

Plan For The Week Students Template

Plan for the week of: April 20 - April 24

At the end of the week you will know, understand, and/or be able to do the following:

I can use mathematics and statistics to analyze data.
I can use tables and graphs to display and analyze data.
I can communicate findings clearly and persuasively.
I can defend my explanation.

Why does this learning matter?

You will be able to use cross cutting concepts that span all subject areas and engage in science and engineering practices.

The plan for the week :

- Monday: Read the Data Nugget Research Background "Invasion Meltdown" and circle unfamiliar words and write at least 3 questions you have in the margins.
- Tuesday: In the Scientific Data section, find the Ambient Average and Elevated Average.

How to calculate mean average: add all of the items together and then divide by how many items there are.
Data set: 3, 9, 6, 8, 4
 $3 + 9 + 6 + 8 + 4 = 30$
 $30 / 5 \text{ items} = 6 \text{ mean average}$

This may not take as long as some of the other days so you can get a head start on the graph if you have time.
- Wednesday: Select the level that is most appropriate for your current skills and complete the graphing portion. You only need to do one of these graphs. Start with Level C and see if you can complete the graph. If that is beyond your current skills then look at Level B or Level C. The graphs are labeled as A, B, or C and you can tell the difference by the following.
Level A: Make observations of a completed graph
Level B: Complete a graph that has the x and y axes labeled and intervals already selected
Level C: Complete the graph on a blank graph
- Thursday: Answer the Interpret the Data questions. I included Sentence Starters: Claim, Evidence, Reasoning to help shape your response.
- Friday: Read 2012 Invasive Plants Poster and see if you can identify any invasive plants in your yard or neighborhood.

Who To Ask For Help and How To Reach Them

Mr. Stoe, 8th Grade Science Teacher

Email: jstoe@fernridge.k12.or.us

Phone: (458) 207-0030

DATA *Nugget*

Invasion meltdown

Featured scientists: Katie McKinley, Mark Hammond, & Jen Lau from Michigan State University

Research Background:

Humans are changing the earth in many ways. First, by burning fossil fuels and adding greenhouse gasses to the atmosphere we are causing **climate change**, or the warming of the planet. Scientists have documented rising temperatures across the globe and predict an increase of 3° C in Michigan within the next 100 years. Second, we are also changing the earth by moving species across the globe, introducing them into new habitats. Some of these introduced species spread quickly and become invasive.

Invasive species harm native species and cost us money. There is also potential that these two changes could affect one another; warmer temperatures from climate change may make invasions by plants and animals even worse.

All living organisms have a range of temperatures they are able to survive in, and temperatures where they perform their best. For example, arctic penguins do best in the cold, while tropical parrots prefer warmer temperatures. The same is true for plants. Depending on the temperature preferences of a plant species, warming temperatures may either help or harm that species.

Katie, Mark, and Jen are scientists who are concerned that invasive species may do better in the warmer temperatures caused by climate change. There are several reasons they expect that invasive species may benefit from climate change. First,



A flower of the invasive plant, *Centaurea stoebe* (spotted knapweed).



A view of the plants growing in a heated ring. Notice the purple flowers of spotted knapweed.

because invasive species have already survived transport from one habitat to another, they may be species that are better able to handle change, like temperature increases. Second, the new habitat of an invasive species may have temperatures that allow it to survive, but are too low for the invasive species to do their absolute best. This could happen if the invasive species was transported from somewhere warm to somewhere cold. Climate change could increase temperatures enough to put the new habitat in the species' range of preferred temperatures, making it ideal for the invasive species to grow and survive.

To determine if climate change will benefit invasive species, Katie, Mark, and Jen focused on one of the worst invasive plants in Michigan, **spotted knapweed**. They looked at spotted knapweed plants growing in a field experiment with eight rings. Half of the rings were left with normal, **ambient** air temperatures. The other half of the rings were **heated** using ceramic heaters attached to the side of the rings. These heaters raised air temperatures by 3° C to mimic future climate change. At the end of the summer, Mark and Katie collected all of the spotted knapweed from the rings. They recorded both the (1) **abundance**, or number of spotted knapweed plants within a square meter, and (2) the **biomass** (dry weight of living material) of spotted knapweed. These two variables taken together are a good measure of performance, or how well spotted knapweed is doing in both treatments.

Scientific Question: Is there evidence that climate change will have a positive impact on the performance of the invasive species spotted knapweed?



Mark collecting data on the spotted knapweed plants one of the eight experimental rings.

Scientific Data:

Use the data below to answer the scientific question:

Temperature treatment	Ring number	Number of spotted knapweed plants per square meter	Dried spotted knapweed biomass per square meter (g)
Ambient	2	49	165.3
Ambient	5	45	25.9
Ambient	7	12	18.5
Ambient	8	4	63.6
Ambient average			
Elevated	1	44	77.9
Elevated	3	56	170.1
Elevated	4	35	111
Elevated	6	55	36
Elevated average			

Note 1: Ambient refers to the surrounding temperature (normal, or control), whereas elevated refers to the plants growing in rings with heat added.

Note 2: The number of plants and the dried plant biomass per 1 meter square are good measures of the amount of a plant species in a given area. Calculate average number of spotted knapweed plants and the average biomass per 1 meter square for ambient and elevated rings and use when graphing below.

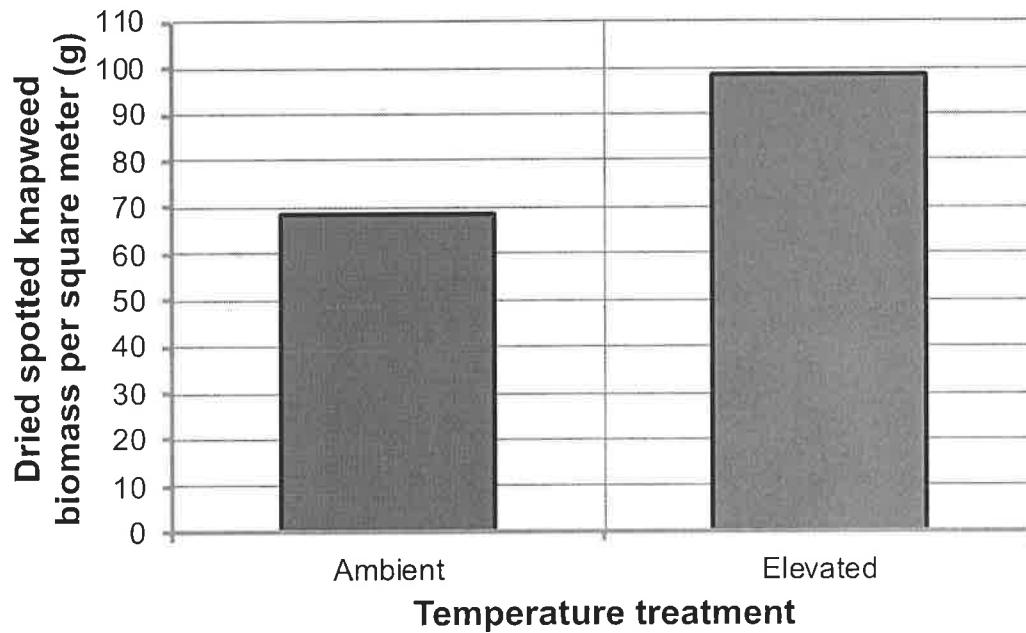
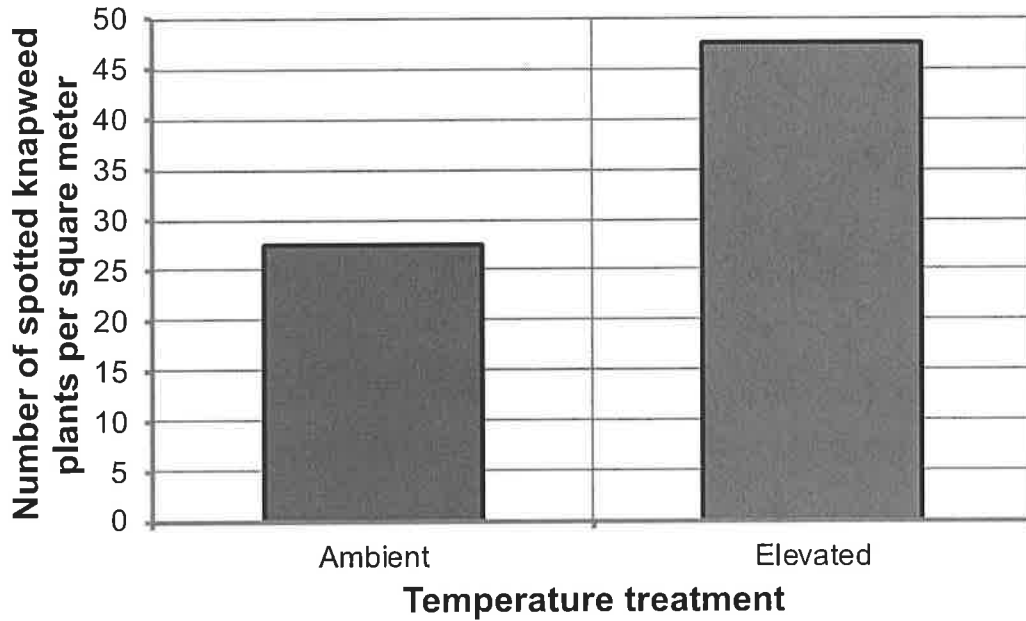
What data will you graph to answer the question?

Independent variable(s): _____

Dependent variable(s): _____

Name _____

Below are graphs of the data: Identify any changes, trends, or differences you see in your graphs. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



A

Name _____

Interpret the data:

Make a claim that answers the scientific question.

What evidence was used to write your claim? Reference specific parts of the table or graphs.

Explain your reasoning and why the evidence supports your claim. Connect the data back to what you learned about how climate change might interact with the temperature preferences of invasive species.

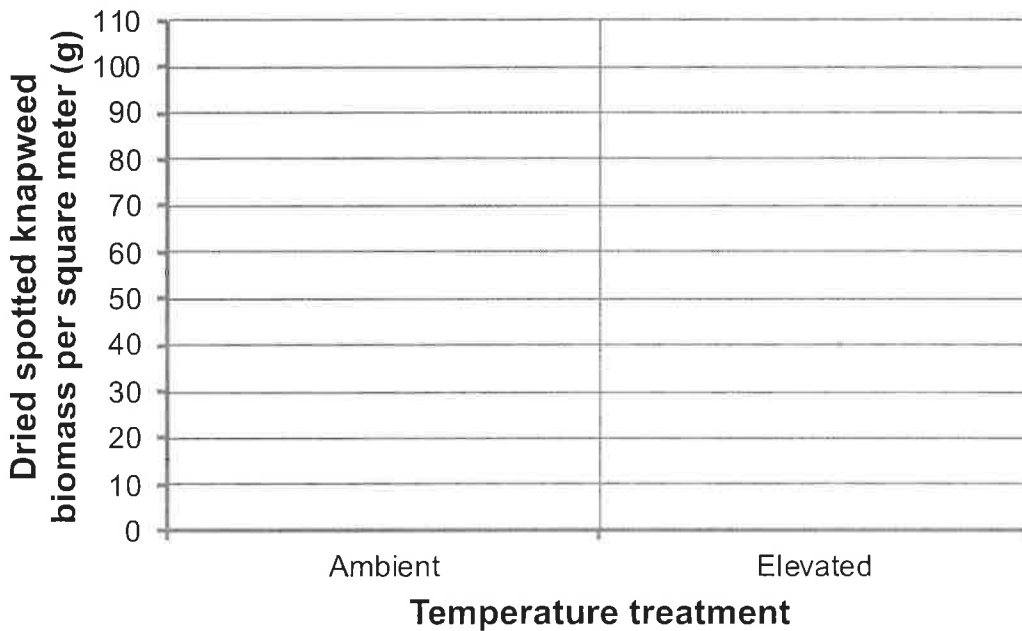
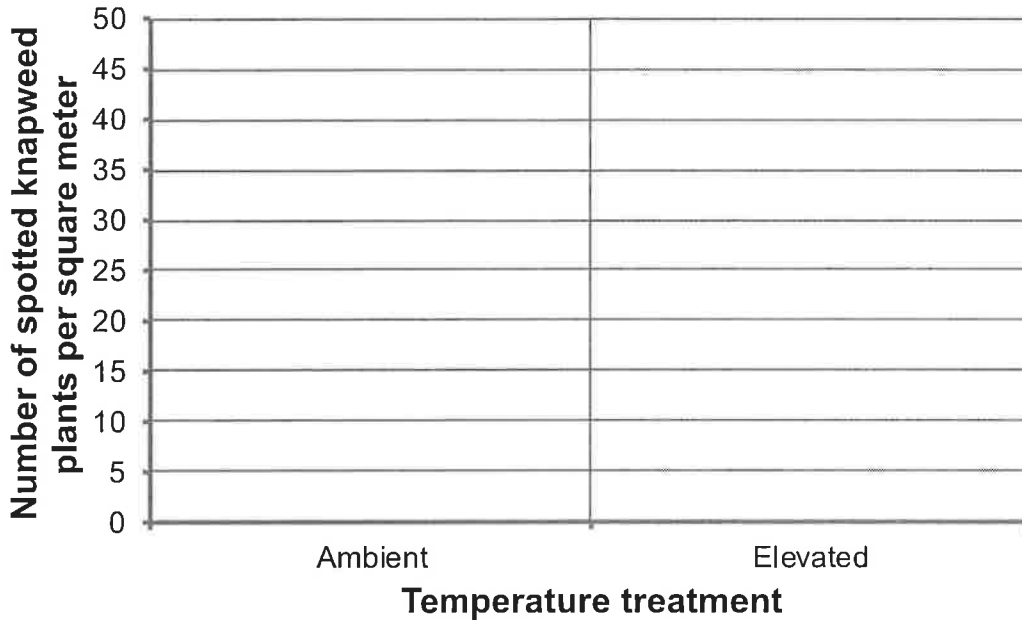
A

Name _____

Your next steps as a scientist: Science is an ongoing process. What new question(s) should be investigated to build on Katie, Mark, and Jen's's research? How do your questions build on the research that has already been done?

Name _____

Draw your graphs below: Identify any changes, trends, or differences you see in your graphs. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



B

Name _____

Interpret the data:

Make a claim that answers the scientific question.

What evidence was used to write your claim? Reference specific parts of the table or graphs.

Explain your reasoning and why the evidence supports your claim. Connect the data back to what you learned about how climate change might interact with the temperature preferences of invasive species.

B

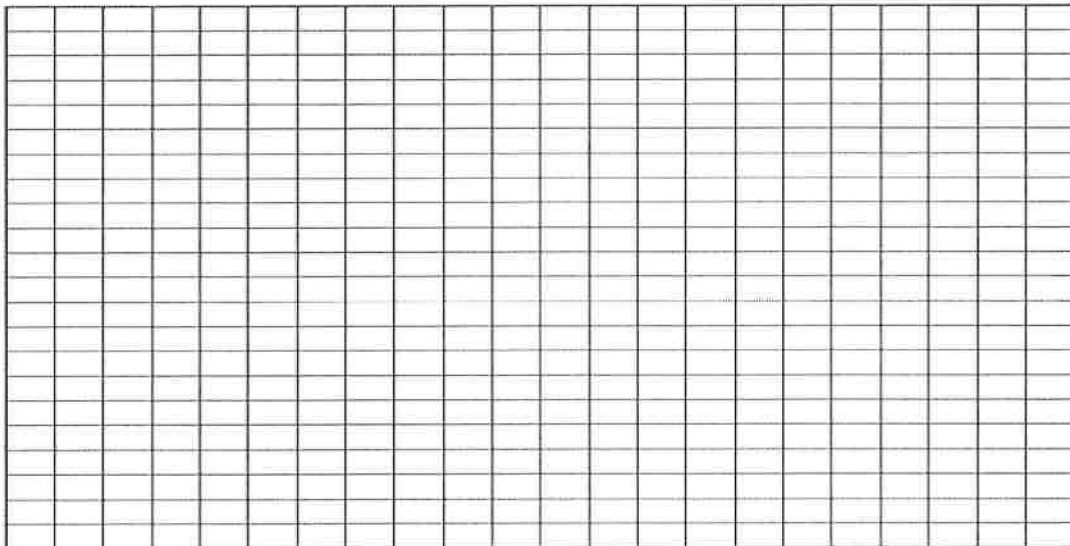
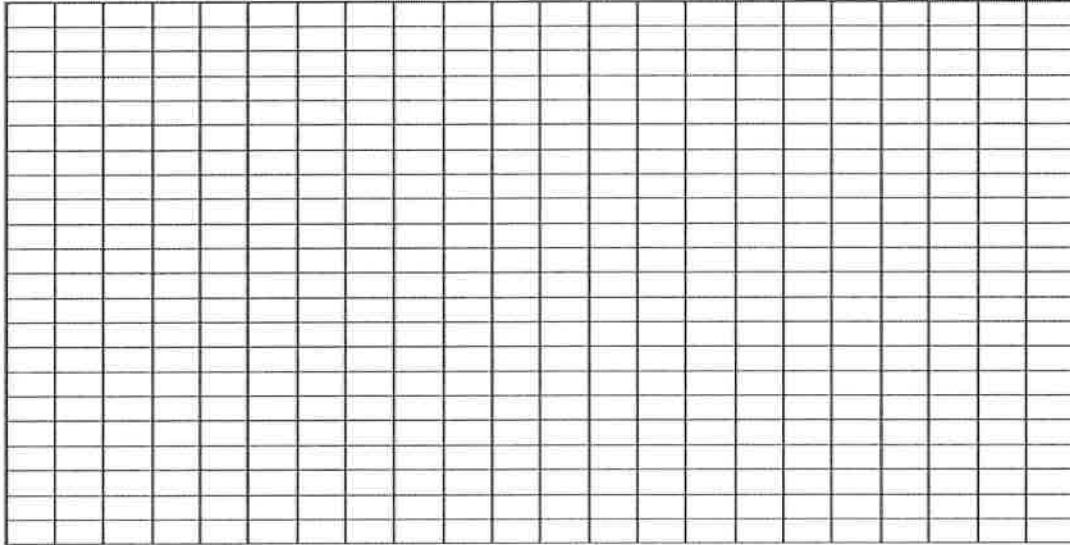
Name _____

Your next steps as a scientist: Science is an ongoing process. What new question(s) should be investigated to build on Katie, Mark, and Jen's's research? How do your questions build on the research that has already been done?

Level C

Name _____

Draw your graphs below: Identify any changes, trends, or differences you see in your graphs. Draw arrows pointing out what you see, and write one sentence describing what you see next to each arrow.



Name _____

Interpret the data:

Make a claim that answers the scientific question.

What evidence was used to write your claim? Reference specific parts of the table or graphs.

Explain your reasoning and why the evidence supports your claim. Connect the data back to what you learned about how climate change might interact with the temperature preferences of invasive species.

Level C

Name _____

Your next steps as a scientist: Science is an ongoing process. What new question(s) should be investigated to build on Katie, Mark, and Jen's's research? How do your questions build on the research that has already been done?

invasive Plants

WHAT MAKES A PLANT INVASIVE?

Invasive plants have been introduced into an environment in which they did not originate. They lack natural enemies, grow and reproduce quickly, and are able to thrive in a wide variety of conditions. These characteristics allow plants to invade new habitats and out-compete natives, resulting in dense thickets of a single plant species.

HABITAT

Dense thickets of invasive plants limit native plant diversity which reduces food and shelter for wildlife. Invasive plants are the second leading cause of species extinction.

WATER QUALITY

Many invasive plants have shallow root systems that provide limited erosion control. Invasive plants also shade out native seedlings resulting in fewer trees. Less shade creates higher water temperatures, reducing oxygen for fish and other aquatic animals. Reduced tree cover also reduces stormwater interception.



Morning Glory

Calyptegia sepium
Perennial vine, likes sunny sites
Seed remains viable for 50 years



Lesser Celandine

Ranunculus ficaria
Deciduous aggressive ground cover
shiny leaves and flowers



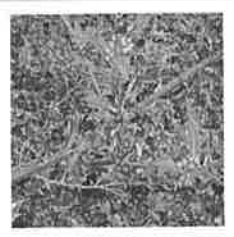
Pokeweed

Phytolacca americana
Perennial has large leaves, white flowers,
and dark berries toxic to humans



English Ivy

Hedera helix
Evergreen woody vine, has 2 different
leaf shapes, and can kill trees



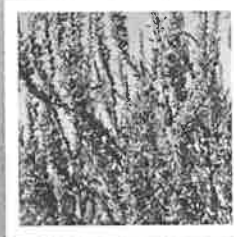
English Holly

Ilex aquifolium
Evergreen thicket forming to
50 feet tall with prickly leaves



Scotch Broom

Cytisus scoparius
Semi-evergreen shrub with yellow pea
flowers turning to black seed pods



Purple Loosestrife

Lythrum salicaria
Aggressive perennial has dark pink
flowers with square stems



Traveler's Joy

Clematis vitalba
Deciduous twining vine, white spring
flowers, with fluffy seedheads in winter



Knotweeds

Polygonum sachalinense/*P. cuspidatum*
Perennial with heart-shaped leaves,
creates large thickets 10 feet tall



Spurge Laurel

Daphne laureola
Evergreen shrub, pale green flowers
in March, berries and sap are toxic



Tree of Heaven

Ailanthus altissima
Deciduous tree to 80 feet with yellow
flower, resembles black walnut



Butterfly Bush

Buddleia davidii
Deciduous shrub to 70 feet tall, with
branches like long flower heads



Himalayan Blackberry

Rubus acris
Semi-evergreen, thorny stems, 5 leaflets
per leaf, more oval than native blackberry



English Laurel

Prunus laurocerasus
Evergreen shrub to 30 feet hedge,
has glossy tough leaves



Yellow Flag Iris

Iris pseudacorus
Perennial to 4 feet tall, forms dense mats
in riparian areas, filling in wetlands



Garlic Mustard

Allyria petiolata
Biennial white flowers and seeds in
second year, basal rosette leaves

Volunteer for a revegetation or restoration project

Environmental Services:
503-823-7740

Parks & Recreation:
503-823-6131

Watershed councils:

• Columbia Slough
503-281-1132

• Johnson Creek
503-239-3932

• Tryon Creek
503-244-1827

• Fans of Farino Creek
fansoffarino@portlandonline.com

SOLV: 503-844-9571



ENVIRONMENTAL SERVICES
CITY OF PORTLAND
working for clean rivers

This Invasive Plant and Native Plants poster are available online
www.portlandonline.com/bes
This poster is free.

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Not to be copied or reproduced
without permission: 503-823-7197

Information Resources

Websites

City of Portland invasive plant management information: portlandonline.com/bes/invasives

Report invasive species online: oregoninvasiveshotline.org

Portland Native and Nuisance Plant Lists: portlandonline.com/bps/pdxplantlist

Oregon noxious weed lists, quarantines, and Invasive Species Council information:
www.oregon.gov/oda/plant/index.shtml

Washington State Noxious Weed Board invasive plant identification and outreach information:
www.nwcb.wa.gov

Information about invasive plant control, noxious weeds, and grants: www.invasive.org

Noxious weed lists and photos: plants.usda.gov

List of garden ornamentals that can be invasive: www.berrybot.org/pubs/ifs_alinvasive.html

Regional Weed Management: www.f4countycwma.org

Control Techniques

www.imapinvasives.org/gist/usa/index.html or www.nps.gov/plants/alien/fact.htm.

Books

Weeds of the West

by Larry C. Burdill, Steven A. Dewey, David W. Cudney, B. E. Nelson, Tom D. Whitson

Field Guide to Weeds of the Willamette Valley by the Institute for Applied Ecology.

Copies available online at www.appliedeco.org and at Portland Audubon Society

Northwest Weeds: The Ugly and Beautiful Villains of Fields, Gardens, and Roadsides

by Ronald J. Taylor, Mountain Press Publishing Co.

GardenSmart Oregon, a guide to non-invasive plants at portlandonline.com/bes/gardensmart

Workshops Gardening with Native Plants

Naturescaping for Clean Rivers offers free workshops and garden tours in spring and fall.
www.emsmcd.org/naturescaping or call 503-797-1842.

Metro has free publications, programs and online resources for natural gardening that's safe for people, pets and the planet. Call 503-234-3000 or visit www.oregonmetro.gov/garden.



Removing Invasive Plants

Manual and mechanical removal are best for small patches of invasive plants. Infestations of more than half an acre may require manual and mechanical methods combined with other weed control techniques.

Invasive plants can reproduce from roots and underground stems (rhizomes), which must be removed for effective control. Removal is most effective when the soil is moist, but be careful not to disturb any nearby native species.

English holly and English laurel – Cut with a chainsaw or loppers. Periodically cut re-sprouting plants. Applying herbicides on waxy leaves is not effective, but a cut stump herbicide* treatment can control re-sprouting from the base. For more information, see your.kingcounty.gov/dnrplibrary/water-and-land/weeds/Brochures/English-Holly-Fact-Sheet.pdf.

English and Irish ivy – Removing berries prevents birds from spreading seeds. Pulling ivy and removing roots is effective for small areas. Repeated pulling may be necessary. Cut vines all the way around a tree trunk to 4.5 feet from the ground to kill ivy in the upper branches. Clear ivy from a six-foot radius around the base of a tree. For information about large scale ivy eradication, go to www.nps.gov/plants/alien/fact/ehet1.htm.

Himalayan blackberry – Hand-pull, cut or mechanically remove the canes, then dig out the roots. Even very small root fragments can re-sprout as new plants.

Knotweed – Knotweed reproduces from rhizomes, which must be dug up for effective control. Mowing and cutting are not sufficient. This plant also reproduces from cut stem fragments so do not leave cut stems on the ground. For information about removing large infestations, see your.kingcounty.gov/dnrplibrary/water-and-land/weeds/Brochures/knotweed-biology-and-control.pdf.

Morning glory (bindweed) – Hand pull small plants or new infestations. For larger infestations, dig up the entire plant, including rhizomes below ground. This plant reproduces from stem and rhizome fragments. Followup treatment will be necessary.

Purple loosestrife – This plant reproduces from root fragments so the entire root system must be removed. Pull plants before seed set because each plant can produce 100,000 seeds. For large infestations, see additional control methods at www.nps.gov/plants/alien/fact/lysa1.htm.

Scotch broom – For plants less than three feet tall, pull up the roots. You can cut the stems of larger plants near the ground, but about half of them will re-grow from cut stumps, so followup treatments may be necessary. Cut or pull plants before seed set from July to September because mature plants can produce 300 seeds per bush and seeds persist in the soil for up to 80 years.

Wild clematis – Cut vines from tree canopies and dig up roots at the base of the vine. Tracing the vine back to the basal clump is easier in winter. For older plants too large to dig, a cut stump herbicide treatment may control re-sprouting from the base.

Butterfly bush – Pull small plants and be sure to remove the roots. You can cut back large plants, but many will re-sprout from cut stumps. Use a woody plant puller in moist soils to remove the entire root system. For older and larger specimens, a cut stump herbicide* treatment may control re-sprouting from the base.

Lesser celandine – Effective digging requires the removal of all bulbets; some resources suggest soil screening. Pulled plants should be bagged and thrown in the trash and NOT be composted or put in yard debris. Herbicide application can be effective but requires care. Do not swap, trade or give away this plant.

Pokeweed – Cut back the plant and dig out the large taproot (which can be as large as a bowling ball). Followup treatments if plants resprouts from root. For older, larger specimens, a cut stump herbicide* may control resprouting from the base.

Tree of heaven – Hand pull seedlings and dig out sapling roots. Cut down larger trees and grind out the stump. A cut stump herbicide* treatment can prevent re-sprouting from the roots.

Spurge laurel – Wear gloves and long sleeves during removal because the plant sap and berries are toxic. Hand pull small plants when soil is moist to maximize root removal. Use a woody plant puller on larger plants to remove the root. This plant will re-grow from root remnants and suckers.

Yellow flag iris – Remove flowers or immature seed pods to limit seed dispersal by water. Continual pulling can exhaust the rhizome, but digging out plants will likely lead to followup treatments because removing rhizomes leaves fragments that re-sprout. For alternative control methods, see www.co.thurston.wa.us/tweeds/weeds/fact-sheets/yellowflag_iris.pdf.

Garlic mustard – Remove garlic mustard when it's flowering from April to June, and before seed matures in the summer (typically July). Removing plants with brown seed pods is likely to spread the mature seeds. Plants can be pulled, but be sure to remove the roots because they can re-sprout. The root is bent so pull slowly and gently in moist soils for best results.

* Inappropriate use of herbicides can be hazardous. Always read labels, and follow safety precautions, or hire a professional.

Check www.portlandonline.com/bes/invasives for updated information on invasive plant disposal methods. For help controlling and removing invasive plants in the City of Portland, call 503-823-2989.

Find out how to help remove invasive plants in Portland Parks Natural Areas at www.portlandonline.com/parks/volunteer. Contact the No Ivy League at noivyleague@gmail.com or 503-823-3681.

These are just a few of the hundreds of invasive plants affecting Oregon. For more information on the weeds threatening our environment see information resources.

SENTENCE STARTERS: CLAIM, EVIDENCE, REASONING

CLAIM

- Directly answer the question/ prompt.

Sentence Starters

- I observed _____ when _____.
- I compared _____ and _____.
- I noticed _____, when _____.
- The effect of _____ on _____ is _____.

EVIDENCE

- The scientific data that supports the claim.
 - Data are observations or measurements OR results from an experiment.
 - Specific Examples
 - Use numbers and data table information

Sentence Starters

- In the data ...
- The evidence I use to support _____ is _____.
- I believe _____ (statement) because _____ (justification).
- I know that _____ is _____ because _____.
- Based on _____, I think _____.
- Based upon _____, my hypothesis is _____.

REASONING

- Explains why the evidence supports the claim, providing a logical connection between the evidence and claim.
 - Why is claim valid?
 - include general scientific principle
 - background/ prior knowledge

Sentence Starters

- Based on the evidence, we must conclude... because....
- The most logical conclusion we can draw from this evidence is that.... because....
- These facts work together to build a case that... because...
- All of this proves that.... because...
- The reason I believe _____ is _____.

Plan For The Week Students Template

Plan for the week of: April 13th

At the end of the week you will know, understand, and/or be able to do the following:

Learn & interpret through oral history about specific experiences of their family members centered around an important historical event (i.e. 9/11, WWII, Pearl Harbor, the Kennedy Assassination, Y2K, the End of the Cold War, ect.).

Why does this learning matter?

You'll be learning about the personal experiences and thoughts of the someone in your family, while also learning history.

The plan for the week :

- **Monday:** Decide which family member to interview in person or via video or phone chat. Use the “**Ten Questions**” page to develop the ***first*** ten questions that you ask the interviewee.
- **Tuesday:** **Interview** the family member in person, or via video or the phone, asking the first ten questions you created on the “Ten Questions” page. Be sure to write down notes on the answers given for each question. You don't have to stop at ten questions... there is space on the page(s) for more information. You don't have to write using complete sentences... these are just notes.
- **Wednesday & Thursday:** Using the questions and answers from the interview, write up a full one page summary of the interview. You can hand write the page, or you can choose to type it out. You do have to use complete sentences for this. You do not have to stop at one page, you can make it two pages if you prefer.
- **Friday:** Using the historical information gained in the interview, draw a picture related to the historical event. You can use stick figures and very basic shapes if you want, or you can be as detailed as Michaelangelo. You will not be graded on your art for the pic, just how it addresses the

content of your interview and write-up. Consider this a cover page for your report on the interview.

If you want to go **above and beyond** you can do some research on the topic you discuss in the interview, either while you are creating your questions, or after the interview, comparing what you find to the answers that were given.

If you struggle with writing the notes on what their answers are, simply write down keywords for what they answered... remember, the answers you write down do not need to be in complete sentences.

Who To Ask For Help and How To Reach Them

Mrs. French, 8th Grade Social Studies Teacher

Email: mfrench@fernridge.k12.or.us

Phone: 541-362-4768

Student name: _____ Date: _____

INTERVIEW – TEN QUESTIONS WORKSHEET

Instructions: Create ten questions you will ask the person you will interview about a specific, crucial event in world history (like 9/11, WWII, Pearl Harbor, the Kennedy Assassination, Y2K, the End of the Cold War, ect.). Answers do not need to be in complete sentences.

Sample Questions:

- How old were you when the event occurred?
- Where were you living when the event occurred?
- How did you find out about the event?
- What did you think about what was going on?
- How did the event affect you and your family?
- Ect.

NOTE: There is space provided at the end of this worksheet for further notes after the tenth question is asked. Use that space to write down any further information you gain after the last question... (a.k.a. the last question doesn't have to be the end of the conversation).

Question #1: _____

Answer: _____

Question #2: _____

Answer: _____

Question #3: _____

Answer: _____

Question #4: _____

Answer: _____

Question #5: _____

Answer: _____

Question #6: _____

Answer: _____

Question #7: _____

Answer: _____

Question #8: _____

Answer: _____

Question #9: _____

Answer: _____

Question #10: _____

Answer: _____

Further Discussion Notes (Anything else you discuss related to this topic, including, but not limited to, further questions and answers)
