

Student Assessment Handout - Diagramming Water Pathways

We have been learning about the hydrologic cycle, specifically how it works in Baltimore. On a white sheet of paper, please draw a diagram that shows both the natural and the human-constructed pathways of water. Make sure you include the following:

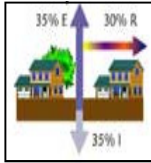
Natural: evaporation, precipitation, runoff, condensation, transpiration, infiltration, interception

Constructed: storm drain/sewer, asphalt (or other impervious surfaces), drinking water pipes, waste water pipes, gutters

If there are other elements you feel are necessary to your diagram, please feel free to include them!

Questions: (answer on a separate sheet of paper)

1. Based on your diagram, what are all of the different points where the natural and the constructed pathways of water in the city intersect?
2. How are the natural and the constructed pathways of water similar? How are they different?
3. What are some of the consequences of constructing a water pathway for the environment? How is it harmful to the environment? How can it help the environment?



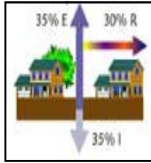
Rubric for Teachers - Diagramming Water Pathways

Teacher: _____ Date: _____

Student: _____

CATEGORY	4 – Above Standards	3 – Meets Standards	2 - Approaching Standards	1 - Below Standards
Natural Pathway Components	Includes all required components of the natural pathway, and also adds in extra details	Includes all required components of the natural water pathway	Includes at least five required components of the natural pathway	Includes less five required elements in their diagram
Constructed Pathway Components	Includes all required components of the constructed pathway, and also adds in extra details	Includes all required components of the constructed water pathway	Includes at least five required components of the constructed pathway	Includes less five required elements in their diagram
Neatness and Clarity	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.
Intersections	Identifies all possible intersections of the pathways of water given their illustration, and explains each of them clearly.	Identifies all possible intersections of the pathways of water given their illustration.	Identifies most intersections of the pathways of water given their illustration.	Identifies few, if any, pathway intersections given their illustration.
Similarities and Differences	Explains in detail the similarities and differences between the natural and constructed pathways, giving clear examples and details.	Explains the similarities and differences between the natural and constructed pathways.	Explains either the similarities or the differences between the pathways, or else does both with insufficient detail	States that there are similarities and differences but does not back up that assertion at all.

CATEGORY	4 – Above Standards	3 – Meets Standards	2 - Approaching Standards	1 - Below Standards
Consequences	Student identifies more than one harmful effect and more than one helpful effect of constructing water pathways in a city.	Student identifies at least one harmful effect and at least one helpful effect of constructing water pathways in a city	Student identifies one harmful effect or one helpful effect of constructing a water pathway in a city	Student identifies one harmful or one helpful effect of constructing a water pathway, but it is not accurate.



Student Assessment Handout – Graphing Data

Now that you've had a chance to practice graphing schoolyard data, take this opportunity to show your stuff and demonstrate that you know how to set up a graph. Pick a county in Maryland, and create a line graph or a bar graph (depending on which your teacher would like to see) of the amount of rainfall in that county for one year. Make sure you set up your graph appropriately, and use all units, as necessary!

Make sure to look at the rubric while you complete your assignment to make sure that you have all of the necessary parts on your graph!

Rainfall Data for Maryland Counties (average in inches)
Source: USDA/NRCS AWM SOFTWARE

County	Station	25yr-24 hr storm	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Yearly Total	Apr-Sep Total	Oct-Mar Total
Allegany	Cumberland	4.9	2.43	2.36	3.24	3.31	3.64	3.51	3.61	3.42	3.06	2.78	2.78	2.66	36.80	20.55	16.25
Anne Arundel	Annapolis	5.9	3.14	3	3.47	3.31	4.11	3.63	3.81	3.98	3.47	3.26	3.43	3.39	42.00	22.31	19.69
Baltimore	Cockeysville	5.5	3.22	3.06	3.66	3.61	4.48	3.97	3.97	4	3.75	3.29	3.77	3.64	44.42	23.78	20.64
Calvert	Prince Frederick	6.1	3.3	3.06	3.62	3.3	4.16	3.85	3.99	3.93	3.58	3.28	3.42	3.32	42.81	22.81	20.00
Caroline	Denton	6	3.44	3.06	3.67	3.36	4	3.72	3.89	4.3	3.6	3.16	3.31	3.51	43.02	22.87	20.15
Carroll	Westminster	5.4	2.97	2.77	3.42	3.48	4.23	3.93	3.59	3.46	3.62	3.27	3.47	3.31	41.52	22.31	19.21
Cecil	Elkton	5.6	3.15	2.84	3.43	3.59	4.1	4.03	4.18	4.02	3.75	3.17	3.47	3.61	43.34	23.67	19.67
Charles	La Plata	6	3.12	2.95	3.52	3.17	4	3.76	3.96	4.12	3.65	3.28	3.39	3.27	42.19	22.66	19.53
Dorchester	Cambridge	6.2	3.59	3.3	3.84	3.33	3.79	3.62	4.11	4.63	3.55	3.07	3.28	3.51	43.62	23.03	20.59
Frederick	Frederick	5.4	2.84	2.75	3.34	3.47	4.21	3.97	3.54	3.43	3.6	3.37	3.46	3.13	41.11	22.22	18.89
Garrett	Mt. Lake Park	4.8	3.11	2.92	3.97	4.08	4.42	4.13	4.74	3.97	3.39	3.13	3.42	3.54	44.82	24.73	20.09
Harford	Forest Hill	5.5	3.2	2.89	3.5	3.7	4.32	4.19	4.18	4.27	3.83	3.2	3.68	3.64	44.60	24.49	20.11
Howard	Woodbine	5.6	3.01	2.95	3.55	3.39	4.35	3.83	3.73	3.81	3.61	3.32	3.57	3.41	42.53	22.72	19.81
Kent	Chestertown	5.8	3.2	2.98	3.57	3.32	4.02	4.11	3.79	3.99	3.66	3.16	3.36	3.67	42.83	22.89	19.94
Montgomery	Derwood	5.6	2.81	2.79	3.34	3.24	4.21	3.81	3.72	3.81	3.58	3.27	3.39	3.15	41.12	22.37	18.75
Prince George's	Upper Marlboro	5.9	3.04	2.84	3.37	3.27	4.18	3.75	3.99	4.08	3.57	3.32	3.39	3.28	42.08	22.84	19.24
Queen Anne's	Centreville	5.9	3.32	2.99	3.56	3.31	4.01	3.92	3.79	3.97	3.6	3.17	3.36	3.62	42.62	22.60	20.02
Somerset	Prince Anne	6.4	3.42	3.26	3.94	3.12	3.36	3.27	3.94	4.76	3.47	3.13	3.08	3.24	41.99	21.92	20.07
St Mary's	Leonardtown	6.2	3.33	3.14	3.74	3.22	4.11	3.81	4.12	4.04	3.68	3.28	3.37	3.3	43.14	22.98	20.16
Talbot	Easton	6	3.51	3.17	3.72	3.36	4.07	3.68	3.97	4.25	3.55	3.14	3.38	3.6	43.40	22.88	20.52
Washington	Hagerstown	5.1	2.55	2.5	3.2	3.32	3.84	3.71	3.51	3.38	3.17	3.19	3.19	2.82	38.38	20.93	17.45
Wicomico	Salisbury	6.3	3.65	3.41	4.05	3.28	3.53	3.56	4.06	5.06	3.58	3.22	3.15	3.48	44.03	23.07	20.96
Worcester	Snow Hill	6.4	3.7	3.47	4.16	3.23	3.51	3.41	4.04	5.15	3.38	3.22	3.18	3.43	43.88	22.72	21.16

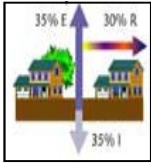
8/04

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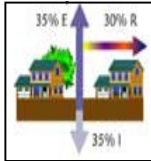
Rubric for Teachers – Graphing Data

Teacher: _____ Date: _____

Student: _____

CATEGORY	4	3	2	1
Title	Title is creative and clearly relates to the problem being graphed (includes dependent and independent variable). It is printed at the top of the graph.	Title clearly relates to the problem being graphed (includes dependent and independent variable) and is printed at the top of the graph.	A title is present at the top of the graph.	A title is not present.
Labeling of Y axis	The Y axis has a clear, neat label that describes the units and the dependent variable (e.g. % of dogfood eaten; degree of satisfaction).	The Y axis has a clear label that describes the units and the dependent variable (e.g. % of dogfood eaten; degree of satisfaction).	The Y axis has a label.	The Y axis is not labeled.
Labeling of X axis	The X axis has a clear, neat label that describes the units used for the independent variable (e.g. days, months, participants' names).	The X axis has a clear label that describes the units used for the independent variable.	The X axis has a label.	The X axis is not labeled.
Units	All units are described (in a key or with labels) and are appropriately sized for the data set.	Most units are described (in a key or with labels) and are appropriately sized for the data set.	All units are described (in a key or with labels) but are not appropriately sized for the data set.	Units are neither described NOR appropriately sized for the data set.
Neatness and Attractiveness	Exceptionally well designed, neat, and attractive. Colors that go well together are used to make the graph more readable. A ruler and graph paper (or graphing computer program) are used.	Neat and relatively attractive. A ruler and graph paper (or graphing computer program) are used to make the graph more readable.	Lines are neatly drawn but the graph appears quite plain.	Appears messy and "thrown together" in a hurry. Lines are visibly crooked.

CATEGORY	4	3	2	1
Accuracy of Plot	All points are plotted correctly and are easy to see. A ruler is used to neatly connect the points or make the bars, if not using a computerized graphing program.	All points are plotted correctly and are easy to see.	All points are plotted correctly.	Points are not plotted correctly OR extra points were included.



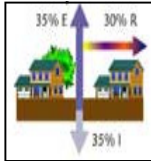
Student Assessment Handout – A Persuasive Letter

We have been studying the pathways of water in the city, and different projects that we can do in order to address some of the problems associated with runoff in our area. To demonstrate your knowledge of restoration projects and their importance to the community we live in, your assignment is as follows:

Write a letter to a member of the community your school is located in that explains the following points

1. Why restoration projects are important
2. What specific restoration projects would benefit the community near the school
3. How these specific projects (or project) would benefit the environment.

When you are writing your letter, use standard business letter format, and make sure you pay attention to the rubric as you compose your rough draft. You need to make sure that you have evidence for the points you make in the letter, and keep the attention of the person you are writing to. Above all, make sure that your facts are accurate! This letter should demonstrate your understanding of hydrology, and how restoration projects can benefit the community we go to school in.



Rubric for Teachers – A Persuasive Letter

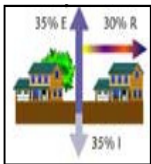
Rubric Made Using: **RubiStar** (<http://rubistar.4teachers.org>)

Teacher: _____ Date: _____

Student: _____

CATEGORY	4 – Above Standards	3 – Meets Standards	2 - Approaching Standards	1 - Below Standards
Attention Grabber	The introductory paragraph has a strong hook or attention grabber that is appropriate for the audience.	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.
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.
Accuracy	All supportive facts and statistics are reported accurately.	Almost all supportive facts and statistics are reported accurately.	Most supportive facts and statistics are reported accurately.	Most supportive facts and statistics were inaccurately reported.

CATEGORY	4 – Above Standards	3 – Meets Standards	2 - Approaching Standards	1 - Below Standards
Audience	Demonstrates a clear understanding of the potential reader and uses appropriate vocabulary and arguments. Anticipates reader's questions and provides thorough answers appropriate for that audience.	Demonstrates a general understanding of the potential reader and uses vocabulary and arguments appropriate for that audience.	Demonstrates some understanding of the potential reader and uses arguments appropriate for that audience.	It is not clear who the author is writing for.



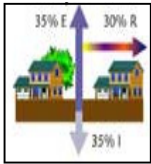
Student Assessment Handout – Design a Restoration Project

We have been studying the pathways of water in the city, and different projects that we can do in order to address some of the problems associated with runoff in our area. To demonstrate your knowledge of restoration projects and their importance to the community we live in, your assignment is as follows:

Design a restoration project for your school - explain in your description of the project the following details:

1. What type of project you chose, and why
2. What specific issue your project will address on your schoolyard
3. What exact location on the schoolyard your project will be "constructed"
4. How you propose to raise money for your project

Include a drawing of what you think your project will look like in the location that you plan to construct it.

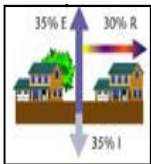


Rubric for Teachers – Design a Restoration Project

Rubric Made Using: **RubiStar** (<http://rubistar.4teachers.org>)

Teacher: _____ Date: _____

Student: _____



Student Assessment Handout – Two Water Drops Story

Story Assessment: Two Water Drops

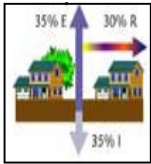
In a city not far away, two drops of water fall from the sky at the exact same instant. One of the drops falls into a reservoir, the other drop falls into the city.....

YOU create their story!

The task: write the story of these water drops, focusing on some of the following topics

1. Do the water drops meet?
2. Where could the drops meet if they did?
3. What is it like for each of the drops to travel through their water pathway?

Each story should be at least two pages long, and contain many creative details and descriptions so that no one falls asleep while the read the story. Make sure your facts are accurate, and that you are clear about which drop you are talking about at different points in the story - otherwise someone might get confused. If you need extra advice, check out the rubric for the project to make sure that you are on track!



Rubric for Teachers – Two Water Drops Story

Rubric Made Using: **RubiStar** (<http://rubistar.4teachers.org>)

Teacher: _____ Date: _____

Student: _____

CATEGORY	4	3	2	1
Focus on Assigned Topic	The entire story is related to the assigned topic and allows the reader to understand much more about the topic.	Most of the story is related to the assigned topic. The story wanders off at one point, but the reader can still learn something about the topic.	Some of the story is related to the assigned topic, but a reader does not learn much about the topic.	No attempt has been made to relate the story to the assigned topic.
Organization	The story is very well organized. One idea or scene follows another in a logical sequence with clear transitions.	The story is pretty well organized. One idea or scene may seem out of place. Clear transitions are used.	The story is a little hard to follow. The transitions are sometimes not clear.	Ideas and scenes seem to be randomly arranged.
Accuracy of Facts	All facts presented in the story are accurate.	Almost all facts presented in the story are accurate.	Most facts presented in the story are accurate (at least 70%).	There are several factual errors in the story.
Requirements	All of the written requirements (# of pages, # of graphics, type of graphics, etc.) were met.	Almost all (about 90%) the written requirements were met.	Most (about 75%) of the written requirements were met, but several were not.	Many requirements were not met.
Creativity	The story contains many creative details and/or descriptions that contribute to the reader's enjoyment. The author has really used his imagination.	The story contains a few creative details and/or descriptions that contribute to the reader's enjoyment. The author has used his imagination.	The story contains a few creative details and/or descriptions, but they distract from the story. The author has tried to use his imagination.	There is little evidence of creativity in the story. The author does not seem to have used much imagination.

Total Grade = _____ / 20 = 4 3 2 1

Comments: