**Claim – Evidence – Reasoning Practice**

In the next 2 examples, find the claim, evidence, and reasoning. Note that there may be more than one claim, evidence, or reasoning section in the paragraph.

1. What will happen to the shark population if the phytoplankton populations die out?



The shark population will die out. The shark eats other fish such as the ocean fish and the lantern fish. The ocean fish and the lantern fish eat other organisms such as shrimp and copepods. The shrimp and copepods eat the phytoplankton. Phytoplankton are producers and they make their own food from the sun. All of the other organisms in the food web depend on the phytoplankton, even if they do not directly eat them. If the phytoplankton die, primary consumers (shrimp and copepods) will die because they will have no food which will cause the secondary consumers (ocean fish and lantern fish) to die, which will cause the shark to die.

Claim:

Evidence:

Reasoning:

2. Can air be considered matter?



Air is matter. I think air has mass because in the balloon experiment when we were comparing or weighing the deflated balloon to the balloon filled with air, the balloon filled with air weighted more. This is because of mass. Mass means the amount of matter in something. The balloon which had air in it has more mass. Another reason why I think air has mass is because in the syringe experiment, it was difficult to push the top of the syringe because the air was blocking it from going down. The tiny little molecules were trapped in a small space and created more pressure. Air pressure made it difficult to push down because the air takes up space. It is made of matter and has mass. It is true that air is made of matter and has mass.

Claim:

Evidence:

Reasoning:

3. Francisco Redi V. Spontaneous Generation

Who (or what!) put the maggots on the meat?



Find the claim and counterclaim, evidence/evidence against, and reasoning:

Flies only come from other flies. Maggots, which develop into flies, only formed on the meat in the first flask. Flies could land on that meat, and they produced maggots there. Those who support spontaneous generation would say that rotting meat alone or in combination with air creates flies. If rotting meat alone could produce maggots, then there would be maggots in flask 2, which was sealed. If rotting meat in combination with air could produce maggots, then there would be maggots in flask 3, which allowed air, but not flies, through the gauze. However, neither of these flasks had maggots. Therefore, flies are necessary to produce more flies.

Claim:

Evidence:

Counterclaim:

Evidence Against:

Reasoning:

Now, create your own scientific explanations:

4. Write a scientific explanation that states whether any of the liquids below are the same substance.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | Density | Color | Mass | Melting Point |
| Liquid 1 | 0.93 g/cm3 | no color | 38 g | -98 °C |
| Liquid 2 | 0.79 g/cm3 | no color | 38 g | 26 °C |
| Liquid 3 | 13.6 g/cm3 | silver | 21 g | -39 °C |
| Liquid 4 | 0.93 g/cm3 | no color | 16 g | -98 °C |



5. What causes some earthquakes to have more destructive power than others? How do you know?

Background Information: Earthquakes travel through the Earth in waves. The waves begin at the focus, which is where the earthquake starts underground.

|  |  |  |  |
| --- | --- | --- | --- |
| Location of Earthquake | Destructive Power at the Epicenter(center of the earthquake)(Sale: 0 to 12) | Average Yearly Crust Temperature 1 Mile Below Surface(°F) | Hardness of Ground Material |
| Earthquake A | 8 | 77 | Soft |
| Earthquake B | 8 | 65 | Soft |
| Earthquake C | 7 | 59 | Hard |
| Earthquake D | 6 | 53 | Hard |
| Earthquake E | 5 | 51 | Very Hard |

6. Carlos has two liquids, butanic acid and butanol. He determines a number of measurements for the two liquids and then mixes them together. After heating and stirring the liquids, they form two separate layers, layer A and layer B. Carlos uses a dropper pipette to take a sample from each layer, and he determines a number of measurements for each (all measurements are displayed on the table below).

Did a chemical reaction occur when Carlos mixed butanic acid and butanol?

Background Information: Density, solubility in water, and melting point are all intrinsic properties that are unique to everyone element/substance/compound in nature. A chemical reaction is a process in which the starting materials are transformed into different substances one the reactions is over.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Volume** | **Mass** | **Density** | **Solubility****in Water** | **Melting****Point** |
| Butanic acid | 10.18 cm3 | 9.78 g | 0.96 g/cm3 | Yes | -7.9° C |
| Butanol | 10.15 cm3 | 8.22 g | 0.81 g/cm3 | Yes | -89.5° C |
| Layer A | 2 cm3 | 1.74 g | 0.87 g/cm3 | No | -91.5° C |
| Layer B | 2 cm3 | 2.0 g | 1.0 g/cm3 | Yes | 0° C |