GEDTS® Graphic Organizers

Resources for the Classroom

Bonnie Goonen – bgoonen@gmail.com
Susan Pittman – skptvs@aol.com

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Reasoning through Language Arts

TIPP?

Elements	Notes
T - Title What do the title, subheadings, and layout tell me about this text?	
I - Introduction What is included in the introduction?	
P - Paragraphs What information is included in the first sentence of each paragraph?	
P - Photographs What do the photographs, maps, charts, tables, illustrations tell me?	
?? - Questions What questions do I have about this text?	

Unpack the Prompt

Underline the verbs in the prompt. Determine the action to be completed. Complete the chart.

Do	What

Close Reading Questions

After they have read the excerpt(s), can your students answer these questions?

- What is the author's argument?
- What position does the author take (for or against)?
- What is one point that supports the author's argument?
- What evidence does the author give to support this point?
- What is the point of view of the author?
- What is one point that refutes the author's point of view?

Evaluating What You Have Read

After reading the article, answer these questions to help you to reflect upon and analyze the article.

Question	Answer
1. What is the author's main argument? Use your own words to rearticulate the main idea.	
2. List and explain the reasons the author provides for his/her main argument.	
3. What kind of evidence is presented to support the author's argument? Is it fact or opinion or a different type of evidence? What is the source of the information? Does it come from an informed authority in the field?	
4. What is the purpose and tone of the article?	
5. Is the author objective or does he/she try to convince the reader to have a certain opinion? If so, what viewpoint does the author use to try and convince you of his/her position?	
6. Does the author's argument assume that the reader thinks in a particular way or has a particular view? What are the major underlying assumptions that the author makes? Do you think they are reasonable and acceptable to most people?	
7. Does the author make inferences based on his/her evidence? Is the line of reasoning logical or illogical? Why?	
8. Does the author try to appeal to the reader's emotions? Does the author use any "loaded" words in the headline or the article? List these words or phrases and explain their effect on the reader.	

9. Based on what you have read, how has the author persuaded or dissuaded you from his/her viewpoint? Why?	

Types of Evidence to Support an Argument

> Evidence isn't the same as proof. "Whereas *evidence* allows for professional judgment, *proof* is absolute and incontestable."
> (Denis Hayes, *Learning and Teaching in Primary Schools*, 2009)

Definition of Evidence
Facts, documentation, or testimony used to strengthen a claim, support an argument, or reach a conclusion.

Type of Evidence	Definition	Samples Supporting an Author's Claim
Factual	Truthful statements that cannot be denied. Statements that the average person may know or which can be proven.	
Statistics or Data	Numerical facts; can be presented in raw numbers, percentages, or fractions.	
Examples or Anecdotes	Real-life situations, events, or experiences that illustrate a position; anecdotal stories that help explain an author's claim.	
Expert Testimony	The observations or conclusions of someone who is considered highly knowledgeable because he/she is an expert in a particular field of study or occupation; someone who has first-hand knowledge and experience.	
Logical Reasoning	An explanation which draws conclusions that the reader can understand; a discussion which helps the reader understand or make sense out of facts or examples offered.	
Emotional Appeal	Use of sympathy, fear, loyalty, etc. to persuade; manipulates the reader's emotions – ethos, pathos, logos	

Sample Completed Organizer: Types of Evidence

Note: The following graphic organizer shows different types of evidence that was used in Passage 1 - **Press Release from the Office of U.S Representative Melody Walls**
United States House of Representatives, Washington, DC

Example of Types of Evidence

Claim: While both sides make an acceptable case, Representative Walls provides a stronger argument for the road construction bill because the press release provides more factual and valid evidence.

Type of Evidence	Definition	Samples Supporting an Author's Claim
Factual	Truthful statements that cannot be denied. Statements that the average person may know or which can be proven.	The bill will ease traffic congestion.
Statistics or Data	Numerical facts; can be presented in raw numbers, percentages, or fractions.	A 2001 study in Texas showed that bypasses reduce traffic through towns as much as 75%.
Examples or Anecdotes	Real-life situations, events, or experiences that illustrate a position; anecdotal stories that help explain an author's claim.	. . . held town meetings to gather opinions from her constituents about revitalizing the economy of the 12th District.
Expert Testimony	The observations or conclusions of someone who is considered highly knowledgeable because he/she is an expert in a particular field of study or occupation; someone who has first-hand knowledge and experience.	Some officials anticipated a 30% increase in highway traffic.
Logical Reasoning	An explanation which draws conclusions that the reader can understand; a discussion which helps the reader understand or make sense out of facts or examples offered.	An increase in travelers will attract national motel and restaurant chains along the highway route.
Emotional Appeal	Use of sympathy, fear, loyalty, etc. to persuade; manipulates the reader's emotions – ethos, pathos, logos	Representative Walls heard residents' concerns for jobs in the district.

Sample Completed Organizer: Types of Evidence

Note: The following graphic organizer shows different types of evidence that was used in Passage 2 - **Letter to the Editor**

Example of Types of Evidence

Claim: While both sides make an acceptable case, the letter provides a better-supported argument.

Type of Evidence	Definition	Samples Supporting an Author's Claim
Factual	Truthful statements that cannot be denied. Statements that the average person may know or which can be proven.	. . . the highway will bypass four cities in our district alone.
Statistics or Data	Numerical facts; can be presented in raw numbers, percentages, or fractions.	. . . two manufacturers closed their doors.
Examples or Anecdotes	Real-life situations, events, or experiences that illustrate a position; anecdotal stories that help explain an author's claim.	If this project were paid for with state tax money alone, angry voters would have struck it down.
Expert Testimony	The observations or conclusions of someone who is considered highly knowledgeable because he/she is an expert in a particular field of study or occupation; someone who has first-hand knowledge and experience.	. . . The 2001 study . . . shows they (bypasses) have a negative impact on local businesses.
Logical Reasoning	An explanation which draws conclusions that the reader can understand; a discussion which helps the reader understand or make sense out of facts or examples offered.	There is no guarantee that tourists will drive an extra two miles into our town if national chain motels and restaurants are built at the highway exits.
Emotional Appeal	Use of sympathy, fear, loyalty, etc. to persuade; manipulates the reader's emotions – ethos, pathos, logos	Please consider local concerns about this federal project.

Both Sides Now

When reading argumentative non-fiction text, materials often present one side or viewpoint on a particular issue. Sometimes, the text may provide evidence to support both sides. Then, it is up to the reader to determine which is best supported. Analyzing and evaluating the evidence for both sides is one way to identify a claim and the reasons for making a specific decision/claim.

<table>
<tr><th colspan="3">Both Sides Now</th></tr>
<tr><th>Evidence that Supports</th><td rowspan="11">Question or statement

Which position is better supported?</td><th>Evidence that Opposes</th></tr>
<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
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<tr><td></td><td></td></tr>
<tr><td></td><td></td></tr>
<tr><td colspan="3">Decision (Claim)</td></tr>
<tr><td colspan="3">Reasons (Analysis/Evaluation)</td></tr>
</table>

Both Sides Now (Sample Completed Organizer)

Note: The following graphic organizer shows different types of evidence used in **"Taxation and Revenue" – Test Bank Item 18101, Stimulus and Prompt**

<table>
<tr><th colspan="3">Both Sides Now</th></tr>
<tr><th>Evidence that Supports</th><td rowspan="11">Question or statement

Which position regarding the building of a new road is better supported?</td><th>Evidence that Opposes</th></tr>
<tr><td>Will ease traffic congestion</td><td>Will bypass town and harm it</td></tr>
<tr><td>Will create jobs</td><td>Road paid for with federal funds</td></tr>
<tr><td>Improving highway means jobs for construction workers</td><td>Few residents will use road</td></tr>
<tr><td>Will bring more long-distance travelers to area</td><td>Will lose money because of bypass</td></tr>
<tr><td>30% increase in traffic that won't impact city roads</td><td>Construction jobs are only temporary</td></tr>
<tr><td>Will attract national motel and restaurant chains</td><td>Minimum wage jobs will remain</td></tr>
<tr><td>Will eliminate truck traffic through city by as much as 75%</td><td>Highway and bypass four cities in one district, so fewer travelers will stop in the cities</td></tr>
<tr><td>Will reduce road maintenance costs</td><td>2001 study shows bypasses have negative impact on local businesses</td></tr>
<tr><td>Representative held town meetings</td><td>Representative did not listen to local concerns in her town meetings</td></tr>
<tr><td colspan="3">Decision (Claim) Pro side
When comparing the two positions, Representative Walls has the better supported position.</td></tr>
<tr><td colspan="3">Reasons (Analysis/Evaluation) Pro side
The press release provides a stronger argument because it provides more factual and valid evidence instead of opinions.</td></tr>
</table>

Argumentative Writing Organizers: Pros and Cons

Question or Statement	
Pros ***(Evidence that Supports}***	**Cons** ***(Evidence that Opposes)***

Decision for a claim:

_____

_____

_____

Defend your decision:

_____

_____

_____

Constructed Response Graphic Organizer

Prompt/Question:		
Restatement of question in your own words		
Claim		
Evidence Detailed body of evidence or reasons that support answer – include enough details to answer the question. Make sure all details support the claim and are not off-topic.	Text 1	Text 2
Counterargument(s)	Claim	Rebuttal
Restated question Concluding thoughts		

Constructed Response Organizer – A Quick Outline

Claim	
Evidence and Connection	
Counterclaim and Rebuttal	
Conclusion	

Constructed Response Organizer

Introductory Paragraph

Hook the audience:

Give a little background on the issue

Claim:

Body Paragraph Reason/Evidence/Connection (use as many paragraphs as needed)

Reason

Evidence, Support and Connection

Transition

Body Paragraph Counterclaim/Rebuttal

Counterclaim (Evidence and Support)

Rebuttal (Evidence, Support, and Connection)

Transition

Conclusion Paragraph

Provide take-away points

Restate your thesis in different way

Sample Thesis/Claim Frames

A thesis is an answer to a specific question. A thesis statement makes a claim or proposition that reflects a specific point of view. The thesis statement should recognize both sides of a question, yet focus on two to three specific points (discussion points) sometimes called points of analyses. A thesis statement is the roadmap for the written response. The placement of the thesis statement is generally located in the introduction and summarized in the conclusion of a writing sample.

The general argument made by _____ in his/her work _____ is that _____ because _____.

Although _____ (believes, demonstrates, argues) that _____, _____ supports/provides the clearest evidence _____.

A key factor in both _____ can be attributed to _____ because _____.

When comparing the two positions in this article, _____ provides the clearest evidence that _____.

Looking at the arguments regarding _____, it is clear that _____.

In discussion of _____, one controversial issue has been _____. _____ believes that _____. On the other hand, _____ asserts that _____. _____ is clearly the best supported argument on the issue of _____.

How Do You Know? – Frames for Incorporating Evidence

In the article, "_____," _____ maintains that _____.

_____'s point is that _____

____'s claim rests upon the questionable assumption that _____

One reason that _____ maintains the position of _____ is that

_____

According to the text/article/passage/report, _____

An example of _____, is _____. This

proves/supports that _____.

The author states that _____.

In addition, the author/article/research supports that _____.

This proves that _____.

Examples/data supporting _____, includes _____.

Citing the Evidence

Question	State	Cite	Explain
This is the question you are directly responding to. If you are writing an essay, you must also use part of the stimulus in your answer so your audience knows what you are talking about.	State the claim - the idea you had about the text.	Cite what in the text led you to that idea.	Explain how each piece of evidence supports your idea.

Question	State	Cite	Explain

Citing the Evidence: Introduce-Cite-Explain/Elaborate

	What to Do	Example
I	Introduce your evidence (e.g., according to, another example of, as stated by, as said by, in addition to, to illustrate, etc.)	Another example of Dr. Morgan's stronger argument is the author's use of a 2012 research study.
C	Cite your evidence. Use appropriate parenthetical citations for all quotes.	The study that she uses reports that gaming shows a positive impact on higher-order thinking skills and that it reduces training time.
E	Explain and elaborate on how the evidence is connected or important to the claim that you are making. Provide an analysis that ties the evidence back to the argument that you are making.	Because training is an important part of the workplace, reducing training time and providing a more effective way of teaching new skills can positively enhance a workplace's return on investment.

Introduce	
Cite	
Explain/Elaborate	

Revising and Editing Checklist

Introduction

☐ Does your introduction begin with a sentence that grabs the reader's attention?
☐ Does your paper contain a thesis that is a clear summary of your main point or argument?
☐ Is your thesis arguable? Your thesis should not simply be the statement of a fact because a statement is NOT arguable.
☐ Does your thesis match your assignment? A thesis for a compare-contrast paper is constructed differently than a thesis for a personal narrative or a research paper.
☐ Is your thesis placed correctly? Normally the thesis should be the last sentence of your introductory paragraph, but it can also appear either as the first sentence or within the first paragraph.
☐ Does your thesis provide a clear outline for the entirety of your paper?
☐ Does your thesis answer a question? Keep in mind, a thesis should never be written as a question.

Body Paragraphs

☐ Does the topic sentence of each body paragraph summarize the entirety of the points that paragraph covers?
☐ Does each topic sentence correspond with your thesis statement?
☐ Does all of the information in your paragraph support your topic sentence?
☐ Is the final sentence in each body paragraph a sentence that either summarizes the paragraph or transitions to the next point?
☐ Do you acknowledge an opposing point of view and then explain why you think it isn't strong enough to change the point of view selected?

Conclusion

☐Does the last paragraph remind readers of the main points of the essay, without going into too much detail repeating everything readers just read?
☐ Is the conclusion free of new information (such as another supporting point)?
☐ Does the last sentence leave readers with a strong final impression?

Entire Paper

General

☐ Is the writing in formal, third person?
☐ Does one idea flow smoothly into the next?
☐ Do the sentence structures and lengths vary?
☐ Does every sentence relate to the thesis?
☐ Does everything make sense?
☐ Is the essay convincing?
☐ Are the grammar, punctuation, and spelling correct?

Sentence Composition

☐ Have you removed unnecessary hedges that weaken your arguments such as *probably*, *might be*, *somewhat*, or *kind of*?
☐ Have you removed unnecessary words that do not add to the sentence such as *really* or *a lot*?
☐ Have you varied your vocabulary by utilizing a thesaurus and dictionary when necessary in order to avoid repetition or incorrect word choices?
☐ Are your sentences of varied lengths and complexities? A paper is stronger when it has a mixture of sentences versus all short sentences or all long sentences.
☐ Are all transitions from one idea to another smooth and clearly explained, so the reader does not need to make any leaps in logic?
☐ Has all slang and conversational language been removed?
☐ Have you removed any offensive language, such as gender-based or biased language?

Verbs

☐ Do your verb tenses match?
☐ Are your verb tenses consistent?
☐ Have you replaced unnecessary “to be‟ verbs (be, been, is, are, were, was) with stronger verbs?
☐ Are you using “active‟ verbs?

Integration of Information

☐ Are all of your quotes and paraphrases correctly cited?
☐ Are all of your quotes introduced and explained properly?
☐ Is all of your information, such as quotes and data, pertinent to your topic? Does your information correspond with the topic sentence of your current paragraph?

Grammar and Mechanics

☐ Have you used parallel structure?
☐ Do your pronouns agree with the antecedents they are replacing?
☐ Is your paper free of fragments and run-on sentences?
☐ Is your paper properly punctuated?
☐ Is your paper free of spelling errors?
☐ Have you read through your paper (slowly) in order to catch errors that you would miss otherwise?

Prewriting Organizer: Toulmin Model for Argumentation

A Claim: Is your point
Is debatable
Is demonstrated by reason and logic

Thesis/Claim Statement: -

_____

Warrants: *Just like a search warrant from the police, the argument warrant gives the writer authority to proceed with his/her argument.*

- ❖ is the assumption that makes your claim plausible
- ❖ questions the evidence
- ❖ shows a logical, persuasive connection between claim, reasons, data (evidence)
- ❖ gives authority to proceed with your argument
- ❖ can be stated, but usually is assumed

REFUTE

Reason

_____
_____
_____

Reason

_____
_____
_____

Reason

_____
_____
_____

Reason

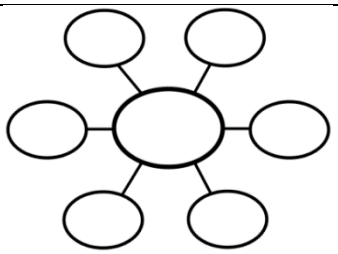
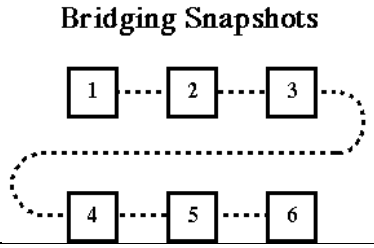
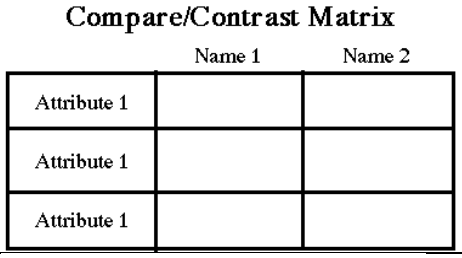
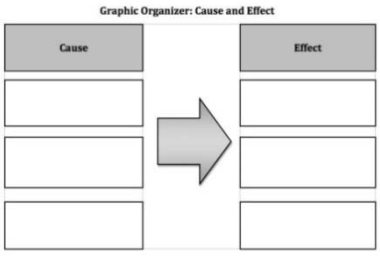
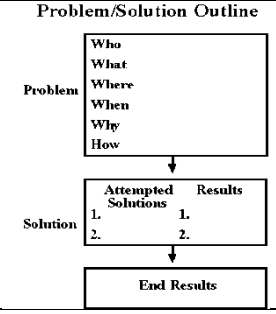
_____
_____
_____

Conclusion

Assessing the Claim

Response	Notes
	The Claim • Is it debatable? • Is the focus narrow enough for the writing required? • Does it establish the argument? • Is it valid? **The Evidence** • Does it support the claim? • Does it include facts or statistics? • Does it include examples? • Is it based on an expert's or the writer's personal opinion? **The Warrant** • Does it explain the pieces of evidence? • Does it connect evidence to the claim? • Is it reasonable? • Does it make assumptions? • Is it logical? **The Counterclaim** • Does the writer include information that disagrees with the original claim? • Is it reasonable? • What is the evidence that supports the counterclaim? **The Rebuttal** • Does it explain why the counterclaim does not work? • What is the evidence used to support the rebuttal?

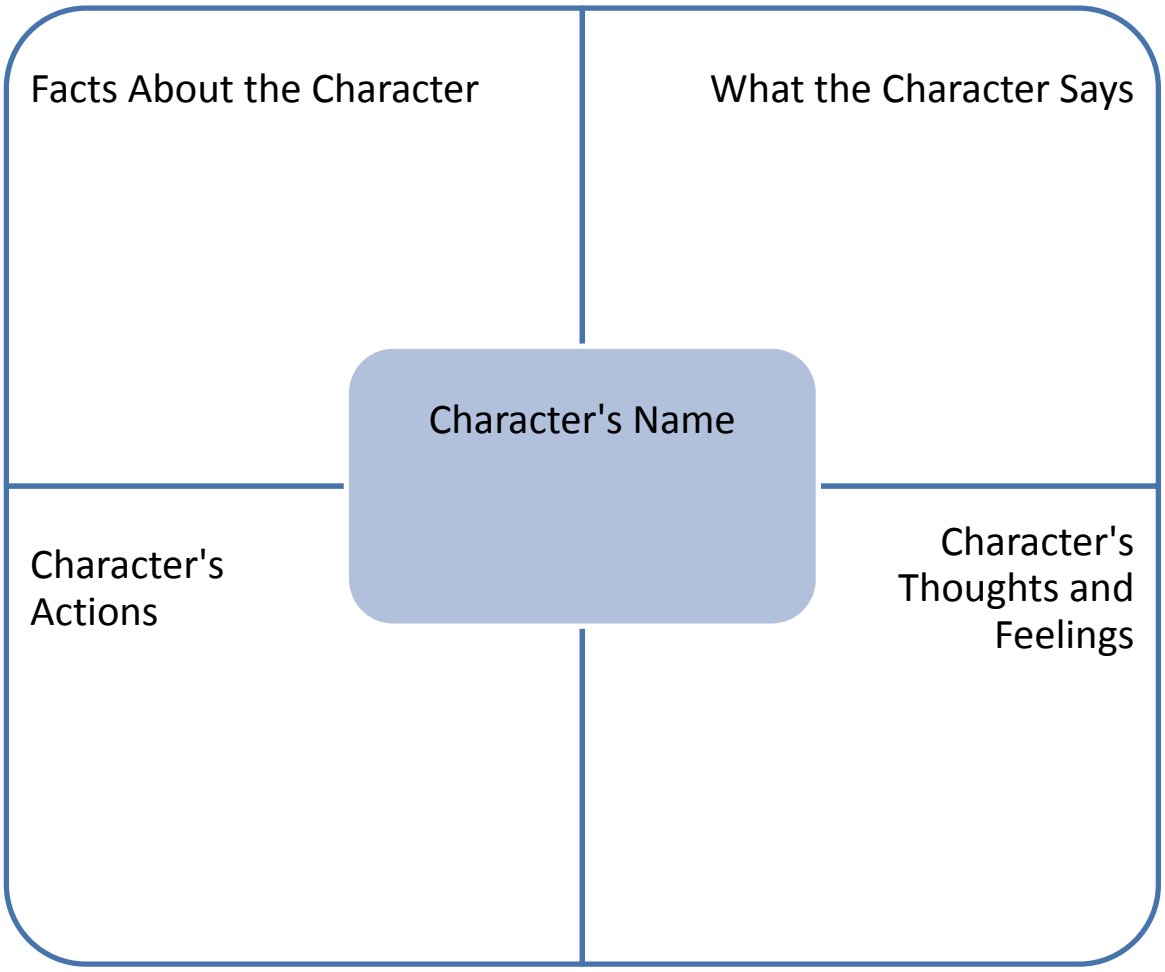
Nonfiction Text Structures

Text Structure	Definition	Signal Words	Graphic
Description	Provides main ideas and supports them with descriptive details	for example, in describing, properties of, for instance, characteristics include, specifically, in addition, in particular	
Sequence and Order	Gives information in a specific order	before, in the beginning, to start, first, next, during, after, then, finally, last, in the middle, in the end	
Compare and Contrast	Presents ideas and examines how they are alike/different	similar, alike, same, just like, both, different, unlike, in contrast, on the other hand, whereas, although	
Cause and Effect	Provides reasons for why or how something happens.	because, so, so that, if… then, consequently, thus, since, for, for this reason, as a result of, therefore, due to, this is how, leads to, nevertheless, and accordingly.	
Problem and Solution	Identifies a problem and offers solutions	problem, dilemma, solution, issue, cause, since, consequently, therefore, as a result, because of, leads to, due to, solve, so, then	

Sample Annotation Guide

Symbol	***Meaning***
1, 2, 3 . . .	*Number of the paragraph*
_____	*Major points or key ideas*
	*Key words or terms*
?	*Something that is confusing*
!	*Something you found surprising*
E	*Example supporting major points*

Character Inferences



It Says – I Say – And So

Question	It Says	I Say	And So
Read the question.	Find information from the text to help answer each question – paraphrase or quote answers from text.	Consider what you know about the information.	Put together the information from the text with what you know, then answer the question.

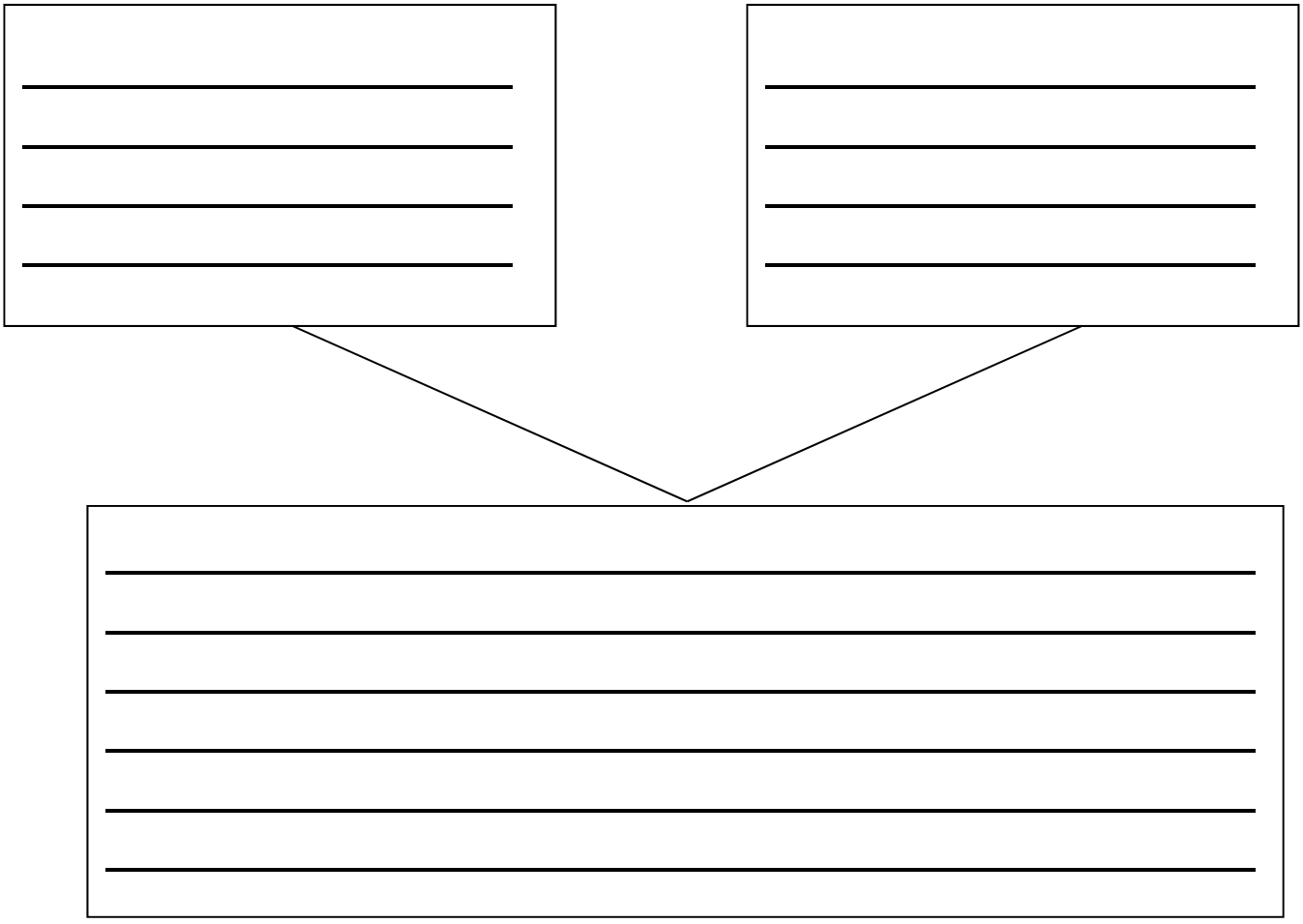
Making Inferences

Reading Between the Lines

Question:

What I know from the *source material*

What I know from my brain



My Inference
(be sure to use at least one “because”)

QtA (Questioning the Author)

Researchers developed a process called “Questioning the Author” (QtA) in which the reader is encouraged to carry on a conversation with the author while reading a selection. This helps readers relate information from different parts of the text and make connections with their prior knowledge.

Some of these “author questions” that students might ask are:

- What is the author trying to say here? What does the author mean here?
- What is the author’s message?
- What is the author talking about?
- Does the author explain this clearly?
- Does this make sense with what the author told us before?
- How does this connect to what the author told us here?
- Does the author tell us why?

Text Selection	
What is the author trying to tell you?	
Why is the author telling you that?	
Is it said clearly?	
How might the author have written it more clearly?	
What would you have wanted to say instead?	

Making Text Connections

Text-to-Self connections	Text-to-Text connections	Text-to-World connections
• What does this text remind you of? • Does anything in the text remind you of anything in your own life?	• What does this remind you of in another text your read? • How is this text similar or different from other things you have read?	• What does this remind you of in the real world? • How are things in this text similar or different from things that happen in the real world?

Passage or Quote from Text	Explain the connection you made to yourself, another text, or the real world.	What kind of connection did you make?
		☐ Text-to-Self ☐ Text-to-Text ☐ Text-to-World
		☐ Text-to-Self ☐ Text-to-Text ☐ Text-to-World
		☐ Text-to-Self ☐ Text-to-Text ☐ Text-to-World
		☐ Text-to-Self ☐ Text-to-Text ☐ Text-to-World
		☐ Text-to-Self ☐ Text-to-Text ☐ Text-to-World

Mathematical Reasoning

K-N-W-S – A Problem Solving Strategy

K-W-L is an active reading tool to help students build content knowledge by focusing on the topic and setting the purpose for the upcoming reading. In K-W-L, students list:

- K – What they *KNOW* about a topic
- W – What they *WANT* to learn
- L – Summarize what they *LEARNED*

K-N-W-S is a similar pattern that students can use with word problems to determine:

- K – What facts they *KNOW*
- N – What information is *NOT* relevant
- W – *WHAT* the problem wants them to find out
- S – What *STRATEGY* can be used to solve the problem

K	N	W	S
What facts do I KNOW from the information in the problem?	**What information do I NOT need?**	**What does the problem WANT me to find?**	**What STRATEGY or operations will I use to solve the problem?**

Reading **and Writing to Learn in Mathematics: Strategies to Improve Problem Solving by Clare Heidema at** www.ohiorc.org/adilit

Problem Solving Graphic Organizer – K-N-W-S

Word Problem

K	N	W	S

Reading and Writing to Learn in Mathematics: Strategies to Improve Problem Solving by Clare Heidema at www.ohiorc.org/adilit

SOLVE Strategy

"SOLVE" is a strategy used to solve word problems. Each letter in SOLVE represents one of the 5 steps in solving a word problem:

- Study the problem
- Organize the facts
- Line up a plan
- Verify your plan with action
- Examine the results

"S" stands for Study the Problem. When you study the problem you need to:
- Highlight or underline the question.
- Answer the question, "What is the problem asking me to find?"

"O" stands for Organize the Facts. When you organized the facts you need to:
- Identify each fact
- Eliminate unnecessary facts (By putting a line through it)
- List all necessary facts

"L" stands for Line Up a Plan. When you line up a plan you need to:
- Choose the operation(s) you will use (Add, Subtract, Multiply, or Divide)
- Tell in words how you are going to solve the problem

"V" stands for Verify Your Plan with Action. When you verify your plan with action, you need to:
- Estimate your answer
- Carry out your plan

"E" stands for Examine the Results. When you examine the results you need to ask yourself:
- Does your answer make sense? (Check what the problem was asking you to find)
- Is your answer reasonable? (Check you estimate)
- Is your answer accurate? (Check your work)

SOLVE Graphic Organizer

S	
O	
L	
V	
E	

Problem Solving Graphic Organizer – Goals and Givens

PROBLEM SOLVING TEMPLATE: This template can be used as another tool that will develop the process of goals and givens. Students will still have multiple reads of the content to complete this template.

Goal: What is the question?	**Givens: Important details/information that is provided**

Plan: What strategies will you use? May have multiple checked.

- ☐ Draw and Label Diagram/Picture
- ☐ Guess and Check
- ☐ Make it simpler
- ☐ Look for patterns
- ☐ Make a table
- ☐ Act out of use objects
- ☐ Write an equation
- ☐ Work backwards
- ☐ Other _____

Circle the one that was most effective.

Conjecture: (reasonable guess)
Predict your answer and any reasoning that results in your predicted answer

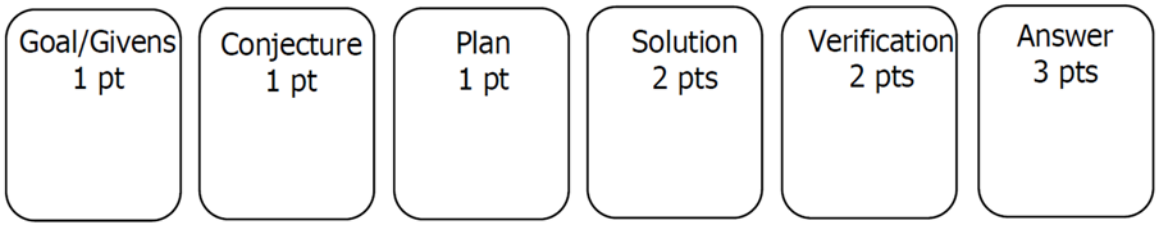
Solution: (make no assumptions, label everything)

Solution: Persevere – if one strategy doesn't work try another one.

Answer: Write a complete sentence that answers your goal with appropriate units.

Verification: Explain why your answer makes sense. Why is it reasonable? Did you answer the goal? Is there another strategy that proves your answer is correct?

Scoring Rubric



SQRQCQ – Another Problem Solving Strategy

SQ3R (survey, question, read, recite, and review) was developed in 1961 as an independent study tool. The premise behind SQ3R was that students need to be engaged with the text if they are to recall and understand complex text.

SQRQCQ is a six-step study strategy designed to help students read and learn mathematics focusing primarily on word problems. It helps students organize in a logical order the steps necessary to solve a word problem. SQRQCQ stands for

Survey – skim the problem to get an idea of the nature of the problem.
Question – ask what the problem is about, what information does it requires or restate the problem
Read – read carefully to identify important information, facts, relationships and details needed to solve the problem. Highlight important information.
Question – ask what must be done to solve the problem such as:

- What operation(s) should be used with what number and in what order?
- What strategies are needed?
- What information is provided?
- What is not given or unknown?
- What units must be used?

Compute (or construct) – do the computation to solve the problem or construct a solution by

- Drawing a diagram
- Making a table
- Setting up and solving an equation

Question – ask if the solution seems to be correct and the answer reasonable. Check to see if

- The calculations were done correctly
- The facts provided in the problem were used correctly
- The solution makes sense?
- Is the answer in the correct units?

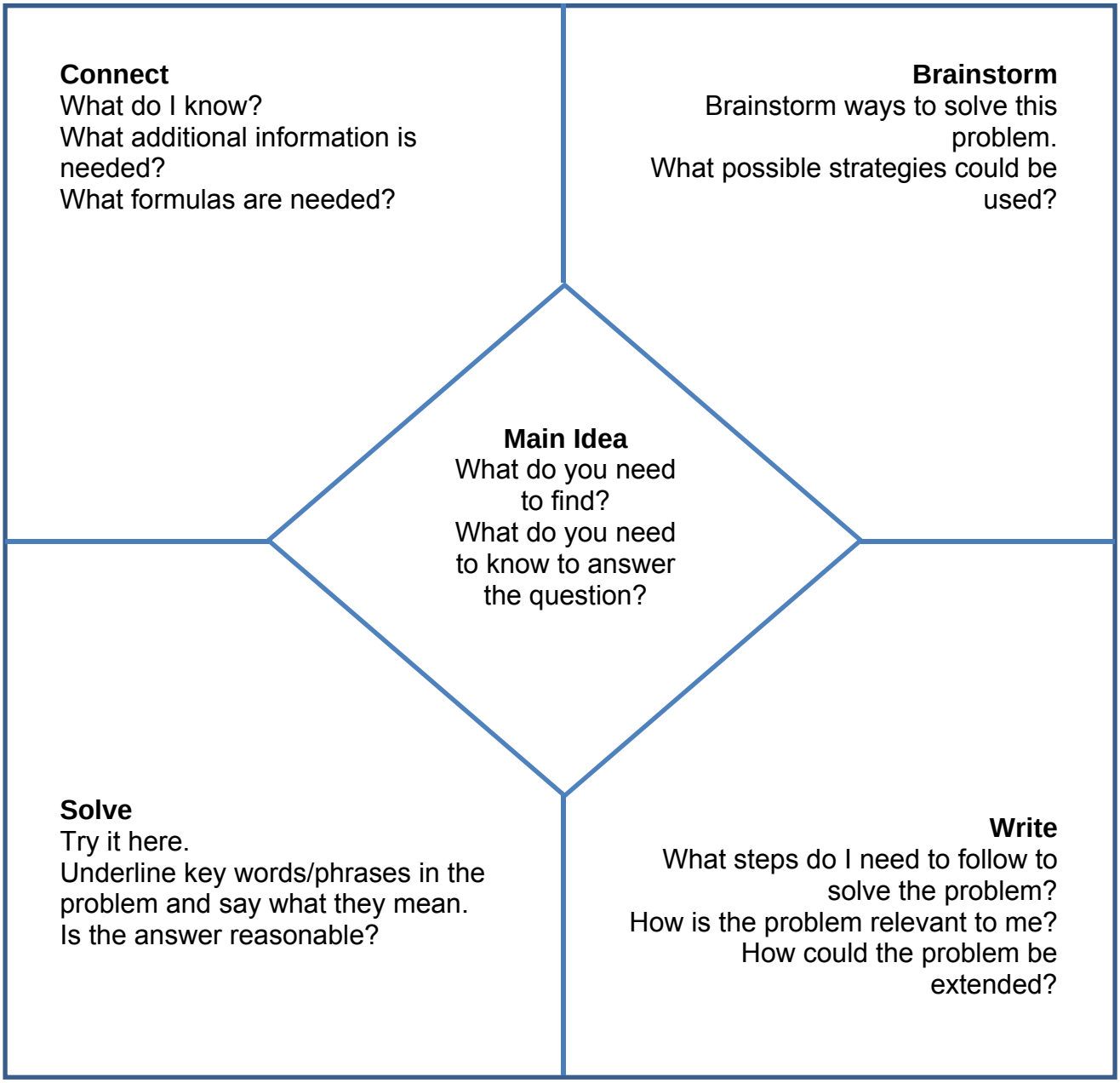
Survey – Scan the problem to get a general idea of what it's about. Clarify terms.	
Question – What is the problem about, and what is the information in the problem?	
Read – Identify relationships and facts needed to solve the problem.	
Question – What to do? How to solve the problem?	
Compute or construct – Do the computations or construct a solution.	
Question – Are the calculations correct? Does the solution make sense? Is the algebra correct, if used?	

SQRQCQ Problem-Solving Graphic Organizer

Survey Scan the problem to get a general idea of what it's about. Clarify terms.	
Question What is the problem about, and what is the information in the problem?	
Read Identify relationship and facts needed to solve the problem**.**	
Question What to do? How to solve the problem?	
Compute (or construct) Do the calculations or construct a solution?	
Question Is the algebra correct? Are the calculations correct? Does the solution make sense?	

Four Corners and a Diamond Math Graphic Organizer

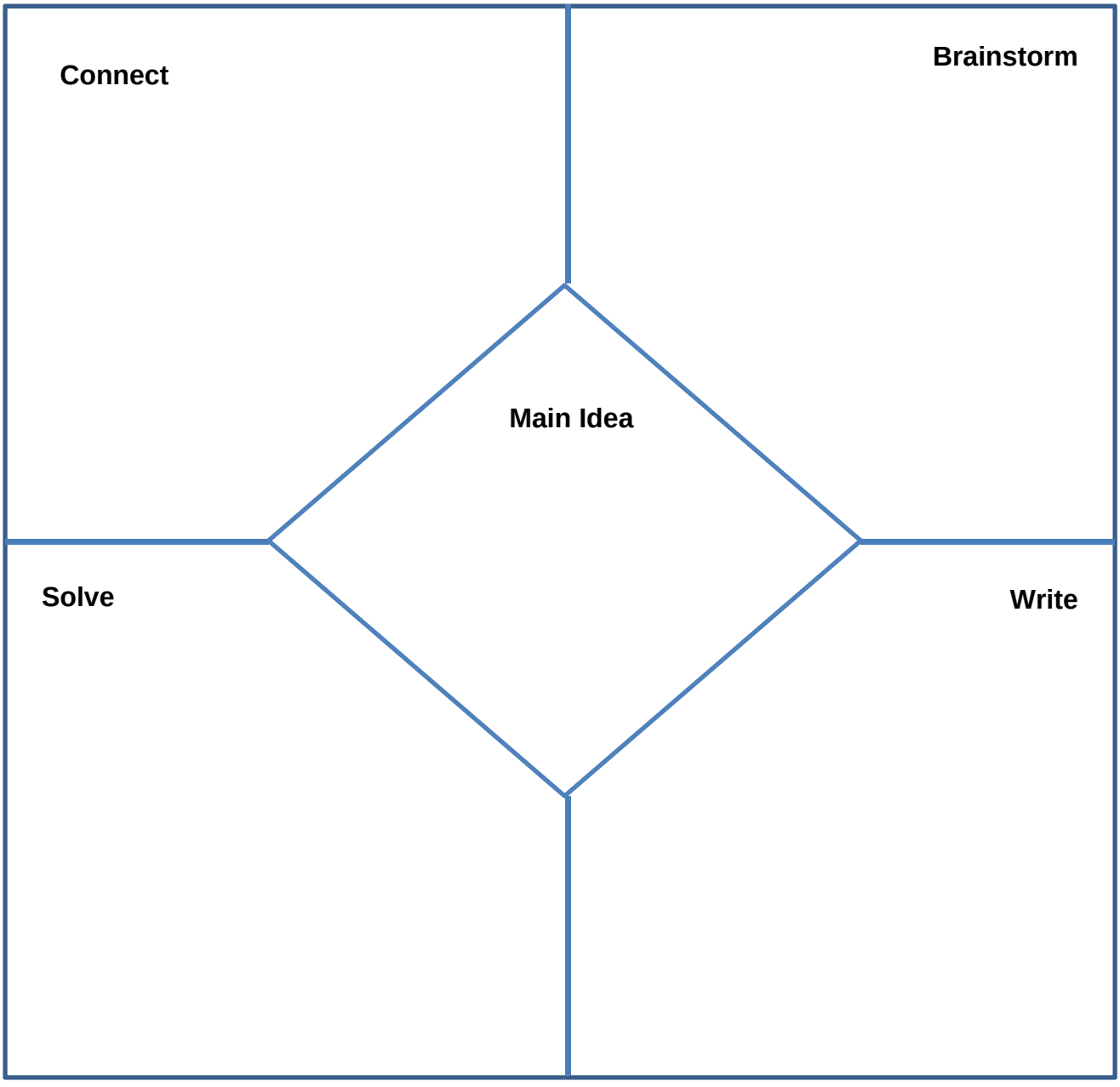
Problem: _____



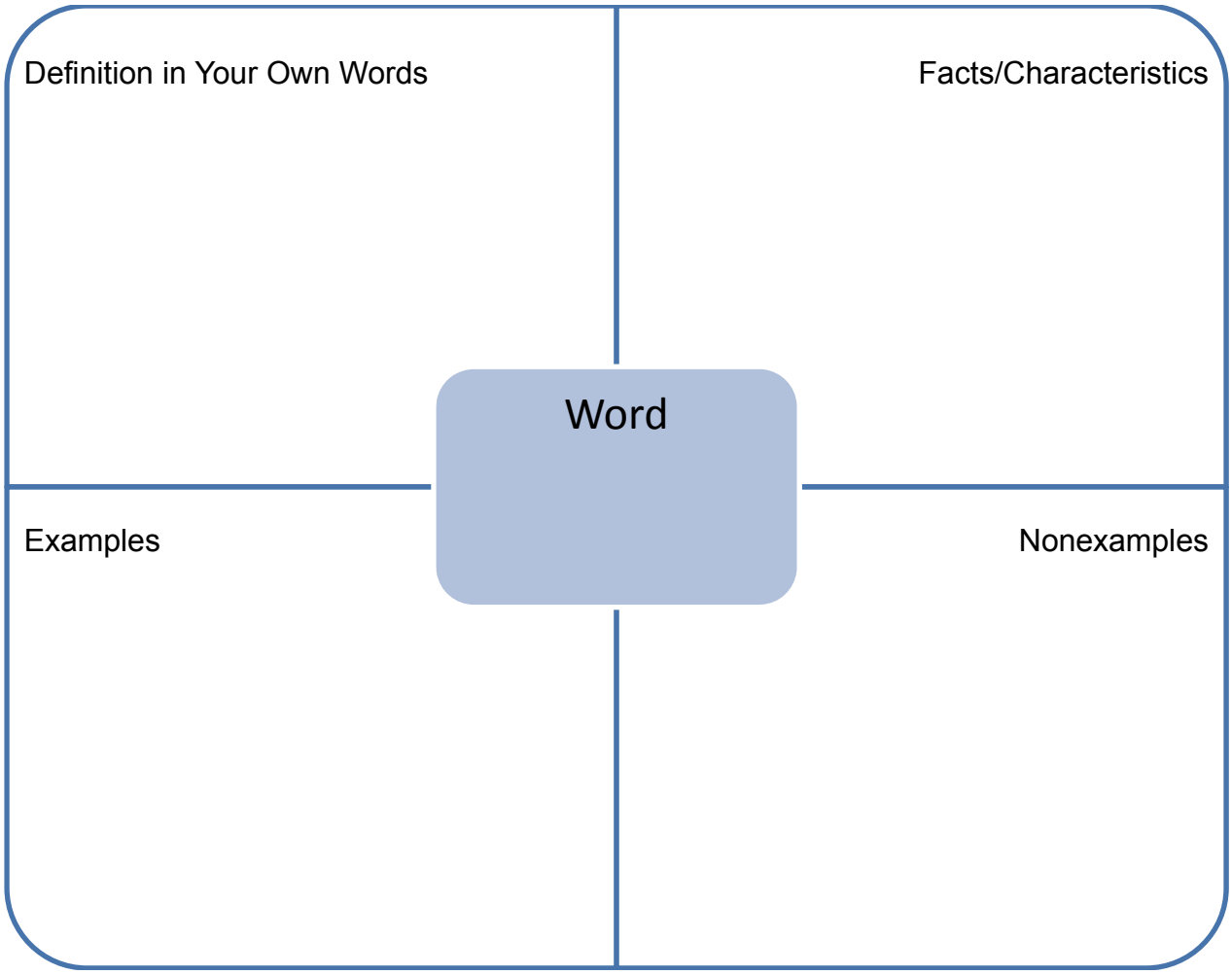
Adapted from Zollman (2009)

Four Corners and a Diamond Math Graphic Organizer

Problem:



Frayer Model (Vocabulary)



Problem-Solving Graphic Organizer

<table>
<tr><td colspan="2">Rewrite the problem</td></tr>
<tr><td>Read the problem
Highlight or circle All the key words in the problem</td><td>Think about the problem
What is the problem really asking</td></tr>
<tr><td colspan="2">Consider the strategies and make a plan
What strategy/strategies will you use?</td></tr>
<tr><td colspan="2">Try out your plan and solve the problem
Show all your work and explain your steps</td></tr>
<tr><td colspan="2">Look back
Did you answer the question? Does your answer make sense? Check our answer,</td></tr>
</table>

Math Translation Guide

The chart below gives you some of the terms that come up in a lot of word problems. Use them in order to translate or "set-up" word problems into equations.

English	Math	Example	Translation
What, a number	*x, n,* etc.	Three more than a number is 8.	$N + 3 = 8$
Equivalent, equals, is, was, has, costs	=	Danny is 16 years old. A CD costs 15 dollars.	$d = 16$ $c = 15$
Is greater than Is less than At least, minimum At most, maximum	> < ≥ ≤	Jenny has more money than Ben. Ashley's age is less than Nick's. There are at least 30 questions on the test. Sam can invite a maximum of 15 people to his party.	$j > b$ $a < n$ $t \geq 30$ $s \leq 15$
More, more than, greater, than, added to, total, sum, increased by, together	+	Kecia has 2 more video games than John. Kecia and John have a total of 11 video games.	$k = j + 2$ $k + j = 11$
Less than, smaller than, decreased by, difference, fewer	-	Jason has 3 fewer CDs than Carson. The difference between Jenny's and Ben's savings is $75.	$j = c - 3$ $j - b = 75$
Of, times, product of, twice, double, triple, half of, quarter of	x	Emma has twice as many books as Justin. Justin has half as many books as Emma.	$e = 2 \times j$ or $e = 2j$ $j = c \times ½$ or $j = e/2$
Divided by, per, for, out of, ratio of __ to __	÷	Sophia has $1 for every $2 Daniel has. The ratio of Daniel's savings to Sophia's savings is 2 to 1.	$s = d \div 2$ or $s = d/2$ $d/s = 2/1$

Example 1
Jennifer has 10 fewer DVDs than Brad.
Step 1: j (has) = b (fewer) – 10
Remember, the word “has” is an equal sign and the word “fewer” is a minus sign, so:
Step 2: $j = b - 10$

Example 2
Clay got 1- fewer votes than Kimberly. Reuben got three times as many votes as Clay. The three contestants received a total of 90 votes. Write an equation in one variable that can be used to solve for the number of votes Kimberly received.
Step 1: Pick which unknown will be represented by the variable. Since you’re solving for Kimberly, let k be the number of votes Kimberly received.
Step 2: Represent the other two unknowns in terms of k. Clay got 10 fewer votes so it’s k - 10 and Reuben got three times that so it’s $3(k - 10)$.
Step 3: Set up the equation using all of the expressions to equal 90.

$$k + (k - 10) + 3(k - 10) = 90$$

Example 3:
A school is having a special even to honor successful alumni. The event will cost $500, plus an additional $85 for each alum who is honored. Write an equation that best represents the number of alumni that can be honored.
Step 1: The amount the school can spend is equal to or less than $1,000, so it’s $\leq 1{,}000$
Step 2: The event has a fixed cost of $500 and a variable of $85 per alum so it’s 500 + 85a.
Step 3: The equation then becomes $500 + 85a \leq 1{,}000$.

Example 4:
A computer repair company charges $50 for a service call plus $25 for each hour of work. Write an equation that represents the relationship between the bill, b, for a service call, and the number of hours spent on the call, h.

- Step 1: Some questions include a situation where there is more than one cost. One of them is fixed and one is variable. First identify the sum of the fixed and variable costs so b equals the total.
- Step 2: Next, identify the fixed cost of 50 and the variable cost of $25h$ (25 x the number of hours).
- Step 3: The equation then becomes $50 + 25h = b$.

Social Studies

Primary Source Analysis Tool from the Library of Congress

Name of Document _____

Observe	Reflect	Question
• Describe what you see. • What do you notice first? • How much of the text can you read? What does it say? • Describe anything that you see on the page besides words, such as images. • How is the text and information arranged? • Describe anything about this text that looks unfamiliar. • What other details can you see?	• What the purpose of this text? • Who created it? • Who do you think was its audience? • Can you tell anything about what was important at the time it was written? • Why do you think this document is important? • What can you learn from examining this? • If someone wrote this today, what would be different?	• What do you wonder – who? • What do you wonder – what? • What do you wonder – where? • What do you wonder – why? • What do you wonder – when? • What do you wonder – how?

Further Investigation
What more do you want to know, and how can you find out? Follow-up activities Select a section of the text and put it in your own words. Look for clues to the points of view of the person, or people, who created this document. Discuss what someone with an opposing or differing point of view might say about the issues or events described. How would the information be presented differently? Examine a section of the text. Think about what you already know about this period in history. How does the text support or contradict your current understanding of this period? Can you see any clues to the point of view of the person who created this document?

Library of Congress - http://www.loc.gov/teachers/primary-source-analysis-tool/

Primary Source Analysis Tool from the Library of Congress

Name of Document _____

Observe	Reflect	Question

Further Investigation

Library of Congress - http://www.loc.gov/teachers/primary-source-analysis-tool

Reading Like a Historian (Stanford History Education Group) http://sheg.stanford.edu/rlh

Historical Reading Skills	Questions	Students should be able to . . .	Prompts
Sourcing (Before reading document)	• Who authored the document? • What is the author's point of view? • Why was it written? • When was it written? • Where was it written? • Is this source believable? Why? Why not?	• Identify author's position • Identify and evaluate author's purpose in producing document • Predict what author will say BEFORE reading document • Evaluate source's believability/trustworthiness by considering genre, audience, and author's purpose	This author probably believes… I think the audience is… Based on the sourcing information, I predict this author will… I do/don't trust this document because…
Contextualization	• What else was going on at the time this was written? • What was it like to be alive at this time? • What things were different back then? What things were the same?	• Use context/background information to draw more meaning from document • Infer historical context from document(s) • Recognize that document reflects one moment in changing past • Understand that words must be understood in a larger context	I already know that ____ is happening at this time… From this document I would guess that people at this time were feeling… This document might not give me the whole picture because …
Close Reading	• What claims does the author make? • What evidence does the author use to support those claims? • What words or phrases does the author use to convince me that he/she is right? • What information does the author leave out? • How does this document make me feel?	• Identify author's claims about event • Evaluate evidence/reasoning author uses to support claims • Evaluate author's word choice; understand that language is used deliberately	I think the author chose these words because they make me feel… The author is trying to convince me… (by using/saying…)
Corroboration	• What do other pieces of evidence say? • Am I finding different versions of the story? Why or why not? • What pieces of evidence are most believable?	• Establish what is true by comparing documents to each other • Recognize disparities between two accounts	This author agrees/ disagrees with… This document was written earlier/later than the other, so…

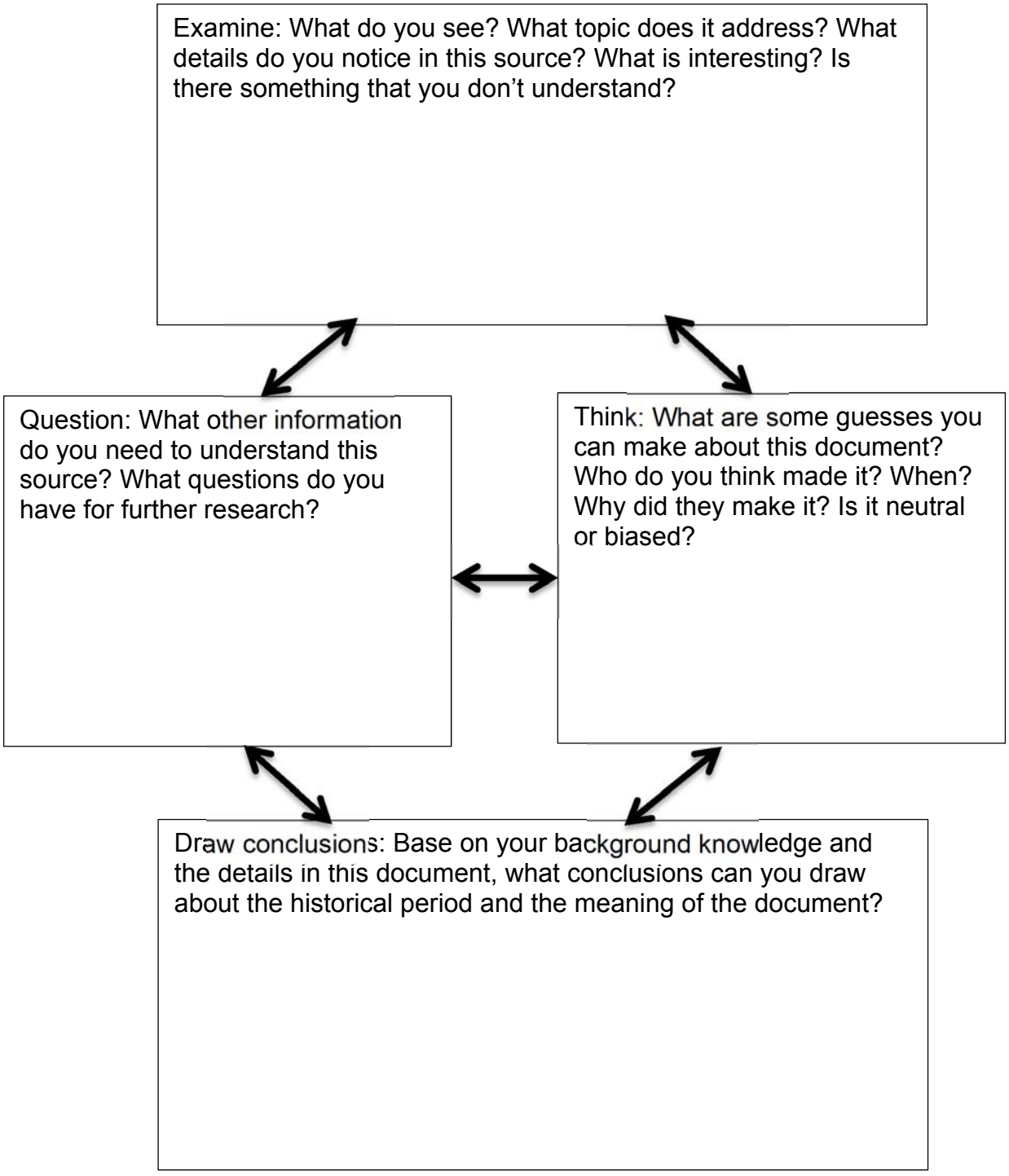
Read Like a Historian – Comparing and Contrasting Using S + 3Cs + E

Directions: Complete this chart after reviewing the different primary sources. Select two documents and answer the questions about each.

	Document 1	Document 2
Sourcing Who made this source? Where did it come from?		
Contextualizing Imagine the setting around this document. How does that world differ from our own? What does this source tell you about that world?		
Close Reading What does this document tell you? Make a brief list of details.		
Corroborating Does this document tell you something new or reinforce what you already knew? Does it contradict something you already knew?		
Evaluating Does this document change your opinion? Why or why not?		

Read Like a Historian

Document Name _____



Questions for Analyzing Primary Sources

1. Who created the source and why? Was it created through a spur-of-the-moment act, a routine transaction, or a thoughtful, deliberate process?

2. Did the recorder have firsthand knowledge of the event? Or, did the recorder report what others saw and heard?

3. Was the recorder a neutral party, or did the creator have opinions or interests that might have influenced what was recorded?

4. Did the recorder produce the source for personal use, for one or more individuals, or for a large audience?

5. Was the source meant to be public or private?

6. Did the recorder wish to inform or persuade others? (Check the words in the source. The words may tell you whether the recorder was trying to be objective or persuasive.) Did the recorder have reasons to be honest or dishonest?

7. Was the information recorded during the event, immediately after the event, or after some lapse of time? How large a lapse of time?

Asking Questions of Photographs

Prompts	Answers
What do I see? (What do you observe? What else?)	
What does it remind me of? (Another image? A personal experience?)	
What is the artist's purpose? (To Analyze? Persuade? Express? Document? Entertain?)	
So what? (Why does it matter? What is the significance?)	

Cartoon Analysis Worksheet

<table>
<tr><td colspan="2">Level 1</td></tr>
<tr><td>Visuals</td><td>Words</td></tr>
<tr><td>1. List the objects or people you see in the cartoon.</td><td>1. Identify the cartoon caption and/or title.

2. Locate three words or phrases used by the cartoonist to identify objects or people within the cartoon.

3. Record any important dates or numbers that appear in the cartoon.</td></tr>
<tr><td colspan="2">Level 2</td></tr>
<tr><td>Visuals</td><td>Words</td></tr>
<tr><td>2. Which of the objects on your list are symbols?

3. What do you think each symbol means?</td><td>4. Which words or phrases in the cartoon appear to be the most significant? Why do you think so?

5. List adjectives that describe the emotions portrayed in the cartoon.</td></tr>
<tr><td colspan="2">Level 3</td></tr>
<tr><td colspan="2">A. Describe the action taking place in the cartoon.

B. Explain how the words in the cartoon clarify the symbols?

C. Explain the message of the cartoon.

D. What special interest groups would agree/disagree with the cartoon’s message? Why?</td></tr>
</table>

The U.S. National Archives and Records Administration.
http://www.archives/gov/education/lessons/worksheets/cartoon.html

Making Inferences

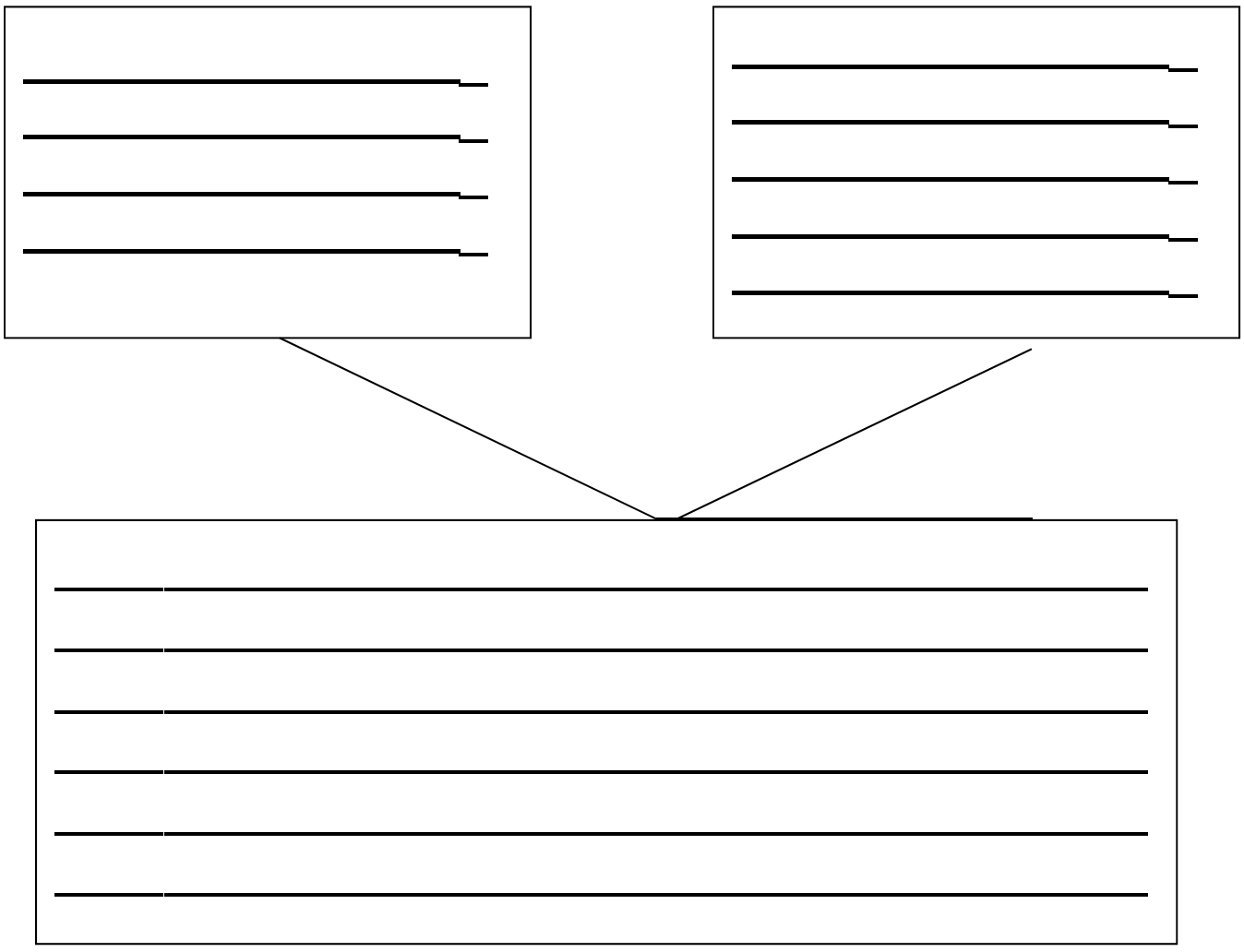
Reading Between the Lines

Question: _____

_____

What I know from the *source material*

What I know from my brain



_____

My Inference

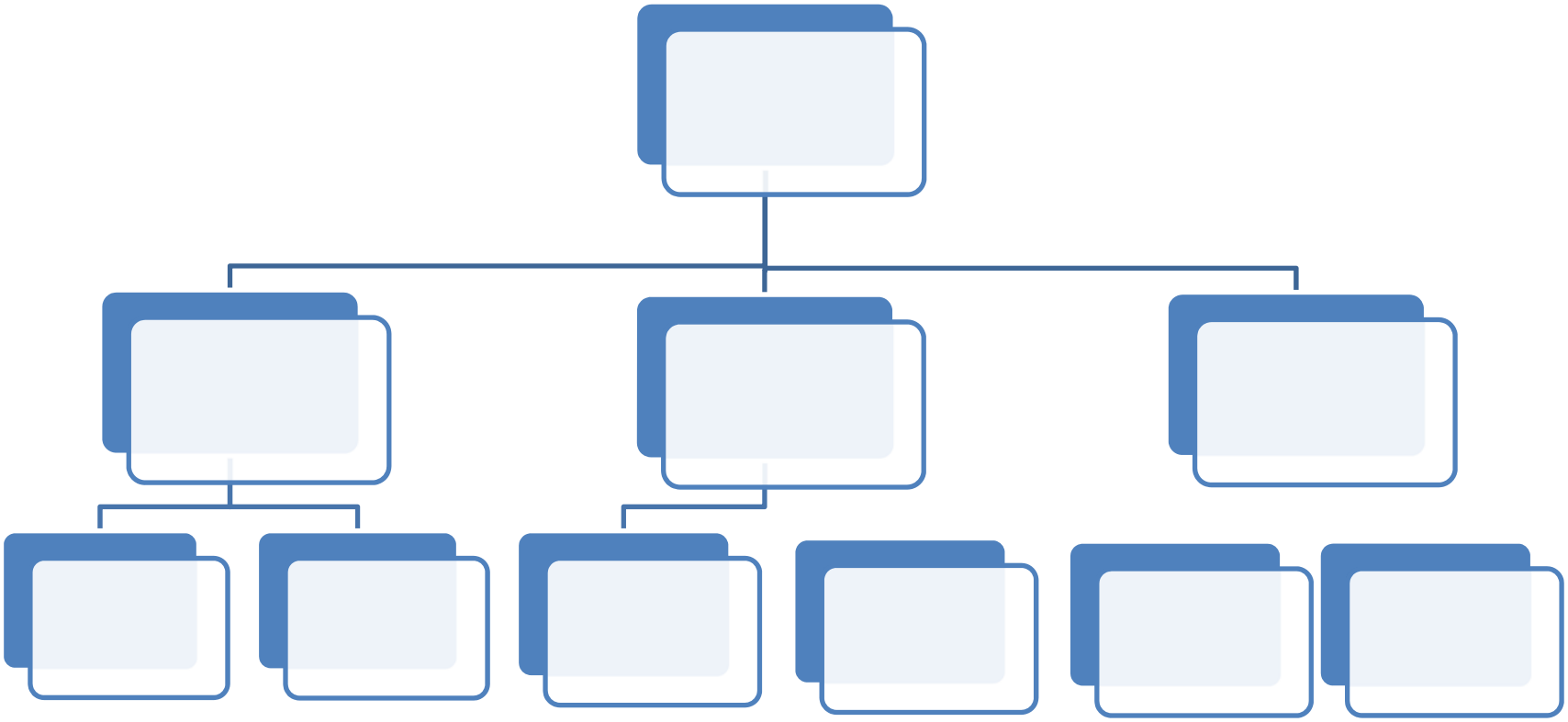
(be sure to use at least one “because”)

Science

Circle of Inquiry

An Overview of the 5Es		
Phase	**Purpose**	**Role of Teacher**
Engage	Create interest and stimulate curiosity. Set learning within a meaningful context. Raise questions for inquiry. Reveal students' ideas and beliefs, compare students' ideas.	Activity or multi-modal text used to set context and establish topicality and relevance. Motivating/discrepant experience to create interest and raise questions. Open questions, individual student writing, drawing, acting out understandings, and discussion to reveal students' existing ideas and beliefs so that teachers are aware of current conceptions and can plan to extend and challenge as appropriate – a form of diagnostic assessment.
Explore	Provide experience of the phenomenon or concept. Explore and inquire into students' questions and test their ideas. Investigate and solve problems.	Open investigations to experience the phenomenon, collect evidence through observation and measurement, test ideas and try to answer questions. Investigation of text-based materials (e.g. newspaper articles, web-based articles) with consideration given to aspects of critical literacy, including making judgments about the reliability of the sources or the scientific claims made in the texts.
Explain	Introduce conceptual tools that can be used to interpret the evidence and construct explanations of the phenomenon. Construct multi-modal explanations and justify claims in terms of the evidence gathered. Compare explanations generated by different students/groups.	Student reading or teacher explanation to access concepts and terms that will be useful in interpreting evidence and explaining the phenomenon. Small group discussion to generate explanations, compare ideas and relate evidence to explanations. Individual writing, drawing and mapping to clarify ideas and explanations. Formative assessment to provide feedback to teacher and students about development of investigation skills and conceptual understandings. Small group writing/design to generate a communication product (e.g. poster, oral report, formal written report or PowerPoint presentation, cartoon strip, drama presentation, letter) with attention to form of argumentation, genre form/function and audience, and with integration of different modes for representing science ideas and findings.
Elaborate (extend)	Use and apply concepts and explanations in new contexts to test their general applicability. Reconstruct and extend explanations and understandings using and integrating different modes, such as written language, diagrammatic and graphic modes, and mathematics.	Further investigations, exercises, problems or design tasks to provide an opportunity to apply, clarify, extend and consolidate new conceptual understandings and skills. Further reading, individual and group writing may be used to introduce additional concepts and clarify meanings through writing. A communication product may be produced to re-represent ideas using and integrating diverse representational modes and genres consolidating and extending science understandings and literacy practices.
Evaluate	Provide an opportunity for students to review and reflect on their own learning and new understandings and skills. Provide evidence for changes to students' understandings, beliefs and skills.	Discussion of open questions or writing and diagrammatic responses to open questions – may use same/similar questions to those used in Engage phase to generate additional evidence of the extent to which the learning outcomes have been achieved. Reflections on changes to explanations generated in Engage and Evaluation phases to help students be more metacognitively aware of their learning.

Building on a Theme Lesson Planner



Analyze the Prompt

Underline the verb. Determine action to be completed. Complete the chart.

Do	What

Analyze the Source Text

Reminder – List key words from the prompt.	
Identify relationships within the text.	
Identify evidence that supports the claim made in the text.	

Preparing the Response

Steps in Scientific Method	What text tells you
Observe	Topsoil is about 20 centimeters in thickness. Farmer knows two method to reduce soil erosion 1) Not till 2) Winter cover crop 3)
Hypothesize	Believes either method 1 or 2 will be better than traditional method (plowing and no cover)
Experiment	Has 30 acres of farmland so could use all 3 methods (10 acres per method). Use traditional method as control group. Conduct experiment for 1 year.
Collect Data	Measure topsoil in each group monthly and record data in a log to show comparison
Evaluate Results	Analyze data to see how the 2 variable methods compared to the control group

Scientific Method Flow Chart

Use this chart to organize the data for your science experiment.

Describe the problem or ask a question

State the Hypothesis

Design the Experiment

Describe the control group

Describe the experimental group

Dependent Variables

Independent Variables

Collect Data

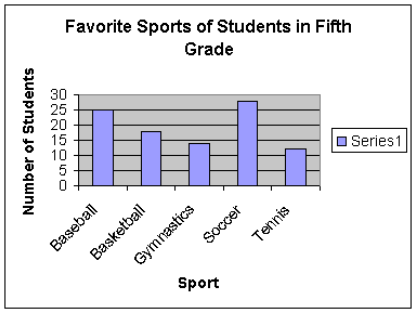
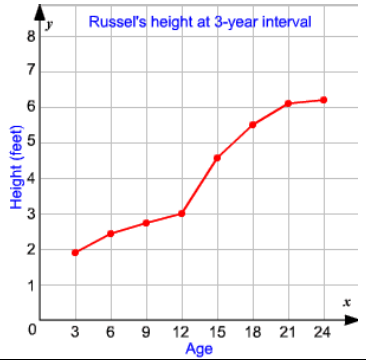
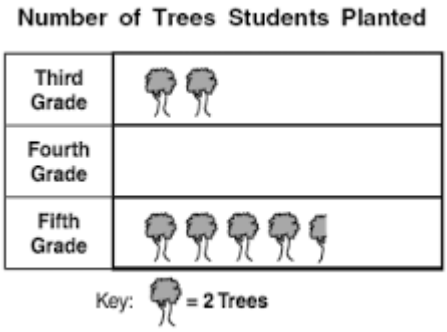
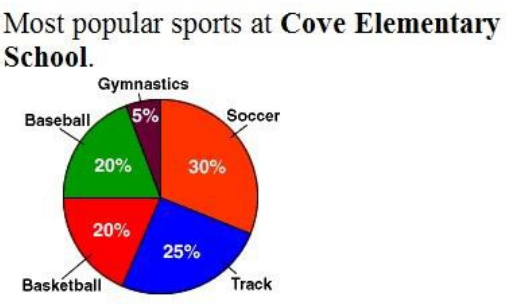
Conclusions

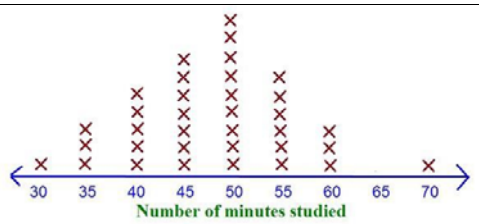
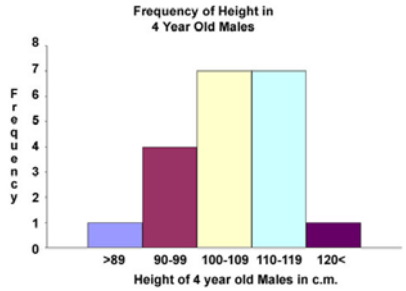
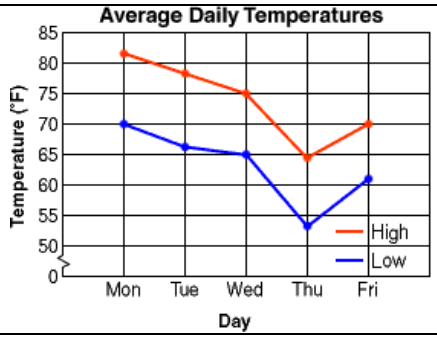
Experimental Design Graphic Organizer

What do you notice about what you are studying?
What is your question?
What is your hypothesis?
How will you set up your experiment? What are your controlled (things that stay the same) and experimental (one change) variables?
How will you collect your data?
How do you know if your hypothesis is right? If . . . then . . .
How will you show your results?

Developed by S.J. Schmidt. Appalachian State University. http://abspd.appstate.edu/teaching-resources

Types of Graphs

Type of Graph	Example	When do I want to use this kind of graph?
A bar graph presents data so that comparisons of different items can be made		• Used to compare the frequency of data • Use a bar graph when you want to compare 2 or more sets of data
A line graph presents data on one item so that changes and trends over time can be identified and comparisons can be made		• Use when you have continuous data • Use when you want to show changes over time
A pictograph presents data using pictures or symbols		• Each picture or symbol represents and assigned amount of data • The key tells the number that each picture or symbol represents • Use when you have large amounts of data that is too big for a bar graph • Use when you only have 2 to 6 categories
A circle graph shows how parts are related to the whole		• Use when you want to show how a total amount of data is divided into parts • Can be used to show percentages • Use when you have 3 to 7 categories

A line plot shows the frequency of data values. The range determines the number line. The x represents the data value.		• Useful when finding the range, mode, mean, and median of a set of data • Easy to identify outliers and clusters • An outlier is a piece of data that is set far apart from the rest of the data • A cluster is where data tends to group together • Best to use this graph when you have a small range
A histogram is a bar graph that shows the frequency of equal intervals of data		• Different than a bar graph because it uses intervals instead of individual numbers and the bars touch • The intervals must not overlap • Good to use with continuous data (ex: weight, height, time, etc.)
A stem and leaf plot is a special table where each data value is split into a “stem” and a “leaf”	Grades on a Science Test Stem | Leaf 7 | 2 2 4 5 6 9 8 | 1 4 5 7 7 9 9 | 0 1 3 5 8 10 | 0 0 Key: 7 / 2 means 72 percent	• The stem is the first digit(s) and the leaf is the last digit in a data value • Ex: In the number 72, the digit 7 is the stem and the digit 2 is the leaf • Useful when organizing numerical data
A double line graph is a line graph used to compare two sets of data		• Useful to compare how two things change over time • Each set of data is graphed separately but on the same grid • A key identifies the sets of data

Types of Graphs – Julie Rozier – Teachers Pay Teachers (Free Digital Download) https://www.teacherspayteachers.com/Product/Types-of-Graphs-Graphic-Organizer-2373146

Question and Answer Relationships - QAR

QAR is a reading technique, whose acronym stands for Question and Answer Relationships. Incorporating QAR can assist students in better comprehending graphics and using that information to correctly answer questions. To incorporate the QAR taxonomy in analyzing graphics, the following three steps need to be instituted:

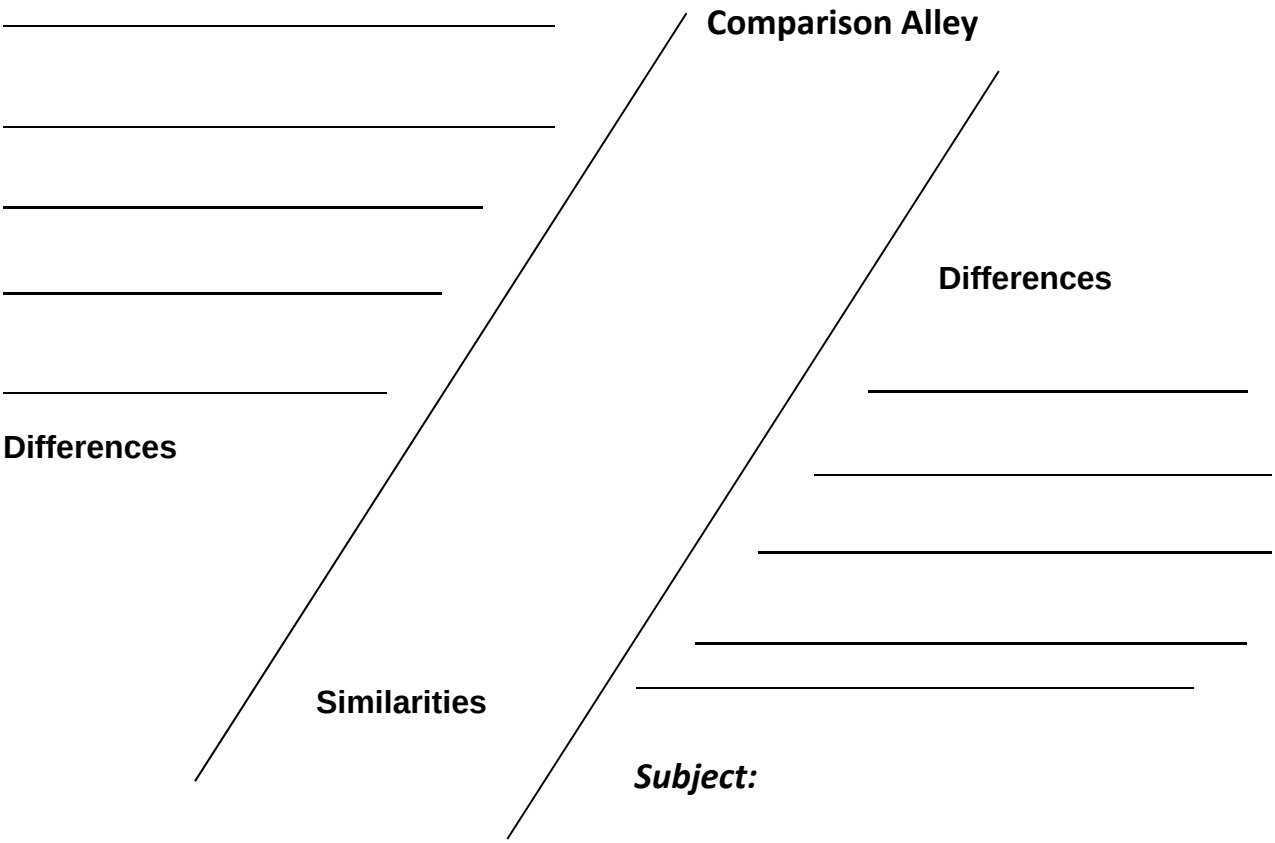
- Identify the type of graphic to be analyzed
- Understand relationships in graphics
- Use QARs with questions and graphics

Right There The answer is in the graphic. The answer is usually easy to find. (You can put your finger on the page and point to the answer.) The words used to make up the question and **the words or numbers used to answer the question are Right There** in the graphic, often as one or more of the labels.	**Author and You** The answer is not in the graphic. You can use the information you **already know** about the topic. **AND** Any information the **author has provided in the paragraph or graphic** to answer the question. Use your knowledge and the author's information to answer the question.
Think and Search The answer is in the graphic; however, you must **put together different graphic elements** (titles, legend, data) to reach the answer. The words in the question and the **words or numbers needed to answer the question are not the same.** **Think and Search** different sections or elements of the graphic to answer the question. More than one graphic may need to be consulted.	**On Your Own** The answer is **not in the graphic**. Using the information you **already know about the topic or based upon your experience,** you can answer the question. **HOWEVER** Reading the graphic will usually expand your knowledge and will help you give a specific or clearer answer to the question.

Adapted from Raphael, T. (1986). Teaching Question-Answer Relationships, Revised. *The Reading Teacher*. 39, 516-522 and Mesmer, H. A. E., & Hutchins, E. J. (2002). Using QARS with Charts and Graphs. *The Reading Teacher*, 56, 21-27.

Comparison Alley

Subject:



Getting the GIST– 5 Ws and H

Who?	
What?	
When?	
Where?	
Why?	
How?	

Write a GIST statement of 20 words or less that summarizes the text or graphic.

_____

_____

_____