**Solution problems**

1. You want to make a 7 g/L solution using 150 g of solute, what volume will you be making?
2. You want to make 450ml of a 15 g/200 mL solution. How much solute is needed to prepare 450 mL?
3. Convert the following to percent concentration.

|  |  |  |  |
| --- | --- | --- | --- |
| 150 g/L | 25 ppm | 37 g/400 mL | 14 mg/L |
|  |  |  |  |

1. Convert the following to g/L.

|  |  |  |  |
| --- | --- | --- | --- |
| 12% | 28 ppm | 30 g/500 mL | 24 mg/L |
|  |  |  |  |

1. Convert 0.5 mg/L and 220 mg/L to ppm.
2. Determine the order of least to most concentrated for the following solutions.

|  |  |  |  |
| --- | --- | --- | --- |
| 1. 0.4 % | 1. 10 g/L | 1. 35 ppm | 1. 15 mg/L |
|  |  |  |  |

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1. You want to make 100ml of a 15 g/L solution; explain the process of making the solution (in percent concentration).

1. You are making Kool-Aid, you add 12 g of powder to 450 mL of water. What is the concentration in ppm of your drink?
2. If blue algae in a lake reach 7 ppm the water is considered dangerous to swim in and the lake must be closed. You test the water for the contaminant and find the algae is at 0.003 g/L. Is the water contaminated?
3. You have 2 types of soil. Soil A has a mercury concentration is 0.03 ppm and soil B has a concentration of 1.6 %. If the lethal concentration of mercury is 0.0005 g/L determine if either soil is contaminated.
4. You have 25 mg of a solute dissolved in 40 L of water. What is the concentration in ppm?
5. Two lakes are being tested for different pollutants that can harm aquatic life. The table below shows the pollutants with their lethal doses.

Lethal doses for pollutants

|  |  |
| --- | --- |
| Pollutant 1 | 20 ppm |
| Pollutant 2 | 0.4 ppm |
| Pollutant 3 | 0.9 ppm |

The table below shows the results of sample water taken from the four lakes and each pollutant.

|  |  |  |  |
| --- | --- | --- | --- |
|  | Pollutant 1 | Pollutant 2 | Pollutant 3 |
| Lake 1 | 0.015 g/L | 0.006 % | 18 mg/L |
| Lake 2 | 0.15 g/L | 0.00003 % | 1.6 mg/L |

Determine if either lake has any pollutants in it.

**Past exam questions**

1. A lake is considered polluted if the concentration of mercury exceeds 8 ppm.

You take a sample of three different lakes to verify if any are polluted.

Results from samples taken from lakes

|  |  |
| --- | --- |
| Lake | Mercury concentration |
| Lake 1 | 0.0005% |
| Lake 2 | 2.5 mg/L |
| Lake 3 | 0.085 g/L |

Determine if any of the lakes have a lethal concentration of mercury.