Know Your Sources of Information

Consider your sources as you collect information regarding any difficult issues, especially issues that involve science.

With modern technologies, it is possible to find information on virtually any topic, but the quality and usefulness of the information to which you have access will vary. It is critical that you pay attention to where information is coming from, who is behind the information (their credibility, expertise, biases, etc.), and what you can and/or should do with that information. There is no single method for documenting the credibility and reliability of information and information sources, but here are some suggested questions to explore in your analysis of any information source. Keep in mind that not all of these questions will be pertinent for all information sources.

1. Who is (or what organization or company) presenting the information?

2. What is the purpose of the publication?

3. What expertise and/or relevant experience does the author (or organization or company) have?

4. What biases does the author (or organization or company) have and how might those biases affect the presentation of information?

5. Does the information presented seem to be accurately reported? Are the claims made in the presentation supported? Do any facts or analyses seem to be distorted?

6. Does the presentation leave important information out? Does the presentation offer information that is unnecessary (particularly if the extra information distorts the message)?

Ethanol Links. Each group will pick two of the following to research using the questions on the front of this page and report back to the group.

http://greenthefuture.com/ETHANOL_PROSCONS.html

http://corn-ethanol.weebly.com/index.html

http://healthresearchfunding.org/pros-cons-ethanol-fuel/

http://www.greencarreports.com/news/1077734_ethanol-in-your-gasoline-tank-the-pros-and-cons

http://alternativeenergy.procon.org/view.answers.phy?questionID=001261

http://www.clearpictureonline.com/SO-Ethanol.html

http://www.consumerreports.org/cro/2011/01/the-great-ethanol-debate/index.htm

http://www.iowacorn.org/en/ethanol/

http://www.scientificamerican.com/article/ethano-not-cut-emissions/

http://necsi.edu/research/social/foodprices/RFS/mythsandfacts

http://www.epa.gov/renewable-fuel-standard-program

http://en.wikipedia.org/wiki/Ethanol_fuel_in_the-United_States

http://www.afdc.energy.gov/fuels/ethanol.html

Learning Log

To get the most out of your classes, you should write about what you did, what you learned, and what questions you still have about the topic. This type of writing is an excellent way to prepare for exams and papers because you use writing to discover and clarify ideas, and you "uncover" what you don't know as you try to articulate your learning.

After a class activity, lecture or event, make conscious decisions about the focus of your learning log. It is possible that you will need to select several focus areas to thoroughly write about a given class. Be sure to organize and label your log in a way that makes it an effective learning tool.

*If you want to **recap your learning**, try some of these prompts:*
- What did I learn in class today? How did I learn it?
- What was especially interesting about class today? Why?
- What do I now know about this topic that I didn't know before class?
- An important activity I was involved in today was…and it affected my learning by …
- By taking today's test, I learned…

*If you are feeling **confident** with the content, try some of these prompts:*
- What questions did I have that were answered today?
- How would I explain to someone else how to do what I learned to do today?
- What steps would I use to teach what I learned to a group of my peers?
- In what other ways can I demonstrate my understanding of this topic (pictures, diagrams, etc)?
- What do I wonder about this topic now that I understand it better? How could I find out the answers?

*If you are feeling **confused or need clarification**, try some of these prompts:*
- What confuses me about this topic?
- What questions do I have about this topic? How will I find answers?
- Something I'm still confused about is… because …
- One things I'd like to know (or think) more about is… because …
- I think my teacher had us do… because…

*If you are feeling **inspired** or want to **validate** your learning, try these prompts:*
- What surprised me about this material? Why?
- Why is it important that I know this information? How can I use it?
- What I learned today will help me because…
- The most important idea I got from the discussion was… and I can use it to…
- Today's learning changed my belief that… I now understand…
- Today's learning clarified my misconception that… My new knowledge reveals that…

*If you want to **extend or apply your learning**, try these prompts:*
- What do I want to learn more about? How will I do this?
- How does this material connect to ideas or information I already know?
- I can relate what I learned today and what I learned in another class by…
- The video I watched related to the course in the following way…

*If you want to **examine group and discussion interaction**, try these prompts:*
- In what ways did I participate in the discussion today? How can I improve for the next discussion?
- How can I encourage others to participate more in our next discussion?
- How did I work with my group today? How can I improve next time?
- What was challenging about working in my group today? How can I deal with this challenge?

PART A: INTIAL MODEL

On the back of this page, draw your ideas for all of the sources where the water we use comes from and how it cycles through our lives. Consider both above and below ground and connections between all human uses for water. Feel free to draw elements of the water cycle you may have learned earlier in school, and please focus on human usage of water.

In your drawing:

- Include what you think are the very most important things that happen with water
- Include actions and/or changes that water might go through. This might include changes in physical or chemical states, above and below ground, etc.
- If helpful, use words and/or numbers to express your ideas about water

Before you start drawing, think first about these ideas, and identify *how* and *why* water is moving and changing through the natural and human changed environments. Include these ideas in your illustration. W
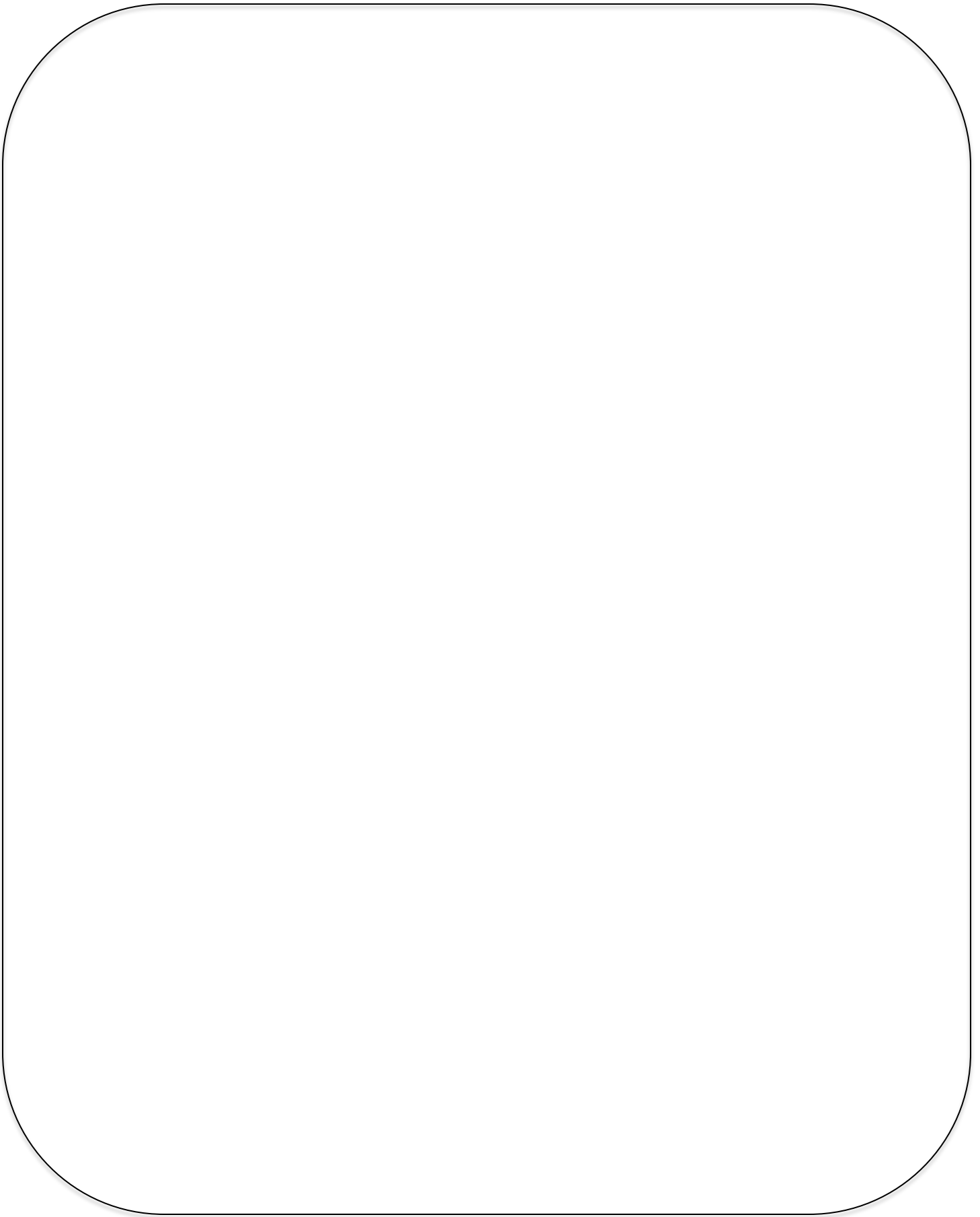
Step one: Draw the water cycle on the back of this page paying close attention to the human uses for water and how water moves through the environment. When you are done, use your illustration to answer the questions below:

Use your drawing to answer these questions:

A. **How** and **why** do you think this is how water moves?

B. **How** do you know?

Initial Water Cycle Model

PART B: Model Evaluation and Revision

o   On a scale of 1 to 5 (1 is the lowest, 5 is the highest) how well does my first model explain the movement of water through natural and human changed environments?

o   Why did you give your model the rating that you did?

o   In what ways should your model be revised to explain water movement? List those below.

o   **How** and **why** do you now think this is how water moves?

o   **How** do you now know?

In the box on the back of this page, draw a new illustration that incorporates your revisions for where water comes from and where it goes:

Revised Water Cycle Model

PART C: Final Model

Using your models from Part A and Part B along with your new understanding of water movement, On the back of this page, draw your ideas for all of the sources where the water we use comes from and how it cycles through our lives. Consider both above and below ground and connections between all human uses for water. Feel free to draw elements of the water cycle you may have learned earlier in school, and please focus on human usage of water.

Large systems, like the water cycle, have feedback loops. These feedback loops maintain a balance or equilibrium in the system.   If variables are changed in the water cycle, the feedback loop might be disrupted which then disrupts equilibrium. Discuss your understanding of how the water cycle works when all variables are balanced and how changing certain variables might affect other parts of the water cycle and the overall system on Earth.

Stream & Lake Health Guide

1. Location: _____

2. General Data
    a. Width   _____
    b. Water Flow rate   _____
    c. Water Flow Volume   _____
    d. Air Temperature   _____
    e. Wind Speed and Direction   _____
    f. Turbidity   _____
    g. Trash, Human Disturbance   _____   0 Heavy, 1 Moderate, 2 Little

3. Water Chemistry
    a. Nitrate   _____ <1 ppm = 1pt,   >1 ppm = 0   _____
    b. Phosphate   _____ <0.2 ppm = 1pt   >0.2 ppm = 0   _____
    c. pH   _____ 6 to 9 = 1pt, outside of range = 0 _____
    d. Temperature   _____ <26=1, >26=0, >35=-1   _____
    e. Dissolved Oxygen   _____

        Dissolved Oxygen % Saturation _____
        (use chart on back to calculate) >80% = 2pt, 70-80%=1, <70 = 0   _____
4. Aquatic Biological Indicators
    a. Group One Invertebrates present   _____   4pts   _____
    b. Group Two, but no Group 1   _____   2pt   _____
    c. Group Three =, but no other groups _____   0pts   _____

5. Coliform Bacteria   present = -1, absent = 1   _____

6. Summary
    10 = Healthy
    8-9 = Slight pollution (note if bacteria only)
    6-8 = Moderate pollution
    <6 = Significant pollution (note why)

                                              Overall Heath Score _____

Notes:

D.O. Percent (%) Saturation Sheet

D.O. (mg/L)

Temp (C)	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15*
0	7%	14%	21%	27%	34%	41%	48%	55%	62%	68%	75%	82%	89%	96%	103%
1	7%	14%	21%	28%	35%	42%	49%	56%	63%	70%	78%	85%	92%	99%	106%
2	7%	14%	22%	29%	36%	43%	51%	58%	65%	72%	80%	87%	94%	101%	109%
3	7%	15%	22%	30%	37%	45%	52%	60%	67%	74%	82%	89%	97%	104%	112%
4	8%	15%	23%	31%	38%	46%	53%	61%	69%	76%	84%	92%	99%	107%	115%
5	8%	16%	24%	31%	39%	47%	55%	63%	71%	78%	86%	94%	102%	110%	118%
6	8%	16%	24%	32%	40%	48%	56%	64%	72%	80%	88%	97%	105%	113%	121%
7	8%	17%	25%	33%	41%	50%	58%	66%	74%	83%	91%	99%	107%	116%	124%
8	8%	17%	25%	34%	42%	51%	59%	68%	76%	85%	93%	101%	110%	118%	127%
9	9%	17%	26%	35%	43%	52%	61%	69%	78%	87%	95%	104%	113%	121%	130%
10	9%	18%	27%	35%	44%	53%	62%	71%	80%	89%	98%	106%	115%	124%	133%
11	9%	18%	27%	36%	45%	54%	64%	73%	82%	91%	100%	109%	118%	127%	136%
12	9%	19%	28%	37%	46%	56%	65%	74%	84%	93%	102%	112%	121%	130%	139%
13	10%	19%	29%	38%	48%	57%	67%	76%	86%	95%	105%	114%	124%	133%	143%
14	10%	19%	29%	39%	49%	58%	68%	78%	87%	97%	107%	117%	126%	136%	146%
15	10%	20%	30%	40%	50%	60%	70%	79%	89%	99%	109%	119%	129%	139%	149%
16	10%	20%	30%	41%	51%	61%	71%	81%	91%	102%	112%	122%	132%	142%	152%
17	10%	21%	31%	41%	52%	62%	73%	83%	93%	104%	114%	124%	135%	145%	155%
18	11%	21%	32%	42%	53%	63%	74%	85%	95%	106%	116%	127%	138%	148%	159%
19	11%	22%	32%	43%	54%	65%	76%	86%	97%	108%	119%	130%	140%	151%	162%
20	11%	22%	33%	44%	55%	66%	77%	88%	99%	110%	121%	132%	143%	154%	165%
21	11%	22%	34%	45%	56%	67%	79%	90%	101%	112%	124%	135%	146%	157%	169%
22	11%	23%	34%	46%	57%	69%	80%	92%	103%	115%	126%	138%	149%	161%	172%
23	12%	23%	35%	47%	58%	70%	82%	93%	105%	117%	129%	140%	152%	164%	175%
24	12%	24%	36%	48%	60%	71%	83%	95%	107%	119%	131%	143%	155%	167%	179%
25	12%	24%	36%	49%	61%	73%	85%	97%	109%	121%	133%	146%	158%	170%	182%
26	12%	25%	37%	49%	62%	74%	87%	99%	111%	124%	136%	148%	161%	173%	185%
27	13%	25%	38%	50%	63%	75%	88%	101%	113%	126%	138%	151%	164%	176%	189%
28	13%	26%	38%	51%	64%	77%	90%	102%	115%	128%	141%	154%	166%	179%	192%
29	13%	26%	39%	52%	65%	78%	91%	104%	117%	130%	143%	156%	169%	183%	196%
30	13%	27%	40%	53%	66%	80%	93%	106%	119%	133%	146%	159%	172%	186%	199%
31	13%	27%	40%	54%	67%	81%	94%	108%	121%	135%	148%	162%	175%	189%	202%
32	14%	27%	41%	55%	69%	82%	96%	110%	124%	137%	151%	165%	179%	192%	206%
33	14%	28%	42%	56%	70%	84%	98%	112%	126%	140%	154%	168%	182%	196%	209%
34	14%	28%	43%	57%	71%	85%	99%	113%	128%	142%	156%	170%	184%	199%	213%
35	14%	29%	43%	58%	72%	87%	101%	115%	130%	144%	159%	173%	188%	202%	216%
36	15%	29%	44%	59%	73%	88%	103%	117%	132%	147%	161%	176%	191%	205%	220%
37	15%	30%	45%	60%	75%	89%	104%	119%	134%	149%	164%	179%	194%	209%	224%
38	15%	30%	45%	61%	76%	91%	106%	121%	136%	151%	166%	182%	197%	212%	227%
39	15%	31%	46%	61%	77%	92%	108%	123%	138%	154%	169%	184%	200%	215%	230%

* If D.O. is greater than 15 mg/L then use the formula
on page. 175 in your Stream Keepers Field Guide:

$$\frac{\text{Actual Dissolved Oxygen (mg/L)}}{\text{Max Oxygen Concentration at Water Temp}}$$

PART A: INTIAL MODEL

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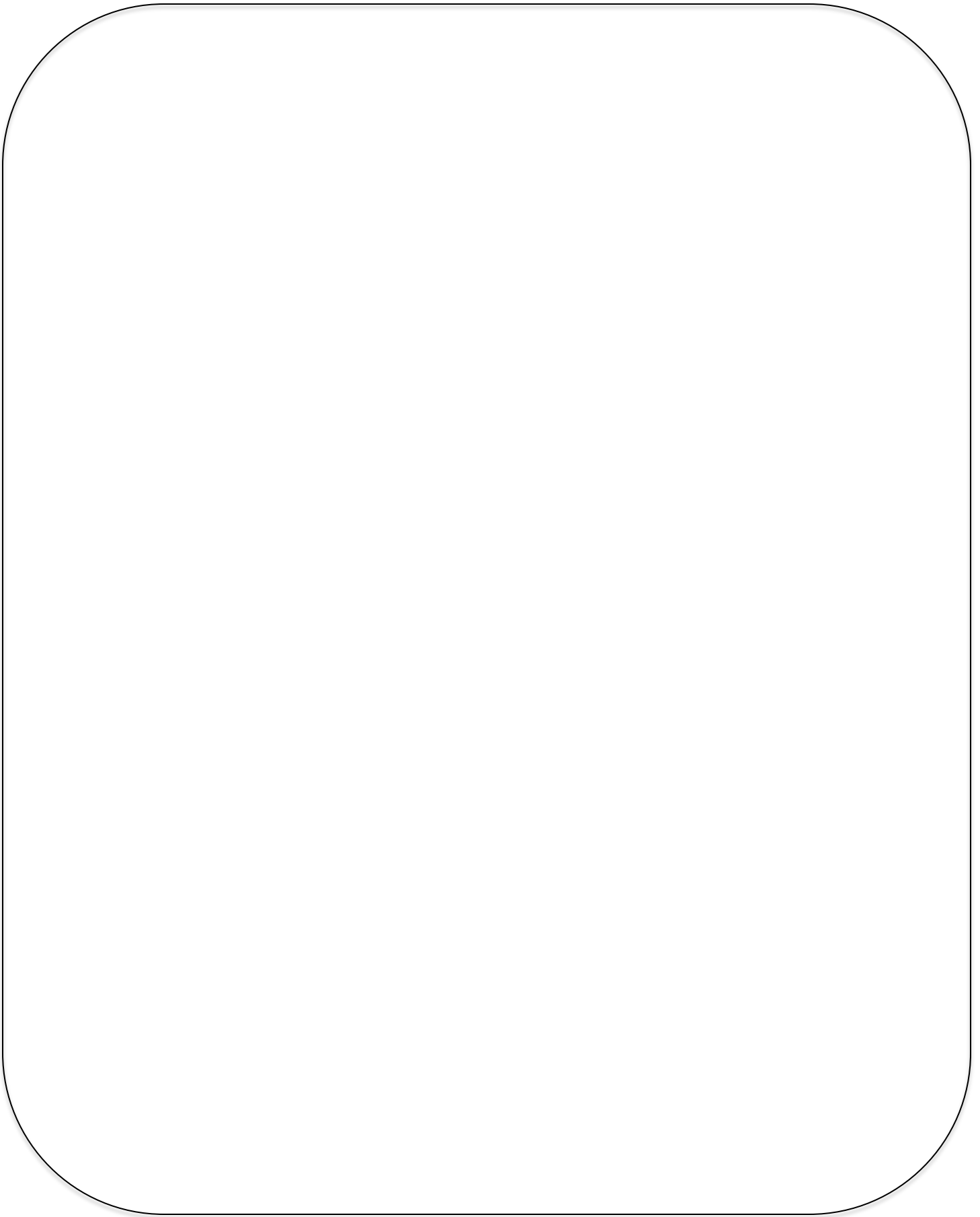
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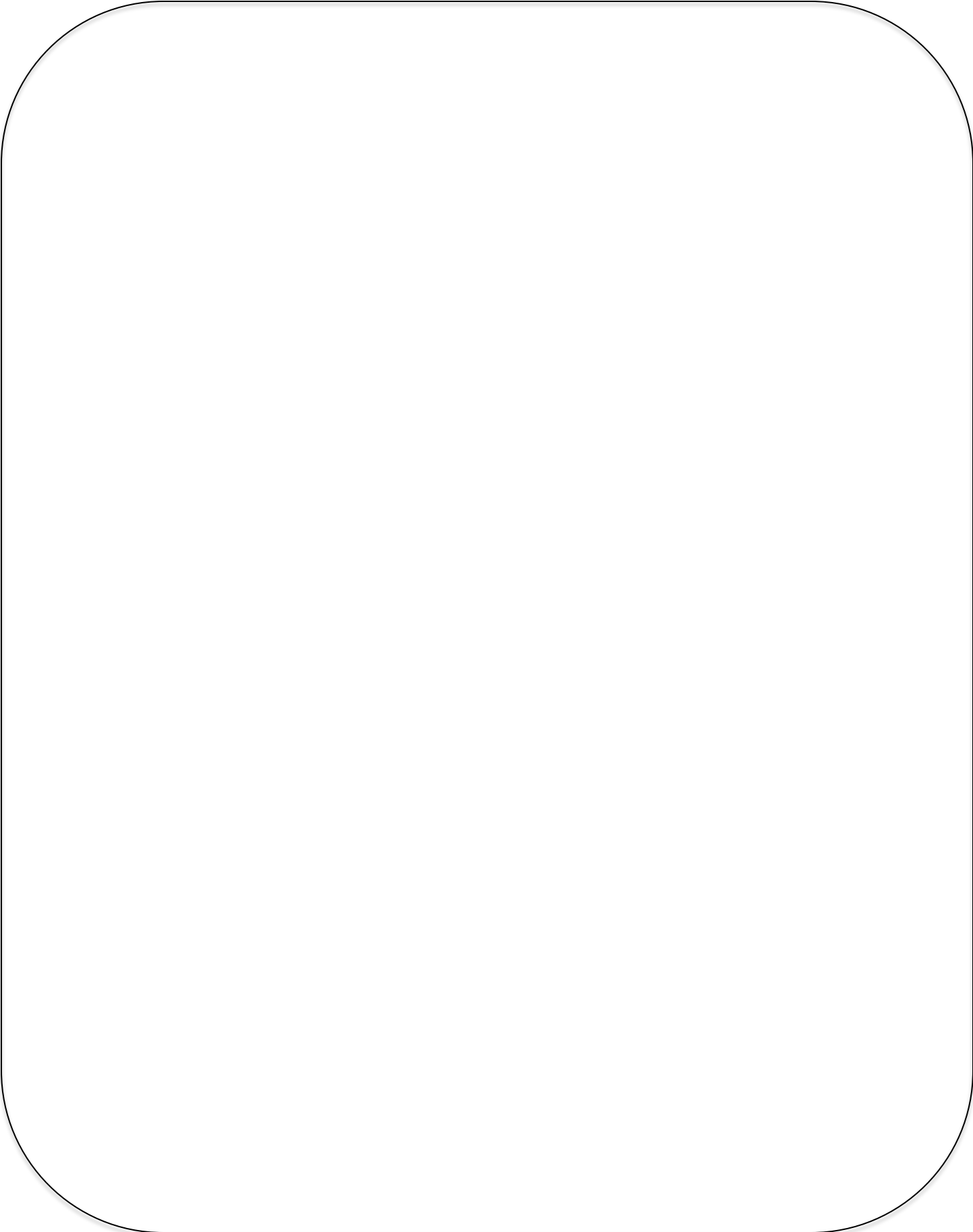
Use your drawing to answer these questions:

A. **How** and **why** do you think this is how water moves?

B. **How** do you know?
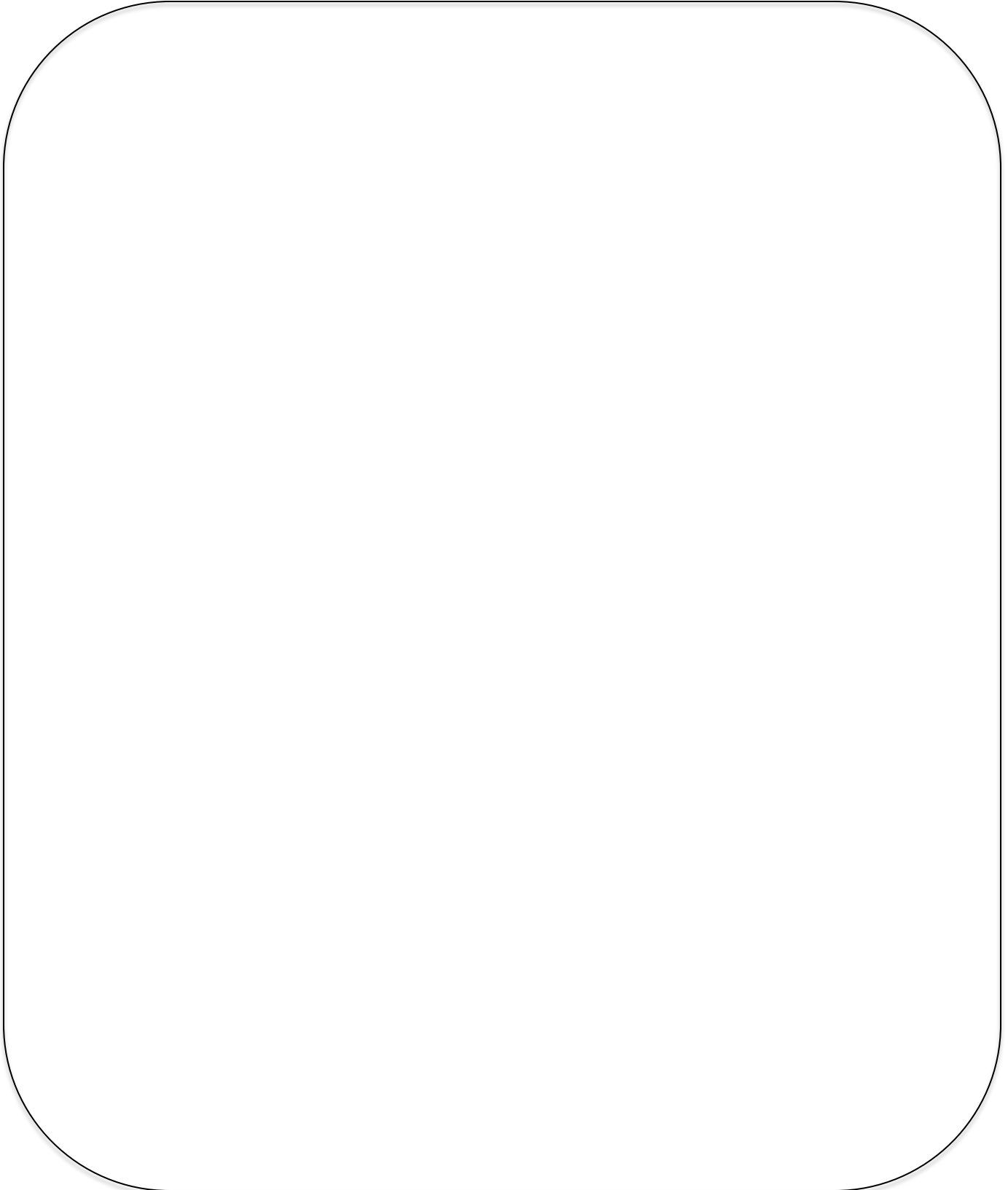
Initial Water Cycle Model

PART B: Model Evaluation and Revision

o   On a scale of 1 to 5 (1 is the lowest, 5 is the highest) how well does my first model explain the movement of water through natural and human changed environments?

o   Why did you give your model the rating that you did?

o   In what ways should your model be revised to explain water movement? List those below.

o   **How** and **why** do you now think this is how water moves?

o   **How** do you now know?

In the box on the back of this page, draw a new illustration that incorporates your revisions for where water comes from and where it goes:

Revised Water Cycle Model

PART C: Final Model

Using your models from Part A and Part B along with your new understanding of water movement, On the back of this page, draw your ideas for all of the sources where the water we use comes from and how it cycles through our lives. Consider both above and below ground and connections between all human uses for water. Feel free to draw elements of the water cycle you may have learned earlier in school, and please focus on human usage of water.

Large systems, like the water cycle, have feedback loops. These feedback loops maintain a balance or equilibrium in the system. If variables are changed in the water cycle, the feedback loop might be disrupted which then disrupts equilibrium. Discuss your understanding of how the water cycle works when all variables are balanced and how changing certain variables might affect other parts of the water cycle and the overall system on Earth.

Food Web and Ecological Pyramid Handout
1. *In small groups, pick an ecosystem we have studied in class and create a food web that outlines the flow of energy within this ecosystem. See the definitions below to help describe your species to your classmates.*
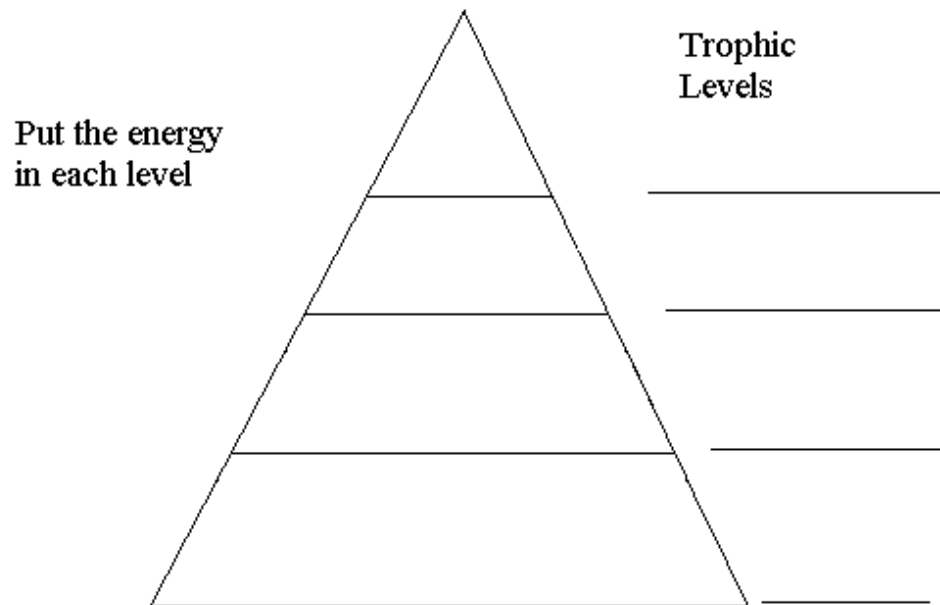
Niche: the role of the organism in its environment (could be general or specific; ex: how it contributes, position in the food chain, producer, consumer, decomposer, etc.)

Habitat: the specific place where an organism lives

2. *Go back to your food web and label, color code, symbolize, etc. the following individuals:*
    - Producer- autotrophs, organisms that can make their own energy
    - Consumer- heterotrophs, organisms that must intake their energy
        o Primary consumer- eats producers
        o Secondary consumer- eats primary consumers
        o Tertiary consumer- eats secondary consumer
        o NOTE: organisms can be at multiple tropic levels
    - Herbivore- consumers that only each plants
    - Carnivore- consumers that only eat other animals
    - Omnivore- consumers that eat both plant/animals
    - Decomposer- organisms that break down dead organic matter (recycle nutrients back to soil)

3. *Outline one food chain (include a producer, primary, secondary, and tertiary consumer) below.*

4. *Use your food chain to create an energy pyramid that shows the amount of available energy at different trophic levels. Assume that 1,000,000 kcal of energy from the sun fuels this food chain.   Only 1% of this energy gets stored in the producers. Only 10% of the energy at one trophic level is available to the next level, while the rest is "lost" as heat energy (think about what you know about cellular respiration).*

Trophic
Levels

Put the energy
in each level

_____

_____

_____

_____

Model Evaluation

Using the Visual Model strand from the rubric, evaluate each model.

	4	3	2	1
Visual Model	Clearly shows specific, relevant, thoughtful, and accurate cause/effect relationships that predict changes in the water cycle.	Shows specific, relevant, and accurate cause/effect relationships that predict changes in the water cycle.	Attempts to show cause/effect relationships that predict changes in the water cycle but is limited and/or general; may lack relevance and/or accuracy.	Attempts to show cause/effect relationships that predict changes in the water cycle, but is confusing or incomplete.

1. Model 1 Score _____
   a. Defend your score by explaining how the criteria from the rubric are met by the model.

   b. What could be added/modified about this model to make it more effective? What have you learned about creating an effective visual model from this example?

2. Model 2 Score _____
   c. Defend your score by explaining how the criteria from the rubric are met by the model.

   d. What could be added/modified about this model to make it more effective? What have you learned about creating an effective visual model from this example?
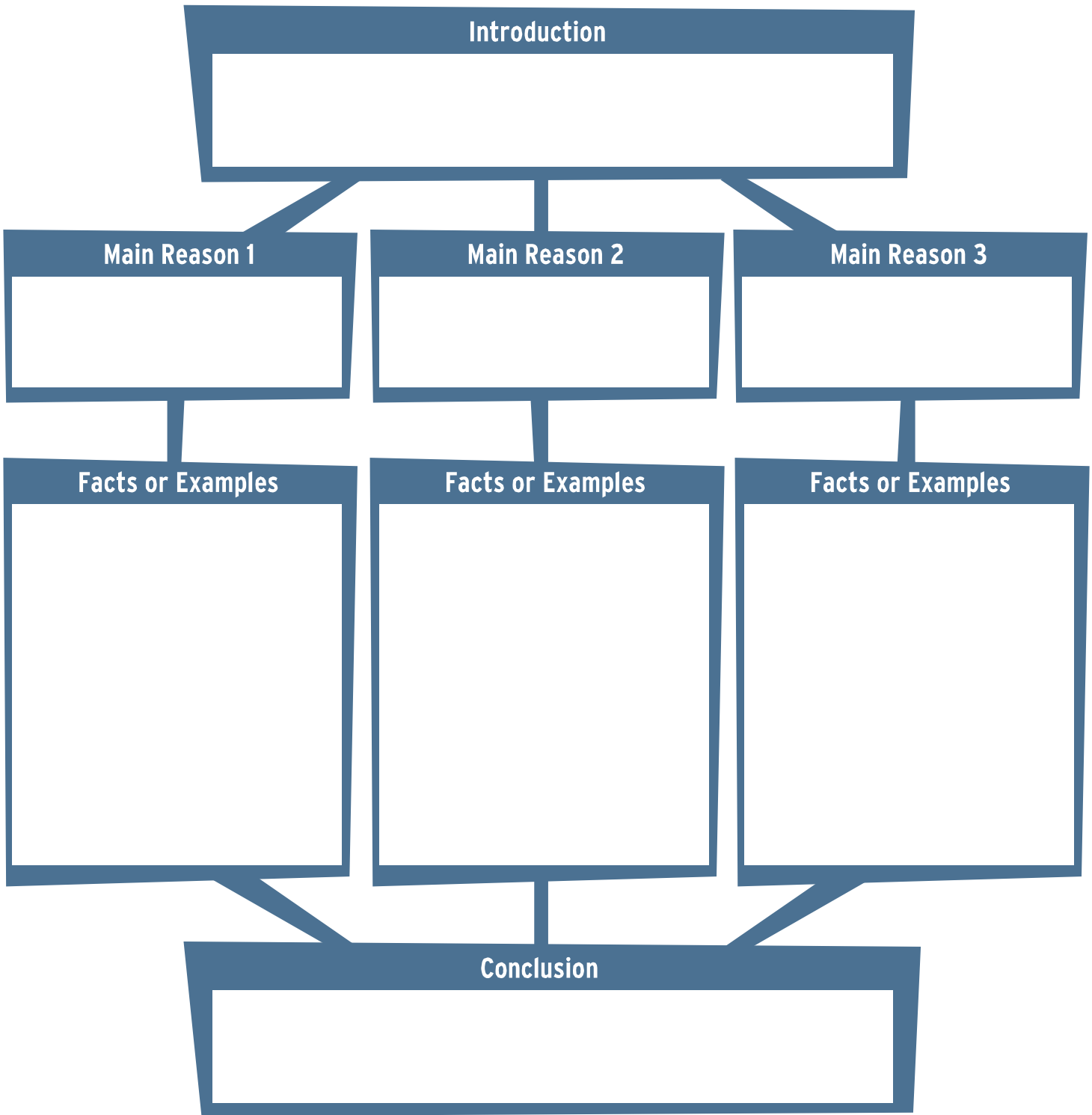
3. Model 3 Score _____

e. Defend your score by explaining how the criteria from the rubric are met by the model.

f. What could be added/modified about this model to make it more effective? What have you learned about creating an effective visual model from this example?

PERSUASION MAP

by: _____

topic: _____

Introduction

Main Reason 1

Main Reason 2

Main Reason 3

Facts or Examples

Facts or Examples

Facts or Examples

Conclusion

Persuasive Essay : Position Paper

Teacher Name: **N Sledge**

Student Name: _____

CATEGORY	4 - Above Standards	3 - Meets Standards	2 - Approaching Standards	1 - Below Standards	Score
Attention Grabber	The introductory paragraph has a strong hook or attention grabber that is appropriate for the audience. This could be a strong statement, a relevant quotation, statistic, or question addressed to the reader.	The introductory paragraph has a hook or attention grabber, but it is weak, rambling or inappropriate for the audience.	The author has an interesting introductory paragraph but the connection to the topic is not clear.	The introductory paragraph is not interesting AND is not relevant to the topic.	
Focus or Thesis Statement	The thesis statement clearly names the topic of the essay and outlines the main points to be discussed. The author's position is strongly and clearly stated.	The thesis statement names the topic of the essay. The author's position is stated	The thesis statement outlines some or all of the main points to be discussed but does not name the topic.	The thesis statement does not name the topic AND does not preview what will be discussed.	
Support for Position	Includes 3 or more pieces of evidence (facts, statistics, examples, real-life experiences) that support the position statement. The writer anticipates the reader's concerns, biases or arguments and has provided at least 1 counter-argument.	Includes 3 or more pieces of evidence (facts, statistics, examples, real-life experiences) that support the position statement.	Includes 2 pieces of evidence (facts, statistics, examples, real-life experiences) that support the position statement.	Includes 1 or fewer pieces of evidence (facts, statistics, examples, real-life experiences).	
Evidence and Examples	All of the evidence and examples are specific, relevant and explanations are given that show how each piece of evidence supports the author's position.	Most of the evidence and examples are specific, relevant and explanations are given that show how each piece of evidence supports the author's position.	At least one of the pieces of evidence and examples is relevant and has an explanation that shows how that piece of evidence supports the author's position.	Evidence and examples are NOT relevant AND/OR are not explained.	

Sequencing	Arguments and support are provided in a logical order that makes it easy and interesting to follow the author's train of thought.	Arguments and support are provided in a fairly logical order that makes it reasonably easy to follow the author's train of thought.	A few of the support details or arguments are not in an expected or logical order, distracting the reader and making the essay seem a little confusing.	Many of the support details or arguments are not in an expected or logical order, distracting the reader and making the essay seem very confusing.	
Writing Mechanics	Piece is clearly written with no grammar, spelling, punctuation, or capitalization errors.	Author paid attention to writing conventions; Minor errors do not distract from meaning.	Errors may be present and may slightly take away from the clarity; yet, the writer's meaning can be determined.	Errors make it difficult to read and/or understand the paper.	
Closing Paragraph	The conclusion is strong and leaves the reader solidly understanding the writer's position. Effective restatement of the position statement begins the closing paragraph and is followed by an effective summary of the essay body.	The conclusion is recognizable. The author's position is restated within the first two sentences of the closing paragraph and is followed by a summary of the essay body.	The author's position is restated within the closing paragraph, but not near the beginning. The essay body is not summarized.	There is no conclusion - the paper just ends.	

Overall Score:_____
Comments:

PART A: INTIAL MODEL

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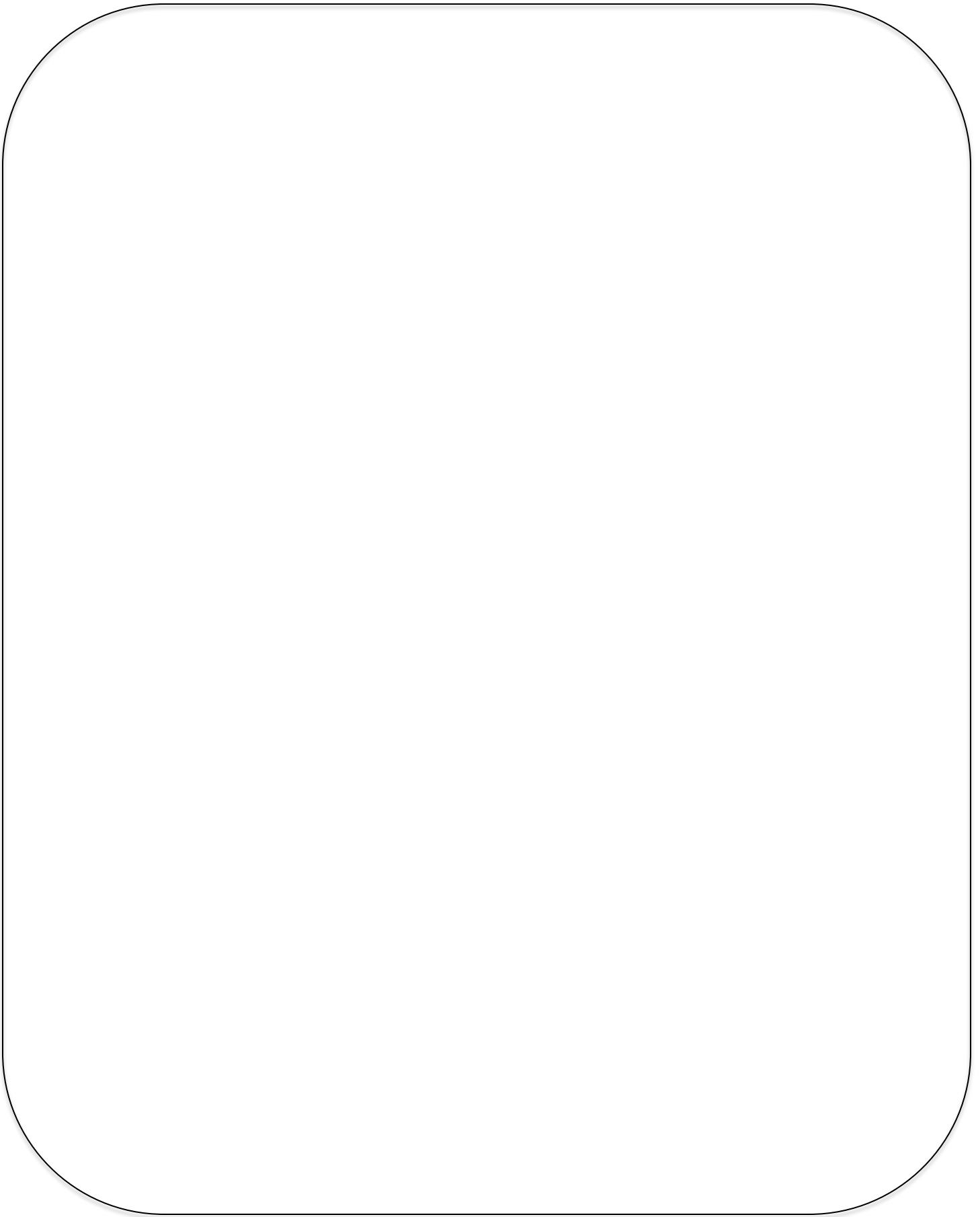
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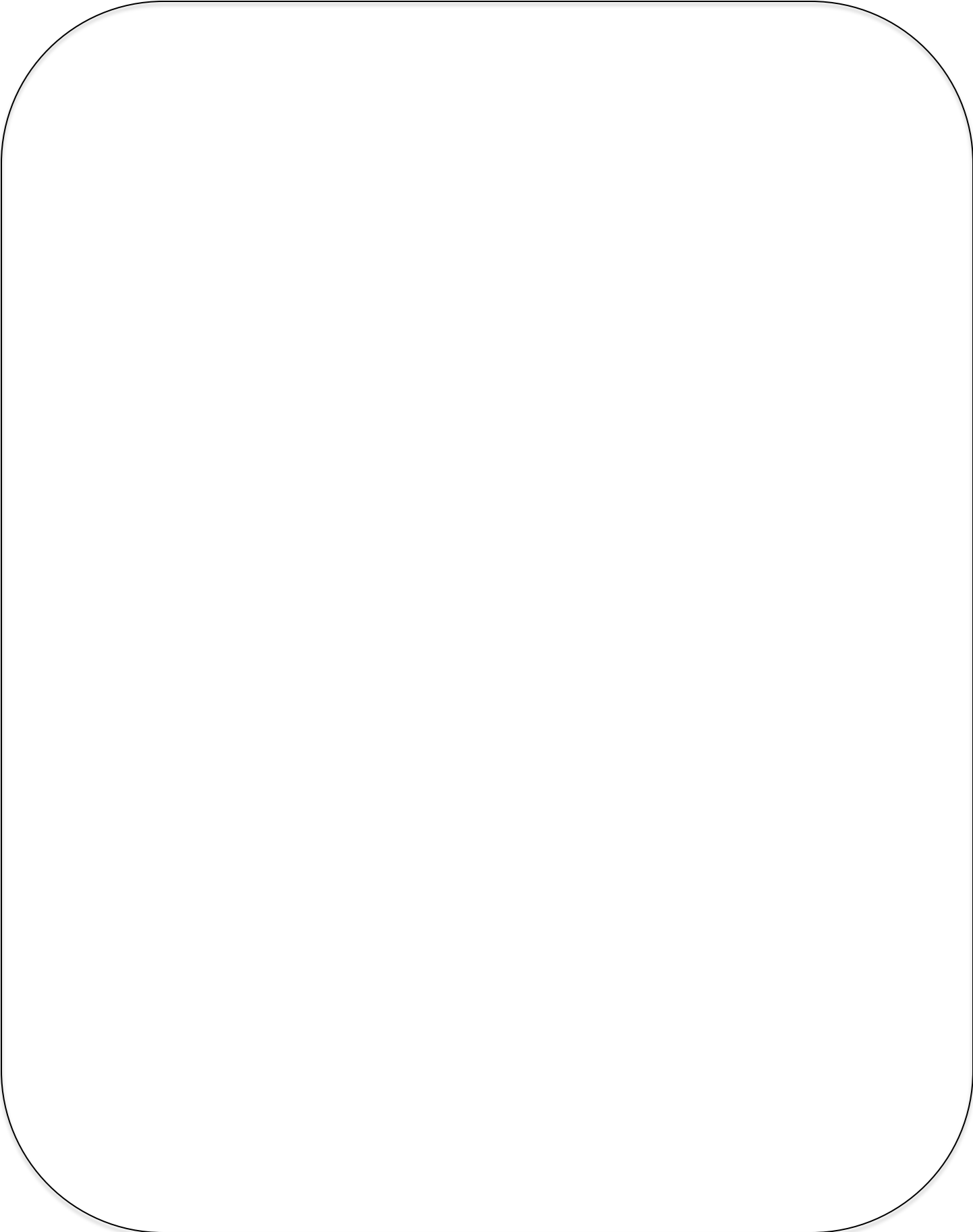Use your drawing to answer these questions:

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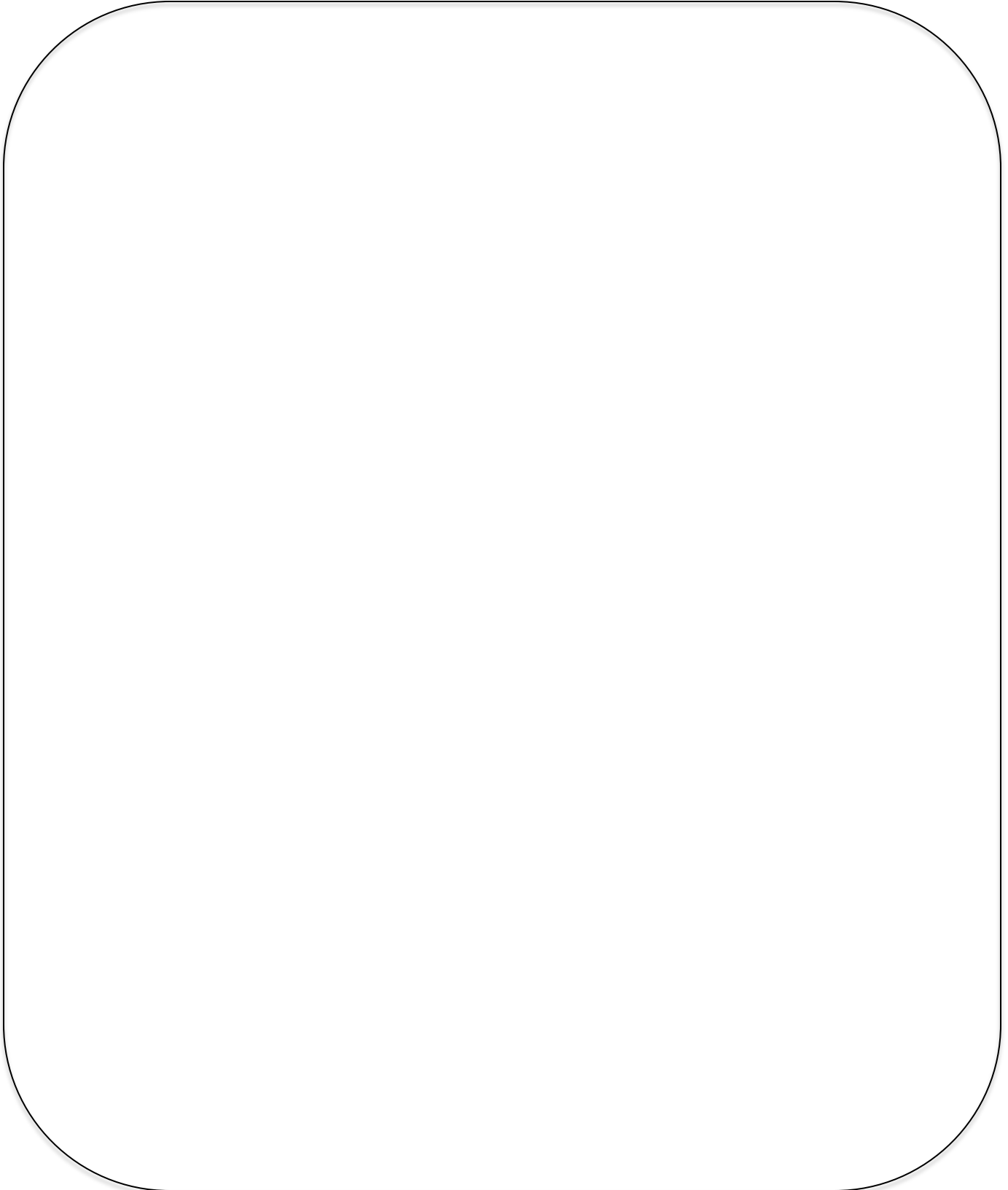
Initial Water Cycle Model

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