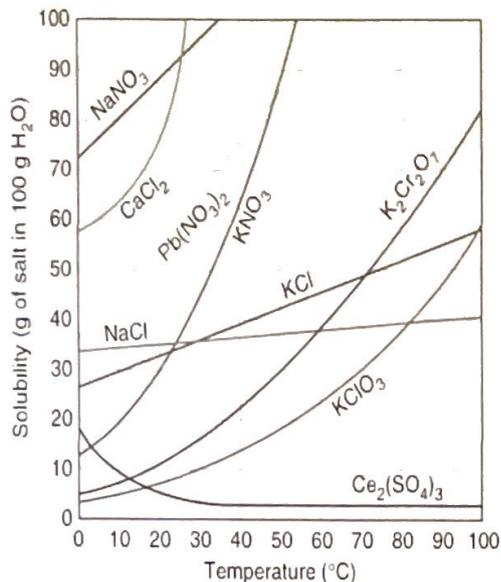


Worksheet: Solubility Graphs

Name Jon Black

Use the provided solubility graph to answer the following questions:



For questions 1 - 4 an amount of solute is given, and a temperature is stated. If all of the solute could be dissolved in 100 g of water at the given temperature, would the resulting solution be *unsaturated*, *saturated*, or *supersaturated*?

- ✓ 1. 60 g KCl at 70 °C Supersaturated
- ✓ 2. 10 g KClO<sub>3</sub> at 60 °C unsaturated
- ✓ 3. 80 g NaNO<sub>3</sub> at 10 °C Saturated
- ✓ 4. 70 g CaCl<sub>2</sub> at 20 °C unsaturated

For questions 5 - 8 a solute and temperature are given. Tell how many grams of each solute must be added to 100 g of water to form a saturated solution at the given temperature.

- ✓ 5. Pb(NO<sub>3</sub>)<sub>2</sub> at 10 °C ~46g
- ✓ 6. Ce<sub>2</sub>(SO<sub>4</sub>)<sub>3</sub> at 50 °C ~8g
- ✓ 7. NaCl at 20 °C ~35g
- ✓ 8. K<sub>2</sub>Cr<sub>2</sub>O<sub>7</sub> at 50 °C ~30g

For questions 9 and 10 underline the solution that is more concentrated.

- 9. At 10 °C: a saturated solution of KNO<sub>3</sub> or a saturated solution of CaCl<sub>2</sub>.
- 10. At 50 °C: a saturated solution of KNO<sub>3</sub> or an unsaturated solution of NaNO<sub>3</sub> consisting of 90 g of the solute dissolved in 100 g of water.

For questions 11 - 12, show your work and circle your final answer.

- ✓ 11. If 115 g KNO<sub>3</sub> are added to 100 g of water at 35 °C, how many grams do not dissolve?

$115g - \sim 54g = \sim 61g$

- ✗ 12. What mass of KCl would be needed to form a saturated solution if the KCl was dissolved in 200 g of water at 80 °C?

$\frac{\sim 52g\text{KCl}}{100g\text{H}_2\text{O}} = \frac{\boxed{\sim 104g\text{KCl}}}{200g\text{H}_2\text{O}}$

$\sim 104g\text{KCl}$