GEO-INQUIRY PROCESS RESOURCE PACKET LIST

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STUDENT WORKSHEET 1 NAME: DATE:

GEO-INQUIRY QUESTIONS

A Geo-Inquiry Question is a query that asks us to think about where things are and how they are connected to other things spatially and why that is important. For the list below, put a check mark next to the question that can be classified as a Geo-Inquiry Question.

1. ☐ What types of bees are found here?
2. ☐ What are the mechanics of bird flight?
3. ☐ Why do monarch butterflies migrate to Mexico?
4. ☐ When was this building built?
5. ☐ Why are pandas black and white?
6. ☐ Where is the library located?
7. ☐ How might the use of weed killers affect the monarch butterflies migration path?
8. ☐ How has the game of baseball changed over time?
9. ☐ How does this neighborhood change between Birch Street and Edwards Avenue?
10. ☐ Why do so many people use cell phones and smartphones?
11. ☐ How does the damming of the river affect those who live downstream?
12. ☐ What is the most accurate way for scientists to measure temperature?
13. ☐ What types of businesses are found on Main Street?
14. ☐ Where is the best place to look for Chicago-style pizza?
15. ☐ Which movie theater is the closest?
16. ☐ Why are some stores often located near each other no matter where you are?
17. ☐ What is the best soil for growing tomatoes?
18. ☐ How will the closing of the mall affect the number of people who visit the area?
19. ☐ Why are most large sports fields not found in downtown areas?
20. ☐ Why is cursive handwriting no longer taught in most schools?

STUDENT WORKSHEET 2 NAME: DATE:

POSSIBLE GEO-INQUIRY QUESTIONS

Your Geo-Inquiry Project will start with a good Geo-Inquiry Question. With your teacher, explore topics in your local community and write Need-to-Knows about them. You may write a lot of geographic questions, and you may think of even more! List your favorite ones here.

STUDENT WORKSHEET 3 NAME: DATE:

PRACTICING GEO-INQUIRY QUESTIONS

As you explore topics and issues in your local community, use this form to help you think more deeply about the issues and write related Geo-Inquiry Questions.

1. What is the topic or issue?

2. What do you know about this topic?

3. What are some Need-to-Knows you can ask about this topic?

PRACTICING GEO-INQUIRY QUESTIONS

4. Circle the Need-to-knows you wrote in question 3 that you think are the most interesting.

5. Why do you think these questions are interesting?

STUDENT WORKSHEET 4 NAME: DATE:

ASKING THE COMMUNITY

Find out what community members think are important local issues or problems that need to be addressed. Write five questions you could ask them to get this information.

1. _____
2. _____
3. _____
4. _____
5. _____

Summarize what you learned from speaking with community members.

STUDENT WORKSHEET 5 NAME: DATE:

REFINING YOUR GEO-INQUIRY QUESTION

Answer the questions below to refine your Geo-Inquiry Question.

About Your Question

1. What is the Geo-Inquiry Question you most want to answer?

2. Why is this Geo-Inquiry Question interesting to you?

3. What is the local issue or topic related to this Geo-Inquiry Question?

4. Summarize the information you have about this issue or topic.

REFINING YOUR GEO-INQUIRY QUESTION

Test Your Geo-Inquiry Question

Answer the following questions with a yes or no.

1. Could you answer your Geo-Inquiry Question quickly using a map, search engine, or other tool? ☐ yes ☐ no
2. Do you care about the answer to your Geo-Inquiry Question? ☐ yes ☐ no
3. Is your Geo-Inquiry Question important to your community? ☐ yes ☐ no
4. Can you think of information or data that would help you answer this Geo-Inquiry Question? ☐ yes ☐ no
5. Will you be able to find this information and collect this data? ☐ yes ☐ no
6. Will the answer to your Geo-Inquiry Question help you better understand how to address a community issue or solve a local problem? ☐ yes ☐ no
7. Will you be able to use this Geo-Inquiry Question to make a positive change in your community? ☐ yes ☐ no

If you answered yes to question one or no to any of the others, you should revise your Geo-Inquiry Question. You can repeat these questions as many times as you need until you are satisfied with your Geo-Inquiry Question.

Write the final version of your Geo-Inquiry Question here. This will be the Geo-Inquiry Question driving the rest of this project

NAME: DATE:

BACKGROUND INFORMATION

Once you have created your Geo-Inquiry Question, it is time to find out more about the Need-to-Knows about your topic. List some Needs-to-Know or topics for research related to your Geo-Inquiry Question.

1. List potential Internet or library resources.

Resource	Where to Find/URL	Did you Evaluate It? (yes or no)	Summary of Information Available

BACKGROUND INFORMATION

2. List community experts or organizations that might have information about your Geo-Inquiry Question. Include contact information.

Name of Contact	Organization	Position or Job	Area of Expertise	Contact Information

BACKGROUND INFORMATION

3. List any previous studies or solutions related to the topic or issue of your Geo-Inquiry Question.

Issue or Topic	Study or Solution	Date	Where to Find Information	Brief Summary

BACKGROUND INFORMATION

4. Conduct research using the resources you found. Write a summary of information on topics or issues related to your Geo-Inquiry Question. Include a brief analysis of any studies or previous solutions to the issue.

5. Explain why this topic or issue is important to your community.

STUDENT WORKSHEET 7 NAME: DATE:

DECIDING WHAT DATA YOU NEED

1. Write your Geo-Inquiry Question.

2. Write key terms in your Geo-Inquiry Question and define them.

3. What will you learn by answering this Geo-Inquiry Question?

DECIDING WHAT DATA YOU NEED

Unpacking Your Geo-Inquiry Question

Break down your Geo-Inquiry Question by listing the Need-to-Knows that will help to answer it. After you have listed your Need-to-Knows that make up your Geo-Inquiry Question, look back at each Need-to-Know and write the specific data you will need to answer it.

Need-to-Knows	Data Needed

STUDENT WORKSHEET 8 NAME: DATE:

PLANNING DATA COLLECTION

Use this table to plan your data collection, including all necessary tools, such as surveys or data sheets.

Type of Data	Why You Need It	How You Will Collect It	Tools You Will Need

EVALUATING RESOURCES

Use this checklist to evaluate project resources.

1. What is the main purpose of the resource?
   - ☐ to inform
   - ☐ to persuade
   - ☐ to inflame
   - ☐ to entertain
   - ☐ to sell something

2. Who are the author and publisher of the resource?
   - ☐ Can you find information about this author's credentials?
   - ☐ Is the author an expert on the topic?
   - ☐ Does the author have a good reputation?
   - ☐ Does the publisher have a good reputation?
   - ☐ Does the author or publisher have a mission?
   - ☐ Does the author or publisher's mission bias the resource?

3. Is the resource readable? Does it have
   - ☐ spelling or grammar errors?
   - ☐ broken links (websites)?
   - ☐ distracting or unprofessional graphics?

4. If it is a web resource, what is the domain?
   - ☐ .gov
   - ☐ .net
   - ☐ .com
   - ☐ .org

EVALUATING RESOURCES

5. Does the information in the resource seem credible?
   - ☐ Are claims backed up by facts?
   - ☐ Does the author cite sources?
   - ☐ Does the resource link to or reference other credible sources?
   - ☐ Does the resource have sensational headlines?
   - ☐ Does the resource make claims that seem unlikely or odd?
   - ☐ Can you find the same information in a second reputable source?

6. Do you think this resource is valid and useful for your purpose? Why?

STUDENT WORKSHEET 10 NAME: DATE:

TAKING NOTES

Use this form to take notes on your research

Title of source: _____

Author: _____

Date: _____

Type: _____

URL (web resources only): _____

Need-to-Knows	Information

Summary

CONTACTING COMMUNITY EXPERTS

Whether you plan to contact a person, organization, or agency by phone, mail, or email, you will need to prepare. Write down the basic information of your project that you will share when you communicate with experts in your community

Introduce yourself and tell what school you attend.

1. Briefly describe your project.

2. Briefly explain what you need.

Contacting Community Experts by Phone

Tips for contacting an expert by phone:

- Keep your call short.
- Be polite.
- Introduce yourself and explain what you need. Use the information you wrote down.
- Ask if the person on the phone can help you or if there is someone else you should contact.
- If necessary, ask if you can make an appointment to call or come in to talk with this person.
- Be prepared to write down contact information and take notes.

CONTACTING COMMUNITY EXPERTS

Below is a sample script for a call.

Hello, my name is _____ and I am a _____-grader from _____ school. We are working on a project (describe your project). I am calling to see if you could help me (describe what you need). Is that something you could help me with or is there someone else I should speak to? Could we set up a time to speak about this? Thank you for your help.

Contacting Experts by Mail

Tips for contacting an expert by mail:

- Use the example format provided for your letter. Notice the spacing between key parts of the letter, such as the date and the address.
- Type your letter using a 12-point, easy to read font or write very clearly.
- Address your letter to a specific person. Use Mr., Mrs., or Ms., plus the person's last name. If you do not know the person's gender, use their full name instead.
- Proofread your letter before sending it and, if possible, have a peer proofread it too.
- Include a stamped envelope addressed to you at your school. This will make it easier for the expert to send you information.

Below is the format for a business letter.

Date	July 12, 2017
Your school address	My School 14 School Rd. Anytown, USA 12345
Address of the person you are writing to	Community Expert 36 Main Street Anytown, USA 12345
Greeting	Dear Community Expert,
Body of the letter	Introduce yourself, explain your project, and describe what you need. Ask if they could help you with this information. Thank them for their help.
Closing	Sincerely,
Signature	Your name (handwritten) Your Name (typed)

CONTACTING COMMUNITY EXPERTS

Contacting Experts by Email

Tips for contacting an expert by email:

- Use the format below for your letter.
- Send the email from your school email address, not your personal email address.
- Use a subject that is short and specific, such as “Help with School Project” or “Information about Water Quality.”
- Type your email using a 12-point, easy to read font.
- Address your letter to a specific person. Use Mr., Mrs., or Ms., plus the person’s last name. If you do not know the person’s gender, use their full name instead.
- Leave a blank line after the greeting, between each paragraph, and before the closing.
- Proofread your email before sending it, and if possible, have a peer proofread.

Below is the format for a business email.

Greeting	Dear Community Expert,
Body of the email	Introduce yourself, explain your project, and describe what you need. Ask if they could help you with this information. Thank them for their help.
Closing	Sincerely,
Signature	Your Name Your School

NAME: DATE:

CONDUCTING INTERVIEWS

Tips for interviewing people:

- Always arrange the interview in advance. If at all possible, conduct the interview in person.
- Let the person you will be interviewing know the topic of your discussion. This will help them to be better prepared to answer your questions.
- Write your questions in advance.
- Practice asking your questions.
- Record your interview. Always ask permission before recording.
- Ask follow-up questions to get more information or clarify what was said. These can be new questions that you think of during the interview.
- Take notes during the interview or have a partner take notes while you ask the questions. You can mark any answers that you want to use in your Geo-Inquiry Story or that will be useful in answering your driving question. You can also record any new questions you want to ask or research.

Write your interview questions below.

ANALYZING YOUR DATA

Analyze all of the data you have collected. Create various maps and charts representing various findings. As you begin the analysis, look for patterns, clusters, or trends that might help you answer your Geo-Inquiry Question.

1. Do you see any patterns, trends, or clusters in the graphs you created? If so, describe them.

2. Do you see any patterns, trends, or clusters on your maps? If so, describe them.

3. Do you think any of the variables you measured depend on what they are near on the map? If so, describe them. What evidence supports this?

ANALYZING YOUR DATA

4. Do you think any of the variables you measured show trends or patterns similar to another variable you measured? If so, describe how they might be connected. What evidence supports this?

5. Which of these patterns or trends will help you to answer your Geo-Inquiry Question?

6. Write the answer to your Geo-Inquiry Question. Give evidence to support your answer.

CREATING A ROUGH DRAFT MAP

A rough draft map is a starting place for seeing how your data relates spatially. As you gather data, you can add it to your map and try different ways of showing the data. Since it is a rough draft, you do not have to worry about everything being perfect or neat.

To create your rough draft map, you need to start with a base map. The base map could be a printed map or a digital map. To decide which map you will use, answer the following questions:

What areas will you be collecting data in or from?

Which types of maps will work best for your Geo-Inquiry Project?

Once you have answered these questions, search for a map that matches your answers. This will be your base map. As you collect data, you can add it to your base map and move it around to help you see any patterns.

STUDENT WORKSHEET 15 NAME: DATE:

CREATING THE FINAL VERSION OF YOUR MAP

As you create the final version of your map, use the checklist below.

- [ ] Does your map support your Geo-Inquiry Story?
- [ ] Is the purpose of the map clear?
- [ ] Is the location the map is showing clear?
- [ ] Is the map easy to understand?
- [ ] Is there a title for the map?
- [ ] Did you include a legend to explain any symbols you used?
- [ ] Does the color scheme help make the map more readable instead of distracting from the map?
- [ ] Are labels used where needed to make things more clear?
- [ ] Is everything spelled correctly?
- [ ] Are any images the right size and easily visible?
- [ ] Is the text readable (font size and type)?
- [ ] Are the authors listed?
- [ ] Is the date included?

STUDENT WORKSHEET 16 NAME: DATE:

ANALYZING GEO-INQUIRY STORIES

Analyze two examples of Geo-Inquiry Stories to get ideas for your own story.

1. Title of the Geo-Inquiry Story: _____

2. What elements worked well in this Geo-Inquiry Story?

3. Why did they work?

4. What elements could be improved?

5. What would you do to improve them?

6. What was missing from this Geo-Inquiry Story that could have helped tell the story?

7. What were some effective visuals?

ANALYZING GEO-INQUIRY STORIES

8. How do these visuals help tell the Geo-Inquiry Story?

9. Overall, was this an effective Geo-Inquiry Story? Why?

1. Title of the Geo-Inquiry Story: _____

2. What elements worked well in this Geo-Inquiry Story?

3. Why did they work?

4. What elements could be improved?

ANALYZING GEO-INQUIRY STORIES

5. What would you do to improve them?

6. What was missing from this Geo-Inquiry Story that could have helped tell the story?

7. What were some effective visuals?

8. How do these visuals help tell the Geo-Inquiry Story?

9. Overall, was this an effective Geo-Inquiry Story? Why?

ANALYZING GEO-INQUIRY STORIES

List some elements you think an effective Geo-Inquiry Story should have.

List some tips for yourself based on what you saw in the Geo-Inquiry Story you reviewed.

STUDENT WORKSHEET 17 NAME: DATE:

CHOOSING THE WAY TO TELL YOUR GEO-INQUIRY STORY

Explore three tools you could use to tell your Geo-Inquiry Story. Analyze each to determine which is the best fit for your Geo-Inquiry Story.

1. Tool: _____

What are this tool's strengths?

_____

_____

_____

How could this tool help you tell your Geo-Inquiry Story?

_____

_____

_____

What are some limitations of this tool?

_____

_____

_____

2. Tool: _____

What are this tool's strengths?

_____

_____

_____

How could this tool help you tell your Geo-Inquiry Story?

_____

_____

_____

CHOOSING THE WAY TO TELL YOUR GEO-INQUIRY STORY

What are some limitations of this tool?

3. Tool: _____

What are this tool's strengths?

How could this tool help you tell your Geo-Inquiry Story?

What are some limitations of this tool?

STUDENT WORKSHEET 18 NAME: DATE:

PREPARING TO TELL YOUR GEO-INQUIRY STORY

Answer the questions below to organize your thoughts and prepare to tell your Geo-Inquiry Story.

1. What is your Geo-Inquiry Question?

2. What kinds of data did you collect?

3. What did you learn from this data?

4. How will you represent data in your Geo-Inquiry Story?

5. What is the answer to your Geo-Inquiry Question or your proposed solution?

6. What action would you like to take based on your findings?

PREPARING TO TELL YOUR GEO-INQUIRY STORY

7. Who is the best audience for your Geo-Inquiry Story?

8. What kinds of elements will be most important to tell your Geo-Inquiry Story?

9. What is the best tool to use to tell your Geo-Inquiry Story?

10. Why is this the best tool?

STUDENT WORKSHEET 19 NAME: DATE:

GEO-INQUIRY STORYBOARD

Use the guide below to plan your Geo-Inquiry Story. Use each box in the left column to sketch one scene, and write any necessary information in the column to the right.

Geo-Story Title _____

Scene	Description Text or Narration Audio (music, sound effects) Video or Image Length Transition Other

GEO-INQUIRY STORYBOARD

Scene	Description Text or Narration Audio (music, sound effects) Video or Image Length Transition Other

STUDENT WORKSHEET 20 NAME: DATE:

TRACKING GEO-INQUIRY STORY ELEMENTS

Use the charts below to track which photographs, videos, graphics, and text have been created and edited and to whom they are assigned.

Photographs

List all photographs you will use in your Geo-Inquiry Story. If you already have the photograph, include its file name. If you do not have it, include the specs for creating it.

Scene #	Photograph Description	Specs (size, orientation)	Shot?	Edited?	File Name	Assigned to?

TRACKING GEO-INQUIRY STORY ELEMENTS

Videos

List all videos you will use in your Geo-Inquiry Story. If you already have the video, include its file name. If you do not have it, list the specs for creating it.

Scene #	Video Description	Specs (orientation, length)	Shot?	Edited?	File Name	Assigned to?

TRACKING GEO-INQUIRY STORY ELEMENTS

Graphics

List all graphics (maps, charts, graphs, etc.) you will use in your Geo-Inquiry Story. If you already have the graphic, include its file name. If you do not have it, list the specs for creating it separately underneath the chart.

Scene #	Type of Graphic	Specs (orientation, colors, what should be included)	Created?	Edited?	File Name	Assigned to?

TRACKING GEO-INQUIRY STORY ELEMENTS

Text

List all text and narration you will use in your Geo-Inquiry Story. If you already have the text, include its file name. If you do not have it, list the specs for creating it separately underneath the chart.

Scene #	Text Written?	Edited?	Narration Recorded?	Edited?	File Name	Assigned to?

DEVELOPING AN ACTION PLAN

You have now answered your Geo-Inquiry Question and created a compelling Geo-Inquiry Story to tell. Next, you need to create an action plan for how you will use your Geo-Inquiry Story to take action. Answer the following questions as a group.

1. Which do you think is the best way to address this issue in your community (circle one)?

   community action public policy

2. What are the advantages of this action or solution? What are the disadvantages? You will need to be able to address the disadvantages, as well.

3. List some influential individuals or groups who might be willing to support your proposal.

4. How might you be able to win the support of some of these individuals or groups?

5. Who are some influential government officials or agencies that might be willing to support your proposal?

6. How can you gain their support?

DEVELOPING AN ACTION PLAN

Have your group create an action plan. An action plan will include different information based on the outcomes. The example below is an action plan aimed to make a change of policy.

Step	Action	Description
Step One	Clearly define the issue.	
Step Two	Identify existing policies, rules, or behavior impacting the issue.	
Step Three	Research the individuals, agencies, and organizations that impact the issue.	
Step Four	Identify the procedures to making a change in policy.	
Step Five	Create a timeline with milestones.	
Step Six	Identify the ways you will share your Geo-Inquiry Story.	

NAME: DATE:

CHOOSING HOW TO SHARE YOUR GEO-INQUIRY STORY

Below are some examples of ways you could share your Geo-Inquiry Story. Check the ones that interest you the most. Add any ideas you have to the list. You can also include notes about how each might work with your story and audience.

- ☐ Presentation
- ☐ Website
- ☐ Written Presentation
- ☐ Poster Session
- ☐ Event
- ☐ _____
- ☐ _____
- ☐ _____

Notes

NAME: DATE:

ONGOING REFLECTION

Use the following questions to assess your team's progress.

1. Describe what you learned as a team.

2. Describe one thing you feel proud about as a team.

3. Describe one thing you found challenging as a team.

4. Describe one thing (skill, quality, other) you can develop as a team.

STUDENT WORKSHEET 24 NAME: DATE:

PLANNING YOUR PRESENTATION

Answer the question below in preparation to the presentation of your Geo-Inquiry Story to the audience you have selected.

1. Who is the audience for your Geo-Inquiry Story?

2. What method will you use to share your Geo-Inquiry Story with them?

Beginning

1. How will you grab their attention?

Middle

1. What is your pitch? This should be a brief description of what you did, why it is important, and how they can help.

2. How will you use your Geo-Inquiry Story?

PLANNING YOUR PRESENTATION

3. What are your arguments to influence your audience?

End

1. What is your call to action? What do you want your audience to do when they leave?

PLANNING YOUR PRESENTATION

Use the chart to plan for your presentation. List all tasks, who is responsible for the task, and when the task is due.

Task	Who Is Responsible?	When Is It Due?

STUDENT WORKSHEET 25 NAME: DATE:

FINAL REFLECTION

Reflect on your project by answering these questions.

1. Why was this project important?

2. What are you proud of that you accomplished during this project?

3. What do you wish you could have done differently? Why?

4. What is something you learned through this project?

FINAL REFLECTION

5. How might you apply something you learned in another area?

6. What do you hope the outcome is of sharing your Geo-Inquiry Story? Why is that important to you?

7. What more did you want to learn?

8. What further action might you take?

NAME: DATE:

PEER REVIEW

1. Members of the group you are reviewing:

2. What are you reviewing?

3. What do you think the purpose is of the work you are reviewing?

4. List some questions you have about the work.

PEER REVIEW

5. List some things you liked about the work.

6. List some suggestions you have.

TAKING ACTION

You can take action to solve problems or address issues in your community through public policy or through community action

Public Policy

In the United States, a public policy is an agreed-on way our federal, state, or local governments fulfill their responsibilities, such as protecting the rights of individuals and promoting the general welfare of the people. As a citizen of the United States, you have a right to say what you think the government should do about problems in your community, your state, the nation, or the world. You have the right to try to influence the decisions elected officials in your government make about those problems.

Community Action

Sometimes you do not need to change public policy to solve a problem in your community. Not all problems require the government to take action. Instead, you can work directly with others in your community to solve a problem. Many community groups exist to work toward solving problems such as hunger, homelessness, environmental issues, and other community concerns.

Many problems can be addressed through both public policy and through community action. For example, if you want to keep a local river clean, you can take action to create public policies such as fining businesses or individuals who pollute the river. You could also organize a group of people to do a monthly river cleanup. Both actions will help keep the river clean.

SOURCES OF INFORMATION IN YOUR COMMUNITY

Identifying Community Experts

Community experts are another good source of information. These are people in your local community with knowledge about a particular topic or issue. The experts you need to interview will depend on the topic or issue you are investigating. Often experts can be found in the places listed below.

Community Organizations

Your community probably has special interest groups who focus on certain topics or issues. Such groups may be able to provide you with information or point you to experts who can answer your questions. You may already know of community groups with an interest in your topic or issue, or you can find them online. List a few keywords related to your topic and search them along with the name of your town and state. Your research could provide additional national or international groups with expertise in your topic, and you can check to see if there is a local chapter.

Colleges and Universities

Colleges and universities are good places to find professors or other scholars with expertise in your topic or issue. Start by going to the website of a local college, as most list their academic departments. Look for departments related to your topic or issue and then search their webpage for information on relevant student groups and faculty.

Libraries

Librarians are excellent sources of information on a variety of topics and can help you find books, newspapers, journals, websites, and other resources. They are also experts in local resources. They can point you to geographic information about your area and may be able to help you identify community experts that you can contact.

Newspapers

Newspapers are a good source of information about topics and issues important to your community. Check your local newspaper's website. Some have online archives that allow you to search past articles. Most newspapers also have a librarian or archivist that you can ask for information about a particular topic or issue.

Government Agencies

Your local government has many agencies, each with specific roles (e.g., the police department, the water department, and the recreation department). You can find a list of agencies on your town's website. Find the departments relevant to your topic or issue.

NAME: DATE:

COLLECTING DATA IN THE FIELD

Collecting data in the field means going outside of your home or classroom to conduct interviews with experts, visit organizations (colleges, universities, government agencies, and libraries), distribute surveys, take photographs, record video, or collect scientific data. You might go to a river to measure water quality or to a park to observe local plants and animals.

As you are collecting data in the field, remember to

- Capture location information. You can use a GPS, a smartphone, or another method to collect information about your location.
- Get permission. Be sure you have the permission of your parent or teacher, as well as the owner or caretaker of any place you visit.
- Be sure you have any needed safety equipment.
- Bring an adult.
- Plan ahead. Make sure you know the type of data you are collecting, what tools you will need, and what method you will use.

VOCABULARY

anecdote – short narrative of an incident

attribute – something belonging or characteristic of a person, thing, or group

audience – observers or listeners of an event or production

basemap – map limited to essential outlines used for plotting or presenting specialized data

bias – media that shows strong feeling for or against something or someone that favors one side too much; it presents just one point of view or one side of an argument

boxplot – graph that summarizes numerical data based on quartiles, which divide a data set into fourths

closed-ended question – queries with a fixed response

cluster – group of organisms or objects that share at least one characteristic

community action – action initiated, organized, and undertaken by members of a community for local improvement

composition (in photography) – arrangement of the parts of a work or structure in relation to each other and to the whole

curate – to organize a collection for displaying, such as an art exhibit

data (singular: datum) – information collected during a scientific study

geographic information system (GIS) – any system for capturing, storing, checking, and displaying data related to positions on the Earth's surface

geospatial data – data that includes a geographic location and characteristics of natural, demographic, cultural, political, or constructed features on Earth

histogram – representation of a frequency distribution by mean of rectangles whose widths represent class intervals and whose areas are proportional to the corresponding frequencies

jargon – technical terminology or characteristic idiom of a particular activity or area of knowledge

latitude – distance north or south of the Equator, measured in degrees

VOCABULARY

line graph – graph of points representing values of an independent variable are connected by a line

longitude – distance east or west of the prime meridian, measured in degrees

map – symbolic representation of selected characteristics of a place, usually drawn on a flat surface

map layer – part of a map representing specific features of a place

map projection – method by which shapes on a globe are transferred to a flat surface

open-ended question – queries that lead to further discussion

pattern – arrangement of people, places, or things across a specific space

physical map – representation of spatial information displaying features and patterns of the natural environment

pie graph – circular graph depicting a part-to-whole relationship where size of each section is directly proportional to the percentage of the whole

pitch – sales talk

political map – representation of spatial information, marking boundaries of states, countries, or other government divisions

proposal – suggested plan

proximity – nearness

public policy – course of actions, beliefs, and laws taken by a government having to do with a specific issue or concern

query – in GIS, a request to select features or records from a database; often written as a statement or logical expression

range – difference between the least and greatest valves of the attribute or variable of a frequency distribution

remote sensing – methods of information-gathering about Earth's surface from a distance

satellite imagery – photographs of a planet taken by or from a satellite

VOCABULARY

satellite map – representation of spatial information based on photographs or other images taken from above Earth's atmosphere

scatterplot – two-dimensional graph of points whose coordinates represent two variables whose relationship is being studied

specs – detailed, precise, explicit presentation of something

statistics – the collection and analysis of sets of numbers

street map – representation of spatial information displaying roads, addresses, and other access points

survey – a study or analysis of characteristics of an area or a population

thematic map – representation of data on a specific topic for a specific area

topographic map – map showing natural and human-made features of the land, and marked by contour lines showing elevation

variable – piece of data that can change

DEVELOPING A SURVEY

Surveys are a good way to gather information from a lot of people relatively quickly. Surveys ask people a series of questions about themselves or for their opinions.

Identifying the Purpose of Your Survey

The first step in creating a good survey is simple: know your purpose. Understanding why you are doing a survey will help you determine what kind of questions to ask and whom you should ask (your respondents). For example, if the purpose of your survey is to find out what your teachers would like to do on teacher appreciation day, then you do not want to survey students.

Types of Survey Questions

There are two main types of survey questions: open-ended and closed-ended.

1. **Open-ended questions** allow respondents to write in their own answer. These questions result in qualitative data. Example: What suggestions do you have for ways we can improve our service?

   Advantages to open-ended questions

   - Respondents can provide answers that might surprise you.
   - Respondents provide more details or information than you would get from a close-ended response.
   - Respondents can make their response more clear and specific, particularly if their answer does not exactly fit the choices you might give.

   Disadvantages to open-ended questions

   - Open-ended questions are more difficult to tally, since every respondent could give a completely different answer. So, if you want numeric data that you can graph or tally, open-ended questions are probably not the best choice.
   - Open-ended question usually take longer to answer than closed-ended questions.

2. **Closed-ended questions** force respondents to choose from a set of options. Yes/No questions, multiple choice questions, and rating scales are all types of closed-ended questions. Closed-ended questions result in quantitative data (data that can be easily counted or measured).

   Example: What color is your cat?

   A. Black
   B. White
   C. Grey
   D. Orange
   E. Combination

DEVELOPING A SURVEY

Advantages to closed-ended questions

- Respondents can answer the questions relatively quickly.
- Answers can be easily counted and visually represented.

Disadvantages to closed-ended questions

- Respondents might have to choose from answers that are not quite what they want to say **(What if you have a purple cat?)**.
- Researchers may miss out on less obvious responses and additional information that might help them better understand the topic.

Surveys can have a mixture of both question types. For example, you might have some multiple-choice answers and rating scales followed by an open-ended answer where respondents can explain their choices. Combining question types can enable the researcher to collect both quantitative and qualitative data.

Tips for Writing Good Survey Questions

Keep it simple

Use the simplest language possible. Use multiple, smaller sentences rather than long, complicated ones.

Give context

If you are going to ask about something that may be unfamiliar to your respondents, include any information they may need to know in the question itself. For example, if you are going to ask a question about specific signs of damage they have observed on the trees on Maple Street, you will probably need to describe what that damage looks like. “Leaf blisters are raised areas ranging up to 2 inches in diameter scattered over the upper leaf surface. Have you seen evidence of leaf blisters in the trees on Maple Street?”

One thing at a time

Each question should focus in on only one thing. Including more than one idea in the same question can be confusing. It can also make it more difficult for respondents to give an accurate response. For example, if you asked: “Rate the trees for bug damage and leaf blister on a scale of 1 to 10,” respondents might have trouble answering that question if they saw bore holes from insects but no leaf blister. Instead you might ask two separate questions: “Rate the bug damage in the trees in your yard,” and “Rate the leaf blister damage in the trees in your yard.”

DEVELOPING A SURVEY

Avoid bias

Sometimes the way you write a question can accidentally affect the way people answer that question. Your wording can make them feel more positively or negatively about the topic. Influencing responses in this way is called bias. For example, if you include the question “Are the oak trees in your yard healthier than the ash trees?” people might rate the oak trees as healthier than they would have if you used the question “Which are the healthiest trees in your yard? (A) oak trees or (B) ash trees.”

Surveys should be as objective, or neutral, as possible. It is very important to try not to bias the survey in any way. When you are writing your questions, try not to have a preferred answer in mind. Always check your language to look for words that might influence how a respondent answers the question.

Test it out

Ask one of your peers to complete your survey to test out before you use it. Your tester can let you know if any of the questions are confusing. They can point out any bias they notice in the survey. They can also give you feedback on how long it took them to complete the survey and on how the survey was conducted.

Ways to Conduct a Survey

After you have written and tested the survey, you need to get people to answer your questions. There are a few ways to do this, and each has its advantages and disadvantages.

1. Written Survey

You can type the survey questions and answer choices and print them out for people to answer and return.

Advantages

- Respondents can take their time with the survey and not feel rushed.
- You can reach people who may not have access to the Internet.

Disadvantages

- Responses will need to be hand-tallied.
- If you are using open-ended questions, respondents’ handwriting may be difficult to read.
- You will need to have a way to get the survey to and from respondents. This might be easy if you are surveying classmates, but more difficult if you are surveying strangers. Many of the surveys may not be returned.

DEVELOPING A SURVEY

2. Phone Survey

You can ask your survey questions over the phone and enter the responses directly onto a spreadsheet.

Advantages

- You can reach people that you may not be able to see in person or contact online.
- Answers entered onto a spreadsheet can be easily tallied.

Disadvantages

- A phone survey may be annoying to people, especially if it is long.
- It may be more difficult to record answers to open-ended questions given over the phone.
- You will need access to phone numbers for the respondents.

3. Online Survey

You can use an online tool to conduct your survey.

Advantages

- You can reach large pools of people easily.
- Online survey tools automatically tally responses, and most provide an option to turn responses into charts and graphs.
- You can email your survey to specific people or spread it widely using social media, if age appropriate.
- Respondents can answer the survey at a time that is convenient to them.

Disadvantages

- Your survey will not reach people who do not have Internet access.
- You will need to become familiar with the tool before you can build the survey.
- You will need Internet access to create the survey and to see the results.

TAKING PHOTOGRAPHS AND VIDEO

As you collect your data, be sure to take photographs and/or video. These visuals will be very helpful when you start assembling your Geo-Inquiry Story. You want to have a large selection to choose from so you can select high-quality images that support your data.

General Tips for Taking Photographs and Videos

1. Make sure you understand how to use any camera equipment before you go out into the field.
2. Check to be sure any batteries are charged, you have enough memory cards, and all equipment works before heading into the field.
3. Have a backup device and plan. Remember that you may not have another chance to get the photograph or video you need.
4. Take lots of photographs and/or video. It is always better to have more than you need rather than too few.
5. Never record or photograph anyone without their permission.
6. Always get a signed release from all people and locations in your photographs or video. The permission should clearly state you have their permission and can use the material in your Geo-Inquiry Story. Depending on the situation, you might want to ask for a release from everyone involved so you can capture photographs and video freely.

PHOTOGRAPH AND VIDEO RELEASE

I _____ give permission to be photographed, videotaped, and/or audio taped by
(subject's name)

_____ at _____ on _____. I understand that this material may be used
(name of photographer/videographer) (location) (date)

for any purpose including, but not limited to, use in publications, websites, video and audio productions, promotional materials, or other media.

Signature: _____

Signature of Guardian if under 18: _____

PHOTOGRAPHY: THE BASICS

After you read these tips, study images taken by professional photographs. Think about what you like and do not like about their work. If it fits into your project, imitate what you like and try to avoid what you did not.

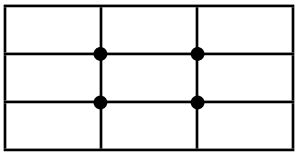
1. **The Subject**
   - **Get focused.** Make sure your subject is in focus. If you are using a smartphone to take pictures tap the screen where the object you want in focus is to sharpen that part of the photograph and then take the picture. Before you go into the field practice with these features to see what works best for your project.
   - **Find your framing.** Ask yourself, "What is the focal point of this photograph?" Remember that it is okay to include other elements in the picture if they are part of the story. For example, suppose you are trying to save a historical building from being torn down and you interview a representative of the local historical society. You might photograph the interviewee in front of the building. In this example, you might want to capture both the person and the building.
   - **Decide what orientation works best for the shot.** Does a horizontal photograph best capture the polluted river you are examining? Would a vertical image taken from a sitting position best capture the damage on the historical local library?
   - **Move around your subject.** Try shooting your subject from different angles to find the best perspective and to frame out anything distracting in the background. Most people take a photograph of a person standing up, with the person centered in the middle of the image, but this is not very interesting. Move around your subject. Sit down on the ground and take an image from there. Step to your right or left. How does this change the background? This is also a quick and easy way to fix that tree that has suddenly sprouted from your subject's head. Rather than asking them to move, you move. This is especially useful if someone else is interviewing a city official or taking water samples. Try to avoid using the zoom feature on your equipment. Get in close or step back instead. This can be awkward and uncomfortable for both you and the subject, so make sure to get consent before entering their personal space.

2. **The Lighting**
   - **Pay attention to lighting.** The light source (from the sun or other lights) should be directed on your subject. The best times to shoot photographs outdoors are early morning or late afternoon when the sun is low in the sky. These times are sometimes called the Magic or Golden Hour. The goal is for the subject to be evenly lit with few or no shadows.

PHOTOGRAPHY: THE BASICS

3. Composition

- **The Rule of Thirds.** Placing the most important part of a picture dead center in the frame is usually not very appealing. Photographers use the Rule of Thirds to help with this issue. The Rule of Thirds breaks an image into nine smaller parts. It seeks to create a composition that strikes a balance between the strongest element and open areas, which will usually lead to a more successful image. In addition to the nine boxes, the Rule of Thirds creates four points where the lines intersect. Studies suggest these points are where people naturally look first. If you are using a smartphone or digital camera to capture images, you can turn on the gridlines feature in settings. These gridlines can help you stick to this rule without having to visualize the lines in your mind. So place the subject close to these intersects. Before you go into the field, practice this rule to determine what works best for you and your project.



- **Background.** Focus on the edges and the background of the photograph. Try to get clean and uncluttered edges of your frame and backgrounds. The biggest mistake we make in photography is to just frame our subjects in our photograph without considering the background. Avoid busy backgrounds, photobombing, trees or flagpoles sticking out of your subjects' heads, white bags, white cars, or telephone poles, unless they are part of your story.
- **Leading lines.** Connect points in a photograph and guide the viewer's eye from one point to another. Most often, these lines guide the eye from the foreground to the background. An example of this would be a road that starts in the front of the image and draws the viewer in until it vanishes into the horizon.
- **Details.** See the beauty in the details. Close-ups of faces, colors, textures, and patterns give added dimension and details to your photographs. When photographing people focus on their eyes to make a memorable shot.
- **Emotion.** Photograph something that brings out an emotional response in you and your viewer. Generally, people like faces in photographs, but side shots can help lead people to the subject of the photograph. Faces show emotions, so pay particular attention to eyes and mouths.
- **Photo editing.** Generally, National Geographic does not edit photographs so the reader gets a truthful and honest picture. Planning your shots in advance can help you follow this method of reporting.

VIDEOGRAPHY: THE BASICS

Whether you are the director or the cameraperson, these tips can help you plan and shoot great video to use for your Geo-Inquiry Story.

1. **The Shots**
   - **Know your audience.** Who will watch your video? How you explain your topic to your peers is different than how you would explain it to the city council or your principal. Be sure to talk at the same level as your audience. You likely know more about your topic than they do. Do not assume that they know all of the jargon.
   - **Shoot horizontally.** The screens on most video viewing platforms are horizontal, so hold your camera horizontally when shooting. When shooting a selfie, look back into the camera lens and not at the screen. This makes your viewer feel like you are talking to them.
   - **Choose your frame.** Think of each video shot like a still photograph. Do you want to highlight a landscape or an individual subject? What is in the background? Make sure your subject is visible, and try to frame out distractions.
   - **Stability.** Hold your camera still and allow the movement to come from your subject, not your camera. Use a tripod. If you cannot use a tripod, hold the camera in both hands and brace your elbows against your rib cage.
   - **Capture the whole Geo-Inquiry Story.** Film each step of your Geo-Inquiry Story—your thoughts before you start, key moments during the process, and your reaction once you have finished.
   - **Shoot a variety of angles.** Get wide shots of your location, close-ups of your actions, and reactions from your team. Get creative by filming from unique perspectives, but always be sure to get a master shot (a wide shot of the action unfolding) before moving on to other angles. You can also get one of your group members to film another angle and then choose which works best for your Geo-Inquiry Story when you are editing.
   - **Follow the action.** Video is about action! Always focus on capturing what is happening and what you and your subjects are doing, for example, your team taking samples or an animal in motion. Seeing something happening in the moment is much more interesting than hearing someone describe it afterwards.
   - **Relax and encourage others to relax.** Pay attention to your body language. Film yourself and have others film you. It is not only about the project but about the people doing the work. Let your personalities shine! Remember to be yourself. You do not need to be a larger-than-life character to be on camera. Viewers appreciate honesty and authenticity.

VIDEOGRAPHY: THE BASICS

2. **Technically Speaking**
   - **Pay attention to lighting.** The time of day, weather, and location all influence how your video looks. Color and light are especially beautiful during "golden hour" and "blue hour" before sunrise and after sunset. Remember to direct the light source (from the sun or other lights) on your subject.
   - **Record quality audio.** Aim your microphone, either external or on-camera, towards the speaker's mouth. When doing an interview, always choose the quietest possible location. If you can hear background noise, you should also see it. If there is noise from traffic or a waterfall, be sure to include that visual in your shot. If you are shooting with a smartphone, consider plugging in a pair of headphones with a microphone; just be sure to keep the wires out of your shot. This can improve audio in some cases. Before you go into the field, practice recording video with your group so you are very comfortable with your tools in the field.
   - **Hold the shot.** Be sure to start recording three seconds before the action starts, and stop recording three seconds after the action ends. You will be grateful when you have to edit the clips! Inform all of the video participants prior to filming that you will need them to remain quiet for a few seconds after you hit record.

3. **Preparation**
   - **Permission.** Before recording, make sure you have permission from the site. You also need permission from any people you plan to record. If possible, visit the location the day before or arrive early to scout out the best place to shoot. A good location is safe, has good lighting, an appropriate background, and multiple vantage points from which to film. Even after you have a plan, be flexible. You may find other interesting possibilities on the day of the shoot.
   - **Be prepared.** Have your equipment charged and ready to use. Pack the charging cable in case you need to plug in your camera. If it is possible, bring extra equipment or record with multiple devices in case you experience technical difficulties. If you are outside, be prepared for the weather. Check the forecast and have a backup plan for what to do if you cannot film or need to change locations.
   - **Let it roll.** Take more video than you think you need. You do not need to use all of what you record, but it may not be possible to go back and film again if you do not have enough material.

VIDEOGRAPHY: THE BASICS

4. **Editing**
   - **Simplify.** Concentrate on being brief. Focus on the most essential components needed to tell the Geo-Inquiry Story.
   - **Accessibility to audience.** Use language that will reach more people and avoid jargon. This should include the use of analogies and metaphors when describing complex concepts.
   - **Make them care.** Use images, angles and event cuts to create emotion.
   - **Scene changes.** Avoid "jumps" when you are editing scenes together. This occurs when you have two consecutive shots with the same camera set up but with different subjects. Also avoid "cuts in motion." Instead, cut from one scene to another when a subject is in motion such as turning his or her head or opening a door. You can also use a technique called a "wipe," which is when someone or something walks in front of the camera; it helps make a natural cut to a new scene.
   - **Interviews.** When doing longer interviews it is good to change angles from a wide shot to a medium shot or close-up. However, using zoom should be avoided, as it is distracting to the audience.
   - **Angles.** Went using multiple shots, always try to change to a new angle with each new shot. This will prevent it from appearing as a "jump" or "bump."
   - **Substance rather then form.** Remember, you are telling a Geo-Inquiry Story not showing fancy techniques. The Geo-Inquiry Story should drive the video editing. Ask questions such as: **How is this adding to the Geo-Inquiry Story? What does this element add to the Geo-Inquiry Story? Are there Need-to-Knows that need to be answered that are not in the video?**

BASIC TYPES OF MAPS

A map is a representation of a place drawn to scale, usually on a flat surface. There are many different types of maps. Each is designed to feature certain kinds of information.

Topographic Map

Topographic maps use contour lines to show changes in elevation.

Satellite Map

Satellite maps are created from aerial images of Earth taken from a satellite.

Image courtesy of Sarah Parcak. Source: satellite image ©2017 Digital Globe.

BASIC TYPES OF MAPS

Political Map

Political maps show the boundaries and names of countries, cities, states, and other political geographic units. Political maps may also show important physical features, such as large rivers.

Road Map

Road maps show highways, interstates, and other roads. They also show locations such as cities, airports, and other points of interest. Major roads are usually shown with thicker lines and in different colors than minor roads.

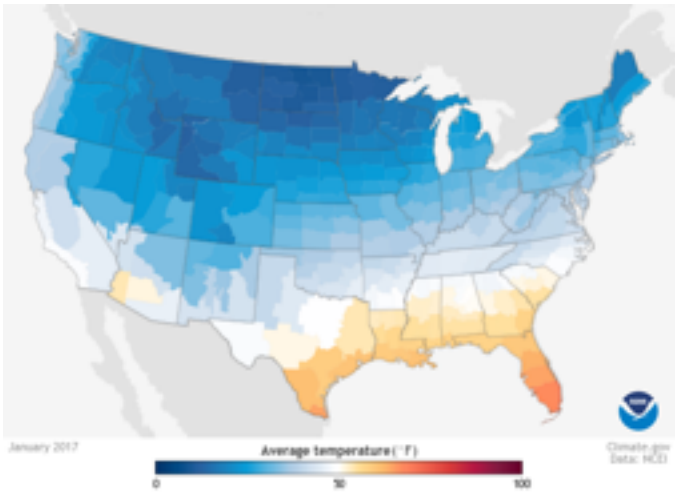
BASIC TYPES OF MAPS

Physical Map

Physical maps use color and shading to illustrate physical features such as mountains, rivers, oceans, deserts, and lakes. Water is usually shown as blue on a physical map, while land is shown as green or brown.

Thematic Maps

Thematic maps display patterns over Earth's surface. They focus on a particular set of data, such as rainfall or population.



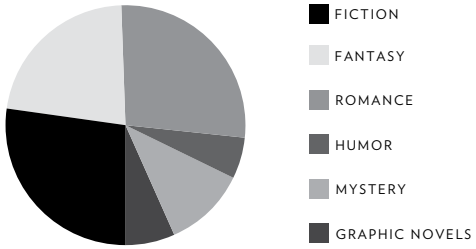
STUDENT WORKSHEET 37 NAME: DATE:

CHOOSING THE GRAPH YOU WILL USE

There are several types of graphs. Each is useful for showing different types of data.

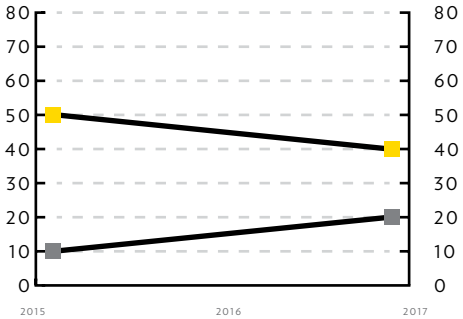
Pie Graph

Pie graphs are circular graphs divided into slices that represent a portion of a whole. Pie graphs work well for showing parts of a total.



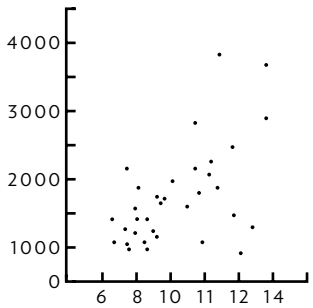
Line Graph

A line graph is a way to show how something changes in value, usually over time. Plotting data points along a horizontal and vertical axis and connecting those points with lines creates a line graph.



Scatter Plot

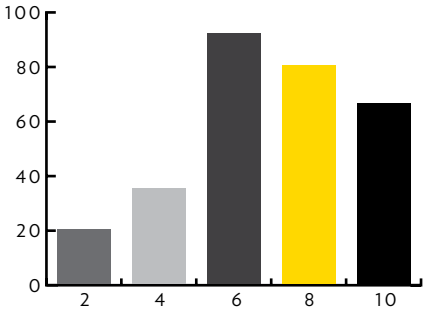
Like line graphs, scatter plots are created by plotting data points along a horizontal and vertical axis. However, in scatter plots two variables are plotted. The scatter plot shows relationships (or correlations) between the two variables.



CHOOSING THE GRAPH YOU WILL USE

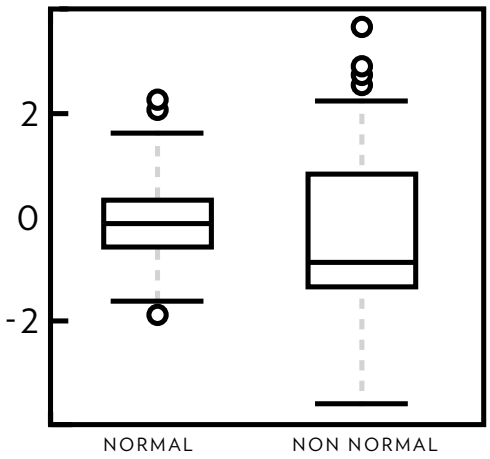
Histogram

Histograms display information in bars of differing heights. The width of each bar in a histogram represents a certain interval. The height of the bar represents frequency. Histograms show the frequency or distribution of one variable.



Box Plot

A box plot looks at the distribution of variables. Box plots display the median, or middle, of the data set. They also show the upper and lower quartiles, which are the points at which 25% of the data is greater (upper) or lower (lower) than that value. Box plots also show minimum and maximum values, as well as outliers. Box plots can be used to display the distribution of multiple variables of related data.



COLLECTING GEOSPATIAL DATA

Answering a Geo-Inquiry Question and telling a Geo-Inquiry Story means you will need to collect geographic data. Some data you collect in the field, while other types can be found online or in other sources. The type of data you collect depends on your question, but following are some common types of geospatial data:

- Maps
- GPS coordinates
- Addresses
- Aerial images
- Satellite images
- Statistical information (population, economic data, etc.)
- Scientific data

STUDENT WORKSHEET 39 NAME: DATE:

CREATING YOUR GEO-INQUIRY MAP WITH YOUR SOLUTION

As you begin to finalize your Geo-Inquiry Story, you will need to create a final, clean map that will illustrate the solution to your Geo-Inquiry Question or represent the current issue you are trying to solve.

1. Make a rough outline of your Geo-Inquiry Story.
   - Reporter's questions: Who, What, Where, When, Why is your neighborhood like it is.

2. Look at your maps for the clearest patterns that answer your Geo-Inquiry Question and support your story. Decide if every map is needed to get your point across. Not everything you gather is always critical to conveying the answer to the Geo-Inquiry Question. Cut any other information that does not answer the Geo-Inquiry Question.

3. Find the best quotes from your surveys that best represent the person who provided the answer. Think of how to arrange the quotes to cover the range of opinions over those the students surveyed.
   - Place the quotes geographically if you think the locations show changing opinions, or
   - Line quotes up in a gradient that indicates "for to against" with lines showing where they came from.

4. Create clean graphs in a digital spreadsheet or hand draw the graphs including trend lines or any statistics clearly explained. Print or draw the results on a blank sheet of graph paper. Remember to give it an informative title and write a short description of the data.

5. Gather the parts of your project to create a blueprint.
   - Separate maps, pictures, quotes, shaded analysis and typed up sections of your work (title, problem statement, background, procedure, data, analysis, conclusions, call to action).
   - Work to lay out these parts in an easy to follow path (left to right, up to down, around the outside of a central map, following the path of an infographic, in a linear report format).
   - Consider light touches expressing your personality:
     - a possible pathway between parts (arrows, stones, hiking path, little survey people walking between sections)
     - sharpening up transitions between sections
     - looking for a tying theme to bring it all together
     - starting and finishing lines to act as a hook and strong tie to your Geo-Inquiry Question

6. Once satisfied with the layout, create your final maps to prepare to tell your Geo-Inquiry Story.
   - reprint photos, insure common fonts
   - create graphs carefully with appropriate highlights
   - if in presentation—choose your theme
   - make sure you to secure the pieces to a poster
   - make image sizes consistent and readable
   - make sure your contact information is on your final product

STORYTELLING: THE BASICS

1. **Preparation**
   - **Audience.** Identify your audience. **Who are you speaking to?** Speaking to your peers is different than speaking to a general audience or policymaker. Replace jargon and slang with words that make sense to everyone.

2. **Structure**
   - **Start with a bang.** The first part of your Geo-Inquiry Story will be the most memorable so open with something special, not an overview of what they will see. Start by grabbing the audience's attention with a colorful anecdote, amazing fact, or pivotal moment.
   - **Facts & data.** Find ways to make facts and data easy to understand. Use analogies, metaphors, and comparisons to simplify. Using this technique allows you to take a complex or unfamiliar concept and make it relatable. It is also useful to talk about scale without measurements (as big as a 747, as small as a coin).
   - **Clarity.** Do not muddle the message with extra information. Generally, editing out extra information that you may have worked hard on is the most important piece of work. **Does the Geo-Inquiry Story tell the story of the journey that the team took? Is the Geo-Inquiry Story clear, concise, and easy to follow?**
   - **Ending.** The ending of a Geo-Inquiry Story should be a call to action or the results of a call to action that has taken place.

3. **Voice and Emotion**
   - **Make them care.** Tap into why you did what you did. If you cannot tell people why you care about the project, how can you expect other people to care?
   - **Speak in headlines when making points.** Just like headlines in a newspaper, short, to-the-point sentences are great for interviews and talks.
   - **Use memorable language.** We live in a world filled with sound and imagery. Use colorful and detailed language to bring your audience into your story and share what is unique about your world.
   - **Narrator.** It sounds like a no-brainer, but many people just do not put in the time required to prepare for the narration. Practice with your friends, colleagues, and family or in front of a mirror. If you have a video camera, record yourself and listen to how you sound. We can hear emotion in a person's voice, so practice. It is also helpful to start listening to commercials, documentaries, and even the news. **How are the actors or reporters using their voice to project an emotion?**

NAME: DATE:

GEO-INQUIRY PRESENTATION RUBRIC

	Needs Revision	Proficient	Advanced
Attention Grabber	The attention grabber is either not engaging or not present.	The presentation's attention grabber evokes a sense of curiosity in the viewer.	The presentation uses a compelling attention grabber that evokes powerful feelings in the viewer.
Synopsis	A synopsis is either missing or provides too little or too much information at the beginning of the Geo-Inquiry Story. It fails to pique the viewers' interest.	The synopsis sufficiently provides the viewers an overview of the project and piques their interest.	The synopsis both orients the viewers and compels them to continue watching.
Use of Geo-Inquiry	One or several Phases in the Geo-Inquiry Process are either missing or not clearly incorporated into the presentation.	All of the Phases of the Geo-Inquiry Process are clearly observed in the presentation.	Each Phase of the Geo-Inquiry Process is clearly shared and plays a key role in the presentation.
Call to Action	The presentation fails to include an argument or it needs revision in its construction or does not include a call to action.	The presentation offers the viewers with a clear, persuasive, and data-supported argument for action.	The presentation offers the viewers a compelling, data-supported, argument that is tailored to the audience and presents a clear call to action.
Collaboration	There is little to no evidence that members of the group collaborated equitably in creating the Geo-Inquiry Story.	There is sufficient evidence that members of the group collaborated equitably to create the Geo-Inquiry Story.	It is evident that members of the group collaborated equitably in creating the Geo-Inquiry Story.

GEO-INQUIRY PRESENTATION RUBRIC

	Needs Revision	Proficient	Advanced
Visualization	Visuals are either missing, insufficient, or not clearly incorporated into the presentation.	Visuals clearly and persuasively present data collected in the Geo-Inquiry Process.	Visuals are clear, engaging, and compelling. They effectively integrate a variety of complex data collected in the Geo-Inquiry Process.
Geographic Perspective	The presentation shows little to no interconnections between the human world and natural world. It fails to draw or insufficiently illustrate connections between the Geo-Inquiry Question solution and other geographic locations. It may lack a clear perspective (historical, cultural, geographic, geological, ecological, political, economic) or view the issue with limited understanding of scale.	The presentation clearly identifies an interconnection between the human world and natural world. Presenters draw connections between their Geo-Inquiry Question solution and other geographic locations. It has a clear perspective (historical, cultural, geographic, geological, ecological, political, economic) and frames the issue and a call to action with a clear understanding of scale.	The interconnections between the human world and natural world are clear, compelling, and complex. Presenters clearly illustrate how their Geo-Inquiry Question solution may be applied to other geographic locations. The presentation incorporates multiple perspectives (historical, cultural, geographic, geological, ecological, political, economic) and frames the issue and a call to action with an understanding of scale.

STUDENT WORKSHEET 42 NAME: DATE:

GEO-INQUIRY STORY RUBRIC

	Needs Revision	Proficient	Advanced
Geo-Inquiry Question	The question does not promote analysis of space, place, and interconnections between both the human world and natural world by failing to incorporate the geographic concepts: Where is it? Why is it there? Why care? The question is too simplistic or does not reflect a geographic perspective.	The question adequately promotes analysis of space, place, and interconnections between both the human world and natural world by incorporating the geographic concepts: Where is it? Why is it there? Why care?	The question is intriguing and effectively promotes analysis of space, place, and interconnections between both the human world and natural world by incorporating the geographic concepts: Where is it? Why is it there? Why care? The question requires complex geographic thinking.
Data	Valid, reliable, and objective data is either not included, insufficient, or does not directly connect to the Geo-Inquiry Question.	Valid, reliable, and objective data is provided and directly connects to the Geo-Inquiry Question.	Compelling, valid, reliable, and objective data is provided and effectively connects to the Geo-Inquiry Question.
Visuals	Visuals are missing or fail to show a clear pattern that helps tell a Geo-Inquiry Story.	Clear and concise visuals are provided that show patterns or connections that help tell a Geo-Inquiry Story.	Clear and concise visuals show patterns or connections and play a key role telling a Geo-Inquiry Story.

GEO-INQUIRY STORY RUBRIC

	Needs Revision	Proficient	Advanced
Geo-Inquiry Story	The Geo-Inquiry Story may need revision to address inaccuracies. The story may fail to use emotion to connect with its audience. The story is unclear in places or difficult to understand.	The story is accurately told and uses emotion to connect with its audience. A viewer could understand the issue and why it is important.	The story is both accurate and moving. It effectively uses emotion to connect with its audience. A viewer would clearly understand the issue, why it is important, and feel compelled to action.
Collaboration	There is little to no evidence that members of the group collaborated equitably in creating the Geo-Inquiry Story.	There is sufficient evidence that members of the group collaborated equitably to create the Geo-Inquiry Story.	It is evident that members of the group collaborated equitably in creating the Geo-Inquiry Story.
Call to Action	There is little to no evidence of a call to action or next steps to solve the Geo-Inquiry Question.	There is sufficient evidence of a call to action or next steps to solve the Geo-Inquiry Question.	There is a compelling call to action or next steps to solve the Geo-Inquiry Question.

SELF-EVALUATION FORM

Use this form to evaluate your overall performance in this project.

Devolving a Geo-Inquiry Story

1. Describe what you learned.

2. Describe one thing you feel proud about.

3. Describe one thing you found challenging.

4. Describe one thing (skill, quality, other) you can develop further.

5. Rate your effort: not there yet, on track, or showing growth

SELF-EVALUATION FORM

Collecting, Organizing and Analyzing Geographic Data

1. Describe what you learned.

2. Describe one thing you feel proud about.

3. Describe one thing you found challenging.

4. Describe one thing (skill, quality, other) you can develop further.

5. Rate your effort: not there yet, on track, or showing growth

SELF-EVALUATION FORM

Creating the Geo-Inquiry Story

1. Describe what you learned.

2. Describe one thing you feel proud about.

3. Describe one thing you found challenging.

4. Describe one thing (skill, quality, other) you can develop further.

5. Rate your effort: not there yet, on track, or showing growth

SELF-EVALUATION FORM

Presenting the Geo-Inquiry Story

1. Describe what you learned.

2. Describe one thing you feel proud about.

3. Describe one thing you found challenging.

4. Describe one thing (skill, quality, other) you can develop further.

5. Rate your effort: not there yet, on track, or showing growth

STUDENT WORKSHEET 44 NAME: DATE:

GEO-INQUIRY PROCESS ORGANIZER

More than ever, our world is interconnected. It is important that you understand how the complex and dynamic human and natural systems interact in order to make informed decisions. The Geo-Inquiry Process relies heavily on using a geographic perspective, offering a unique lens to analyze space, place and the interconnections between both the human and natural world. Using both a geographic perspective and the Geo-Inquiry Process you will begin to connect complex components, see patterns, and make connections as they look at the world differently in order to make informed predictions, well-reasoned decisions and inform public policy and community action.

The Geo-Inquiry Process consists of five phases, which are listed below. The goal of this Geo-Inquiry project is for you and your team to find a solution to the issue you have defined by proposing a solution to the issue or through community action. Through this process, you will create a Geo-Inquiry Story, which you will share with an audience that will be receptive to your story.

Use this worksheet as a project organizer. Mark each phase as you work through it. Add notes after each phase as needed. For example, you might want to keep track of any worksheets or handouts you receive, due dates, or questions you have for your teacher or for your team.

Phase 1: Ask

Developing a Geo-Inquiry Question

Draft a Geo-Inquiry Question, which is the “big” driving question that guides a Geo-Inquiry Project. This question is geographic in nature, open-ended, action oriented and generally community-focused issues to be solved.

GEO-INQUIRY PROCESS ORGANIZER

Phase 2: Collect

Acquiring Geographic Information

Next, you will conduct research to collect data and information that is essential components of the Geo-Inquiry Process. You will select different types of data and information using different methods of collection. This information will allow you to answer the Geo-Inquiry Question. Data collected can include images, sound, video, and maps.

Phase 3: Visualize

Organizing and Analyzing Geographic Information

During this phase, you will organize and analyze the data you have collected. You are preparing the information that will help you tell a Geo-Inquiry Story. This can use images, sound, video, or maps, to tell the story of the Geo-Inquiry Process.

GEO-INQUIRY PROCESS ORGANIZER

Phase 4: Create

Developing Geo-Inquiry Stories

Next, you will create your The Geo-Inquiry story. Keep in mind the audience you have identified in previous phases, as you will present it to them. Develop your story as a multi-media presentation, designed to inform, inspire and change minds of your audience regarding the Geo-Inquiry Question. It should include the Geo-Inquiry Question, scientific data and research, visuals (maps, charts, photographs, video), in an inspiring multi-media package.

Phase 5: Act

Sharing Geo-Inquiry Stories

In this final phase, you will explore the best way to present your Geo-Inquiry Story to the audience you have identified. Finally, you will present your Geo-Inquiry Story and use it to take action.

GEO-INQUIRY TUBRIC

Framing Words	Person or Entity	Action or challenge	Audience or Purpose	**Geo-Inquiry** Where is it? Why there? Why care?

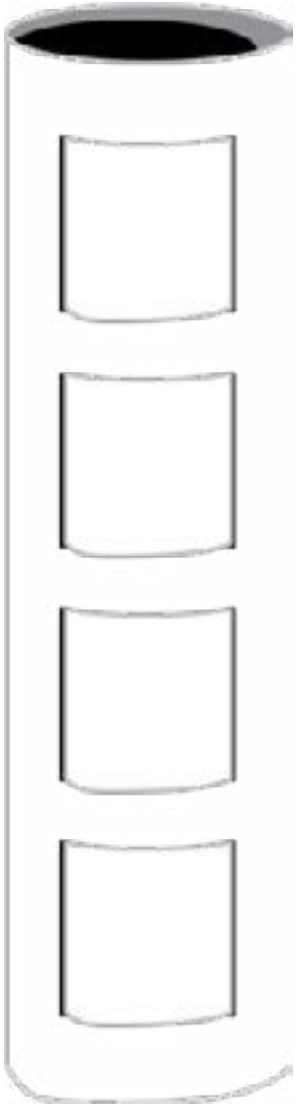
Directions: Cut along the dash lines. Then roll up forming a tube. Leave the text box above visible.

1	2	3	4
Wild card	Wild card	Wild card	Wild card
How can…	I We	Create… Make… Produce…	Real issue… Real problem…
How do…	We as, (Roles, Occupations)	Design… Plan… Develop…	For a community
Could…	Town… City…. County…	Solve… Save… Protect…	For a species… For the environment…
What…	Location	Propose… Decide…	To teach… To educate… To learn…
Should…	Community, Organization, Business	Build… Establish… Construct…	For a public audience…

NATIONAL GEOGRAPHIC

Directions:

Use scissors to cut across along the vertical dashed lines.



STUDENT WORKSHEET 46 NAME: DATE:

GEO-INQUIRY QUESTION FLOW CHART