Name: _____ Community _____

Math 7/Science Checklist: Q3 Weeks 7&8- February 26th-March 9th

Big Ideas:

Math:	Science:
• Statistics! o Sample sizes o Comparing data: Box and Dot plots o Mean Absolute Deviation	• Microbes and Diseases o What makes a virus different than a bacteria o What is life?

Upcoming Dates:

Week 1	Week 2
2/28: Math Test corrections due 3/2: Science assessment on Earth History	☐ 3/6: Science Catch a Contagion Lab ☐

Shelfwork: Show All Work. Explore work is to be checked against the control and then marked complete. Complete individually unless noted with a "G"

Lesson	Explore	Expand	Extend
❑ Population and Sample HW Video ❑ #1 Lesson Check-in 2/26	❑ Understanding Random Sampling-Matching Worksheet(___✓,M,0) ❑ Simple Random Samples(___✓,M,0)	☐ Understanding Random Sampling-Independent Practice(___%)	☐ Making inferences from random data stations(____%)
Monday's work plan: (Add missing works from last checklist) Time Estimate:		Tuesday's work plan: Time Estimate:	
❑ Virus/ Bacteria Reading HW ❑ #2 Lesson Check-In 2/27	☐ Virus/Bacteria Reading with Graphic Organizer (G) **AND** o Create a Venn Diagram **OR** ☐ Use provided Graphic Organizer (____✓, M, 0)	☐ Microbe Wanted Poster (G)(see rubric) (____%)	☐ Microbes and Diseases in the News: Research an article, video, or TedTalk to be used in a seminar (see rubric for details) (____%) **OR** ☐ Feeling inspired to do something else? Submit a proposal, outlining your plan! (____%
Wednesday's work plan: Time Estimate:		Thursday's work plan: Time Estimate:	
❑ Mean, Median, Mode HW Videos ❑ #3 Lesson Check-In 2/28	☐ Mean, Median Mode Matching Card sort(___✓,M,0)	☐ M,M,Mode Practice Problems (____%)	☐ Mean Absolute Deviation Worksheet (____%)
Friday's work plan: Time Estimate:		Monday's work plan: Time Estimate:	

❑ Diseases HW Video ❑ #4 Lesson Check-In 3/6	☐ I Have, Who Has Microbes and Diseases-choose 9 'Who Has' Questions to answer on paper (___✓, M, 0)	❑ Outbreak: Will You Catch it Contagion Lab? (____%)	☐ Microbes and Diseases in the News: Research an article, video, or TedTalk to be used in a seminar (see rubric for details) (____%) ☐ Feeling inspired to do something else? Submit a proposal, outlining your plan! (____%)
Tuesday's work plan: Time Estimate:		Wednesday's work plan: Time Estimate:	
❑ Box and Dot plots HW ❑ #5 Check In 3/01	☐ Box and whisker plots, Multiple choice (___✓,M,0) ☐ Dot Plots (___✓, M, 0) ☐ Make and Interpret the Plot (___✓,M,0)	☐ Zombie Outbreak! (G) (____%) ☐ Box and Whisker Plots, 1-3 (__%)	☐ Graphing Stations 1-24 (____%) ☐ Create AND teach a green product card (use Extend rubric (____%)
Thursday's work plan: Time Estimate:		Friday's work plan: Time Estimate:	
❑ Re-loop: #5 Hydrology	☐ Hydrology Practice with Test Taking Strategies (___%)		

Homework: (*All assignments are to be done independently and are due the next day unless noted*):

- ☐ Monday 2/26: **Microbes PP** video on EdPuzzle with guided notes
- ☐ Tuesday 2/27: **Mean and Median with outliers** and **Mean, Median and Mode Toads** videos with guided notes on EdPuzzle
- ☐ Wednesday 2/28: **Comparing Dot Plots** and **Comparing Box plots** video with graphic organizer on EdPuzzle
- ☐ Thursday 3/1: Read over the Science Study Guide and videos, review Test Taking strategies and Study for the **Assessment tomorrow.**
- ☐ Friday 3/2: Review and organize binder and complete missing work as needed as well as test corrections
- ☐ Monday 3/5: **Diseases PP** video with guided notes on EdPuzzle
- ☐ Tuesday 3/6: Complete missing assignments.
- ☐ Wednesday 3/7:Complete missing assignments.
- ☐ Thursday 3/8: **Theoretical Probability** video with guided notes on EdPuzzle for check in on Monday 3/12.
- ☐ Friday 3/9: Review and organize binder (Math and Science) and/or complete missing assignments

Lesson Requests:

❑ _____

Notes and formulas:

Math 7 **Drawing Conclusions about a Population**

When you have a good representative sample, you can _____.

This is important because _____.

Examples (assuming good sampling methods):

1) Your school cafeteria is going to make some changes to the menu. They ask 150 students if they would like to have pizza as an option every day. One hundred five students answered, "Yes." If the school has 900 students, how many would you expect to answer "Yes" if asked the same question?

2) Your PTA is going to pay for a cultural arts assembly. They ask 200 students what kind of assembly they would prefer. Seventy-five asked for a speaker, fifty-eight asked for an animal show, and the rest said that they would prefer and acrobatic show. If there are 1100 students in the school, about how many would you expect to want to see an animal show?

3) A team of researchers wants to study the travel patterns of squirrels. They capture and tag 150 squirrels with a tracking device. Over the next 6-months, they collect data off of the tracking devices. Half of the squirrels keep within 10 miles of the area where they were tagged. Fifty squirrels travel within 15 miles, and the remaining twenty-five travel over 20 miles from where they were tagged. Based on this data, how many squirrels would you expect to travel over 20 miles in a population of 1,100 squirrels.

Now you try:

1) Your school is going to buy some new physical education equipment. Of a survey of 225 students, one-hundred students would like new basketballs, seventy-five would like new hockey equipment, and the remaining would like new footballs. Based on this data, how many students would you expect to like new basketballs in a school of 1,000 students?

2) Your school cafeteria is going to look at adding a salad bar to the lunch line. Of the 200 students they surveyed, 125 students said that they liked that idea. If the school has 1300 students, about how many would you expect to like the idea of a salad bar?

Bacteria	Viruses
Diseases:	**Diseases:**
Treatment:	**Treatment:**

Check your understanding:

1) Why are viruses considered NON-living?

2) **Summarize:** In what ways are viruses and bacteria alike? In what ways are they different?

3) Which statement below correctly identifies the reason why viruses are not considered alive?

a) They have DNA or RNA
b) They have a protein coat
c) They are really small
d) They can only reproduce inside cells

I choose this answer because _____
_____
_____.

4) Against which disease with an antibiotic be effective (helpful)?

a) The flu
b) Lyme disease
c) HIV
d) Chicken pox

I choose this answer because _____
_____
_____.

5. Why are viruses ***not*** considered living things?

a) Viruses are not made of cells
b) Viruses do not contain hereditary material
c) Viruses cannot make their own nutrients
d) Viruses can be seen only with an electron microscope

I choose this answer because _____
_____
_____.

6) What are vaccines used for?

WHAT'S THE DIFFERENCE BETWEEN VIRUSES AND BACTERIA?

Use the following information to make a VENN DIAGRAM describing the differences and similarities between viruses and bacteria. Once you are done, you should use this information to write a detailed description of the two in essay format on Writing Wednesday. The introductory paragraph should include a thesis statement and the similarities between bacteria and viruses. The following two paragraphs should detail how the two are different. Finally, close with your concluding paragraph, summarizing your statements made in your essay.

A BRIEF OVERVIEW

Bacteria are single-cell, living organisms that can survive independently You can kill them by interfering with their metabolism (internal biological functions), which is basically what antibiotics do. *Antibiotics* are used to treat bacterial infections Most bacteria are neither male nor female and reproduce by simply dividing in to two. Infections they cause include pneumonia, cystitis and food poisoning bugs like salmonella. But, did you know not all bacteria are bad? In fact, some friendly types actually help protect us from disease.

Viruses are not cells, they have no metabolism and they cannot survive alone. A virus is a chain of DNA (genetic material) and needs a *host cell* in order to stay alive You can, of course, pick them up on door handles and other surfaces That's one of the most common ways of catching colds and flu, but that's because they're contained in sweat or skin cells. Once a virus gets in to cells it tricks the cells to replicate it! Antibiotics are useless against viruses. That said, if you have a virus, like a cold, the doctor will never prescribe an antibiotic because it will not work! Antiviral drugs either improve the immunity of the cell to the virus or interfere with the virus's reproduction.

INFECTIONS - BACTERIAL & VIRAL

Many human infections are caused by either bacteria or viruses. Bacteria are tiny single-celled organisms, thought by some researchers to be related to plants They are among the most successful life forms on the planet, and range in habitat from ice slopes to deserts. Bacteria can be beneficial - for instance, gut bacteria help us to digest food - but some are responsible for a range of infections. These disease-causing varieties are called pathogenic bacteria. Many bacterial infections can be treated successfully with appropriate antibiotics, although antibiotic-resistant strains are beginning to emerge. Immunization is available to prevent many important bacterial diseases. A virus is an even smaller micro-organism that can only reproduce inside a host's living cell. It is very difficult to kill a virus. That's why some of the most serious communicable diseases known to medical science are viral in origin.

HOW BACTERIA & VIRUSES ENTER THE BODY

BACTERIA To cause disease, pathogenic bacteria must gain access into the body The range of access routes for bacteria includes	VIRUSES Spread from one person to another by:
• Cuts • Contaminated food or water • Close contact with an infected person • Contact with the feces of an infected person • Breathing in the exhaled droplets when an infected person coughs or sneezes • Indirectly, by touching contaminated surfaces - such as taps, toilet handles, toys and nappies.	• Coughs • Sneezes • Vomits • Bites from infected animals or insects • Exposure to infected bodily fluids through activities such as sexual intercourse or sharing hypodermic needles • Forgetting to wash your hands after handling pets and animals is another way for germs to be taken in by mouth.

CURING INFECTIONS:

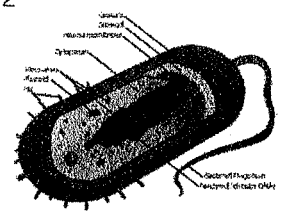
Bacterial infection: The body reacts to disease-causing bacteria by increasing local blood flow (inflammation) and sending in cells from the immune system to attack and destroy the bacteria. Antibodies produced by the immune system

attach to the bacteria and help in their destruction. They may also inactivate toxins produced by particular pathogens, for example tetanus and diphtheria.

Viral infection: Antibiotics are useless against viral infections. This is because viruses are so simple that they use their host cells to perform their activities for them. Antiviral drugs work differently than antibiotics by interfering with the viral enzymes. Antiviral drugs are currently only effective against a few viral diseases, such as influenza, herpes, hepatitis B and C and HIV - but research is ongoing. A naturally occurring protein, called interferon (which the body produces to help fight viral infections), can now be produced in the laboratory and is used to treat hepatitis C infections.

Immunization against viral infection is not always possible

It is possible to vaccinate against many serious viral infections such as measles, mumps, hepatitis A and hepatitis B. An aggressive worldwide vaccination campaign, headed by the World Health Organization (WHO), managed to wipe out smallpox. However, some viruses - such as those that cause the common cold - are capable of mutating from one person to the next. This is how an infection with essentially the same virus can keep dodging the immune system. Vaccination for these kinds of viruses is difficult, because the viruses have already changed their format by the time vaccines are developed.

	BACTERIA	VIRUSES
LIVING?	Living organism	Nonliving
NUMBER OF CELLS	Unicellular, one cell	No cells, not living
TREATMENT	Antibiotics	Vaccines prevent the spread and antiviral medications help to slow reproduction but cannot stop it completely.
INFECTION	Localized area of body	Systemic - can affect entire body
BENEFITS	Some bacteria are beneficial (e.g certain bacteria are required in the gut)	Viruses are NOT beneficial. However, a particular virus may be able to destroy brain tumors (see references) Viruses can be useful in genetic engineering.
REPRODUCTION	Splits into 2 	Invades a host cell and takes over the cell causing it to make copies of the viral DNA/RNA Destroys the host cell releasing new viruses.
SIZE	Larger	Super tiny 

QUICK RECALL FACTS:

- The biggest difference between viruses and bacteria is that viruses must have a living host – like a plant or animal – to multiply, while most bacteria can grow on non-living surfaces.
- There are some useful bacteria but all viruses are harmful.
- Antibiotics can kill bacteria but not viruses.
- An example of a disease caused by bacteria is strep throat and an example of an affliction caused by a virus is the flu.

Math 7 **Mean & Median with Outliers**

Vocabulary

Mean
Definition:_____
_____
How to find: _____
_____

Median:
Definition:_____
_____
How to find: _____
_____

Outlier:
Definition:_____
_____

Measures of Center
Definition:_____
_____
Examples: _____ and _____

1) Shoe Prices at REI: 20, 45, 48, 31, 20, 122, 37, 20

	With Outlier	Without Outlier	Effects of the Outlier
Mean			
Median			

If there are two numbers in the middle, to find the median you must _____.

A high outlier will _____ the mean and median of the data set.

Name:_____

BACTERIA

VIRUS

Similar

1.
2.
3.

Different

1.	1. Size	1.
2.	2. Shape	2.
3.	3. Living/Non-living	3.
4.	4. Diseases	4.
5.	5. Cells	5.
6.	6. Structure	6.

Now you try!

2) Calories in cookies: 124, 177, 180, 210, 195, 200

	With Outlier	Without Outlier	Effects of the Outlier
Mean			
Median			

A low outlier will _____ the mean and median of the data set.

3) Time (in minutes) it takes 6 students to travel to school:
8, 10, 10, 15, 20, 45

	With Outlier	Without Outlier	Effects of the Outlier
Mean			
Median			

Outliers have a greater effect on the _____ than on the _____.

Epidemic vs Pandemic Diseases

Disease:

Epidemic and Pandemic both...

1.

2.

Epidemic:

1.

2.

Pandemic:

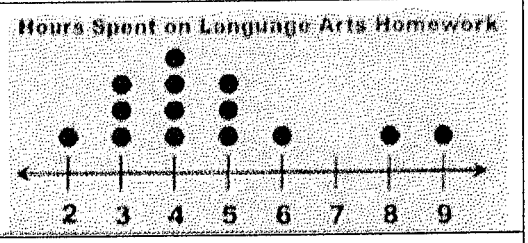
1.

2.

Example(s):

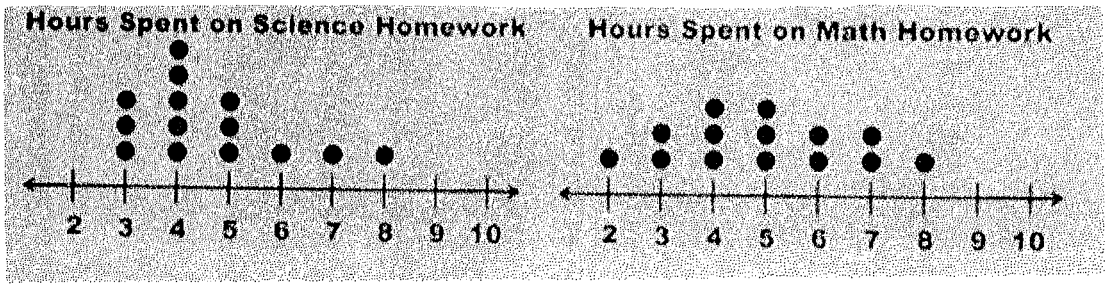
Microbiology:			
Viruses	Bacteria	Fungi	Parasites
1.	1.	1.	1.
2.	2.	2.	2.
3.	3.	3.	3.

Dot Plot (Line Plot):



Vocabulary	Definition	From Above
Variability		
Peak		
Cluster		
Skewed		

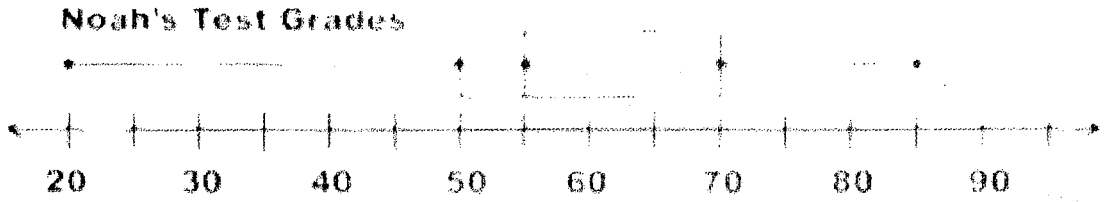
Example: The dot plots represent the number of hours students spent on their math and science homework in one week.



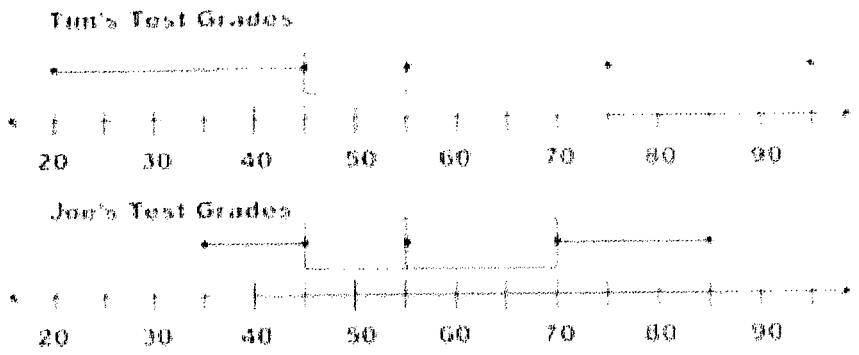
1. What is the difference in the median value for each set of data?	
2. How is the Science graph skewed?	
3. What comparisons can you draw from looking at the plots about the amount of time spent on homework?	
4. Does either graph show any clustering? What does that mean?	
5. Does either graph show a peak? What does that mean?	

Math 7

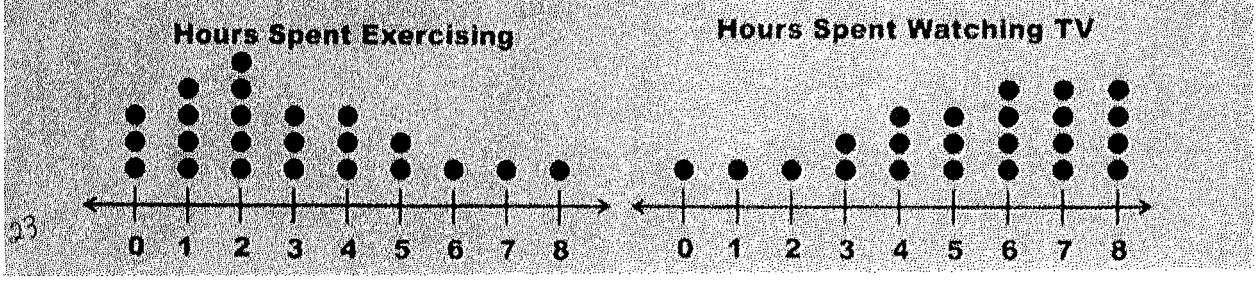
Comparing Box Plots



Vocabulary	Definition	From Above
Five-Number Summary		
Range		
Interquartile Range		
Symmetrical		
Cluster		

Example: The two box plots at the right compare the test grades for Tim and Joe in math class for the entire school year.	
1. Find the median, range, and interquartile range for Tim and Joe.	
2. Use the medians to compare the students' grades.	

The dot plots show the amount of time students spent exercising and watching TV in one week.



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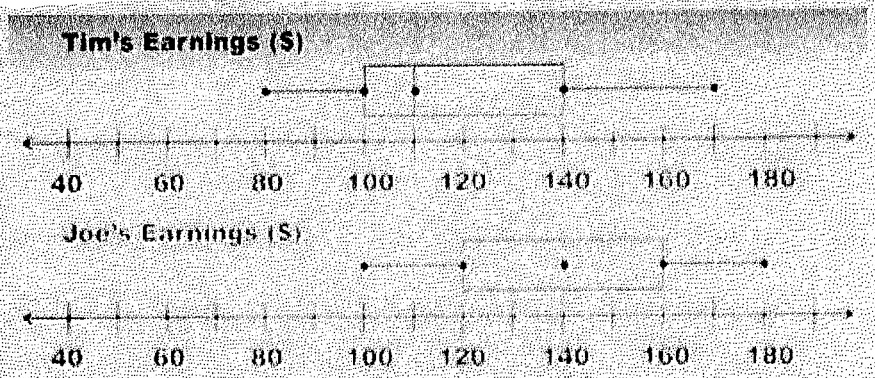
1. What is the difference in the median value for each set of data?	
2. Is either graph skewed? If so, how?	
3. What comparisons can you draw from looking at the plots about how students spend their time?	
4. Does either graph show any clustering? What does that mean?	
5. Does either graph show a peak? What does that mean?	

3. Use the interquartile range to compare the students' grades.	
4. Use the range to compare the students' grades.	
5. Use evidence of cluster and/or symmetry to compare the students' grades.	

Example: The two box plots at the right compare the amount of money that Tim and Joe earned one day while working at a restaurant.	
1. Find the median, range, and interquartile range for Tim and Joe.	
2. Use the medians to compare the boys' earnings.	
3. Use the interquartile range to compare the boys' earnings.	
4. Use the range to compare the boys' earnings.	
5. Use evidence of cluster and/or symmetry to compare the boys' earnings.	

Math 7 **Theoretical Probability**

By the end of this lesson you will be able to_____.

Probability is _____.

Theoretical probabilty is _____.

It can be written as the ratio _____.

Probability can be shown as _____, _____, or _____.

Example 1. The Shell Game

What is the theoretical probability that you can choose a shell with a ball underneath?

By increasing the number of favorable outcomes of the total number of outcomes, you can _____
_____.

Example 2, Pick a Card

A standard deck of cards has ___ cards. There are ___ red cards. There are __ of each suit (hearts, spades, etc)

What is the probability that you can pick...

A red card? A black card? A spade? A heart or face card?

Now you try!

Find the theoretical probability of each event below. Write as a fraction, decimal and a percent.

1) Rolling a 6-sided di and having it land on 4.

2) Choosing the vegetable corn or carrots, from the choices of potato, carrots, green beans, or corn.

3) Getting the red gumball from a box with 3 green, 4 blue, 7 white, and 7 red gumballs.

4) Choosing a boy from a class of 24 students with 18 girls.

Name:_____

Microbes Wanted Poster Rubric

Directions: You will choose a virus or bacteria to create a Wanted Poster for. This is to be completed independently. Please turn this rubric in with all Wanted Posters.

Name of Virus or Bacteria:_____

Suggestions (Areas that Need Work)	Criteria (Standards for this work)	Compliments (Areas that Exceed Criteria)
	Criteria #1:Mugshot ❑ Include a microscopic image of the virus or bacteria that you are researching. (4) Student:_____/(4) Teacher:_____/(4)	
	Criteria #2: Crimes Committed ❑ Include three negative characteristics or effects that this microbe has on other organisms (12) Student:_____/(12) Teacher:_____/(12)	
	Criteria #3: Last Seen ❑ Where is this microbe most likely to be found within another organism? (4) Student:_____/(4) Teacher:_____/(4)	
	Criteria #4: Reward Information ❑ Description of the reward and contact information-this will include which medicines/treatment options work for the microbe you are researching. (8) Student:_____/(8) Teacher:_____/(8)	
	Criteria #5: Organization and Neatness ❑ Poster is neat/easy to understand (2) ❑ Poster is visually appealing, not rushed and neat. (2) Student:_____/(4) Teacher:_____/(4)	

Student Total: _____/32 Teacher Total:_____/32

Reflection:

1. Justify the grade you gave yourself-discuss specifics from the rubric.

2. Discuss one thing you loved about this work, and one you would improve.

Name:_____ Date:_____

Hydrology Reloop with Stump the Test!!!

Directions: Annotate each question below by underlining key words and then defining them off to the side. Use the Test Taking Strategies handout and DETER to guide this work. Jot down tips to help you remember the content in the boxes on the right side of the page.

Which will ***most likely*** result if there is increased upwelling in a coastal area?

A more aquatic life

B less nutrients in the water

C higher water temperatures

D fewer nitrates

Which ***best*** determines the health of a lake used as a source of freshwater?

A its depth and width

B its temperature and pH

C its location and depth

D its temperature and depth

Why is water from an aquifer more likely to be cleaner than water from other sources?

A because it forms where fresh and salt water meet

B because it receives water directly from precipitation

C because it rises to the surface near the ocean

D because pollutants are filtered by rock and soil deep within Earth

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If a body of water has high turbidity levels, what can ***most likely*** be concluded?

A It has a low pH.

B It is unsafe to drink.

C It is too hot to drink.

D It contains a lot of chemicals.

Which ***best*** describes the characteristics of a river basin?

A the land drained by a river and its tributaries

B the land formed when rivers create estuaries and marshes

C the land at the mouth of a river where water flows into the ocean

D the land formed as a result of a river flooding

Which factors can have the *greatest* effect on the health of a river system? **A** type of soil and salinity **B** nitrate levels and turbidity **C** human consumption and pH **D** natural disasters and tidal changes	
In the United States, which is responsible for ensuring the safety of the country's drinking water? **A** Environmental Protection Agency (EPA) **B** Food and Drug Administration (FDA) **C** National Oceanic and Atmospheric Administration (NOAA) **D** Center for Disease Control (CDC)	
What do bioindicators tell you about the health of a body of water?	
Why would fisherman/woman be in favor of upwelling?	
You see a layer of green scum on the top of a local pond. What does this indicate about the levels of dissolved oxygen (DO) in the pond?	

Self-Reflection:

1. Which test taking strategies work the best for you? Name 2 and be specific.

2. Describe your comfort level with the above questions: