**The Lorax: Video Questions**

The Lorax was written by Dr. Seuss in 1971, after the environmental reform movement of the 60’s which peaked with the nation’s first Earth Day on April22, 1970.

As you view the video, list at least 3 environmental issues you encounter. Do these issues exist today?

**ISSUES:**

1.

2.

3.

**After the video is over, answer the following questions:**

1. Who do the Lorax and Once-Ler represent? What are their professions?
2. What do the Lorax and Once-Ler really want? What are their biggest concerns?
3. Can you equate the ideas in the story with real, present day situations? Give a specific example of the people, resources and issues involved.
4. Are their identifiable “good guys” and “bad guys” in this story? Where do the people who purchase and use Thneeds fit on the good or bad scale?
5. Is it necessary to completely stop cutting the Trufflla trees to preserve the Lorax ecosystem?
6. What, if any, significance do the ideas presented in this book (video) have for you in your daily life?
7. What do you think could be possible outcome of the story? How else could it have ended?
8. Do you think the Lorax was written for young children, their parents or both?

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  Date: \_\_\_\_\_\_\_\_\_\_\_  Period: \_\_\_\_\_\_\_

**TPEQEA Graphic Organizer**

**T**opic: Introduces the topic of the paragraph *(Topic Sentence)*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**P**oint: Makes a clear argument about the topic

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**E**xample: Provides an example to back up the point

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**Q**uotation: Provides research to prove the point *(Remember to setup the quote)*

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**E**laboration: Explains how the example and/or quotation prove the point

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**A**nalysis: Analyzes the importance of the argument and takes the elaboration one step farther *(Ends with Concluding Sentence)*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

One in A Billion Lab: Student Sheet 2A

At what concentration will the solution appear colorless?

Hypothesis:

Materials

White paper

Dropper

Food coloring (red, blue or green)

200 mL of Water

Rinse Cup of Water

9 small cups (clear or white) or beakers

2 graduated cylinders (10mL)

Procedure

1. Number the cups or beakers 1-9
2. Place white paper under the nine cups or beakers.
3. Using a graduated cylinder, put 1 mL of food coloring and 9 mL of water into cup 1. Be sure to rinse the graduated cylinder with water each time. Gently swirl the cup or beaker to mix solution.
4. In your data chart, describe the color of the solution in cup 1 and write 0.1 under concentration to represent a 10% solution.
5. In cup 2, add 1 mL of solution from cup 1 and 9 mL of water. Again, describe the color and calculate the concentration of the solution. Record your results in the data chart.
6. In cup 3, add 1 mL of solution from cup 2 and 9 mL of water. Record your results in the data chart.
7. Continue the dilution process as done above for cups 4 -9. Record all of your results in the data chart.

Data Chart

|  |  |  |
| --- | --- | --- |
| Cup | Color | Concentration |
| 1 |  |  |
| 2 |  |  |
| 3 |  |  |
| 4 |  |  |
| 5 |  |  |
| 6 |  |  |
| 7 |  |  |
| 8 |  |  |
| 9 |  |  |

Conclusion

1. In which cup did the solution first appear colorless?
2. What is the concentration of mouthwash in this cup?
3. Do you think there is any mouthwash present in this cup of diluted solution even though you can’t see it? Explain.
4. What is the concentration in cup 9? Explain your answer.

**One in A Billion Lab: Student Sheet 2B**

Your challenge is to dilute the mouthwash to the point that it is a “nano” solution. You will use the same process as you did for the first dilution investigation. In cup 1, add 1 mL of mouthwash and 9 mL of water. As you continue the dilution process for cups 2 – 9, record your observations of color and smell. Calculate and record the concentrations.

At what point do you think you will no longer be able to smell the solution?

Hypothesis

Data Chart

|  |  |  |  |
| --- | --- | --- | --- |
| Cup | Color | Smell | Concentration |
| 1 |  |  |  |
| 2 |  |  |  |
| 3 |  |  |  |
| 4 |  |  |  |
| 5 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |
| 8 |  |  |  |
| 9 |  |  |  |

Conclusion

In which cup did the solution appear colorless?

In which cup did the solution appear odorless?

Which cup holds the “nano” percent solution?

What is the actual percent solution of the “nano” mixture written in numerical format?

Explain how you made a “nano” percent solution.

**Nanoparticles Lab: Student Sheet 3A**

Procedure

Build a large, hollow, clay mountain.

1. Build a large, clay mountain structure that will occupy about one-third of the container.
2. Carve a channel in the mountain to resemble a stream. If the clay dries, spray it with water.

Build the model beach and land.  
 3. Wash the disposable metal pan thoroughly to remove any dust.

1. Fill half of the container with 1/4 inch of sand.
2. Cover the other half of the tray with 1/2 inch of rocks. The rocks should be taller than the sand.
3. Place the mountain on top of the rocks. The mountain’s streams/rivers should face the sand.
4. Add 1/2 inch of distilled water to the container on the sand to model ocean water.
5. Your model is complete. Wait for your teacher to give instructions on how to use the water testing kit by taking a baseline measurement of the water in your spray bottle (distilled water) together as a class. Record this measurement in the table below.
6. Add a tablespoon of fertilizer atop the mountain.
7. Spray water 100 times over the mountain. Use the spray setting that allows the water to evenly disperse and more accurately simulates precipitation (rain). Notice where the water (and fertilizer) goes during the “rainstorm”.
8. Take a small sample of the runoff water using a micropipette.
9. Divide sample equally into the 4 small test tubes provided with the water testing kit.
10. Follow the kit directions to test for pH, ammonia, nitrates, and nitrites. The drops come out easier (and measurements are more accurate) if you hold the chemical bottles straight up and down and do not tilt them.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | pH | Ammonia (ppm) | Nitrite (ppm) | Nitrate (ppm) |
| Uncontaminated Water |  |  |  |  |
| After precipitation |  |  |  |  |

**Brainstorming Chart**

Search for nano inventions in the field of: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

List & Describe inventions you find during your research

What are the possible benefits of the inventions?

What are the possible negative side effects of this invention?

**Nano Invention Brochure Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 5 | 4 | 3 | 2 |
| **Organization of Information presented** | Each section in the brochure has a clear beginning, middle, and end. | 75% or more sections of the brochure have a clear beginning, middle, and end. | 60% of the sections of the brochure have a clear beginning, middle, and end. | Less than half of the sections of the brochure have a clear beginning, middle, and end. |
| **Content- Accuracy and Information validity** | All facts in the brochure are accurate and match cited resources. | 99-90% of the facts in the brochure are accurate. | 89-90% of the facts in the brochure are accurate. | Fewer than 80% of the facts in the brochure are accurate. |
| **Spelling & mechanics** | No spelling errors and all sections of brochure are free of writing errors. | No more than 1 spelling and/or writing errors are present. | No more than 3 spelling and/or writing errors are present. | More than 3 spelling and/or writing errors are present. |
| **Attractiveness & Organization** | The brochure has exceptionally attractive formatting and well-organized information. | The brochure has attractive formatting and well-organized information. | The brochure has well- organized information or format but not both. | The brochure's formatting and organization of material is confusing to the reader. |
| **Graphics/ Pictures** | Graphics match the topic and text in section where placed. Each section has no more than two graphics and there are at least a total of three graphics used. | Graphics go well with the text, but there are so many (more than two per section)that they distract from the text. | Graphics go well with the text, but there are too few (less than three graphics for entire brochure) and the brochure seems "text-heavy". | Graphics do not go with the accompanying text or appear to be randomly chosen. |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | 5 | 4 | 3 | 2 |
| **Knowledge of Content** | Shows a full understanding of nanotechnology and human impacts on the environment. | Shows some understanding of nanotechnology and human impacts on the environment. | Shows a good understanding of nanotechnology and human impacts on the environment. | Has a lack of understanding of nanotechnology and human impacts on the environment.  . |
| **Organization** | Extremely well planned and has a smooth transition. | Well planned and follows a logical sequence | Some evidence of planning but not always logical**.** | No evidence of planning. |
| **Oral Communication** | Speaks loudly and commands audience’s attention. | Speaks loudly and maintains eye contact. | Does not speak loudly and/or does not maintain eye contact. | Does not speak loudly enough to be understood. |
| **Multimedia** | Greatly enhances content and purpose. | Supports content and purpose. | Does not distract audience from content and purpose. | Distracts audience from content and purpose |
| **Total Points** | /20 |  |  |  |

**Nano Invention Presentation Rubric**

**Nano Invention Model Rubric**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CATEGORY | **5** | **4** | **3** | **2** |
| **Plan** | Plan is neat with clear measurements and labeling for all components. | Plan is neat with clear measurements and labeling for most components. | Plan provides clear measurements and labeling for most components. | Plan does not show measurements clearly or is otherwise inadequately labeled. |
| **Appearance** | Project stands out from the rest, shows evidence of considerableeffort. | Appearance is neat, project is organized, and shows evidence of good effort. | Labels are hard to read, project is not neatly done, more effort needed | Appears hastily completed, lack of effort is evident. |
| **Information Gathering** | Accurate information taken from several sources in a systematic manner. | Accurate information taken from a couple of sources in a systematic manner. | Accurate information taken from a couple of sources but not systematically. | Information taken from only one source and/or information not accurate. |
| **Scientific Knowledge** | Explanations by all group members indicate a clear and accurate understanding of scientific principles underlying the construction and modifications. | Explanations by all group members indicate a relatively accurate understanding of scientific principles underlying the construction and modifications. | Explanations by most group members indicate relatively accurate understanding of scientific principles underlying the construction and modifications. | Explanations by several members of the group do not illustrate much understanding of scientific principles underlying the construction and modifications. |
| **Total Points** | /20 |  |  |  |