you think their line plots would compare to yours? Why?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

How would your line plot have been different if you had measured your fingers to the nearest ½ inch? or nearest inch?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Could you have measured your fingers closer than the nearest ¼ inch? Explain your thinking.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Handy Measurements Continued…

If your classmates measured their fingers, how do you think their line plots would compare to yours? Why?

Answers may vary. Possible answer; plots would be similar because students are about the same age and size.

How would your line plot have been different if you had measured your fingers to the nearest ½ inch? or nearest inch?

Answers will vary.

Could you have measured your fingers closer than the nearest ¼ inch? Explain your thinking.

Answers may vary. Correct answers may indicate an understanding that measurements to the nearest 1/16 could have been made.

|  |  |
| --- | --- |
| **Measurement** | |
| **Enrichment Investigation #5** | |
| Common Core State Standard(s):  3.MD.2 | Standard(s) for Mathematical Practice:   1. Make sense in problems and persevere in solving them   4. Model with mathematics  5. Use appropriate tools strategically  6. Attend to precision  7. Look for and make sense of  structure |
| Materials Needed:   * Blackline Masters:   + *Plane Plots*   + *Plane Plots Data Table* * Copy/printer paper for folding paper airplanes. * Students can design their own paper planes or go to [www.10paperairplanes.com](http://www.10paperairplanes.com) for ideas and instructions. * Safe and appropriate location to launch paper airplanes. | |
| Instructions:   1. Students may work independently, in pairs, or in groups. 2. Provide student with the needed materials. 3. Have the student decide on an appropriate time for completion and then communicate their plan with you. 4. Decide on a way to share information with teacher, group, and/or class. | |
| Sources:   * [www.10paperairplanes.com](http://www.10paperairplanes.com) | |

Plane Plots

Directions:

1. Fold and name 5 to 10 different paper airplanes. You may design your own or visit [www.10paperairplanes.com](http://www.10paperairplanes.com) for ideas and instructions.
2. Measure each airplane’s length and width to the nearest ¼ and ½ inch.
3. Record measurements on chart.
4. Predict which plane will travel the furthest. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Do you think the length or width of the plane will impact the distance it travels? Explain your thinking. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. Find a place to launch your airplanes. (Ask you teacher for a safe and appropriate place.)
7. Launch the airplanes one at a time. Estimate the distance traveled and then measure to find the actual flight distance from the starting point to the nearest ¼ inch.
8. Record your information in the data table.
9. Using bulletin board paper, markers, and paper airplane models, make a line plot showing the flight distances of each plane. Attach the planes to the plot to indicate the flight distance.



C:\Documents and Settings\Administrator\Local Settings\Temporary Internet Files\Content.IE5\OP7BYZ0H\MC910217610[1].wmfPlane plots Data Table

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Name of Plane | Length of plane | Width of plane | Estimated  Distance Traveled | Actual distance traveled to the nearest ¼ inch |
| 1. |  |  |  |  |
| 2. |  |  |  |  |
| 3. |  |  |  |  |
| 4. |  |  |  |  |
| 5. |  |  |  |  |
| 6. |  |  |  |  |
| 7. |  |  |  |  |
| 8. |  |  |  |  |
| 9. |  |  |  |  |
| 10. |  |  |  |  |

Was your prediction of the plane that would travel the furthest correct? Explain. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Write the distance traveled by the plane in another way\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Explain your answer. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_