BETH "KEY"

Use the solubility curve below to label the following solutions as saturated or unsaturated. If unsaturated, write how much more solute can be dissolved in the solution.

Solution	Saturated or Unsaturated?	If unsaturated: How much more solute can dissolve in the solution?
a solution that contains 70g of $NaNO_3$ at 30°C (in 100 mL H_2O) $\frac{95g\ NaNO_3}{100g\ H_2O}$	Unsaturated	$70 + x = 95$ $x = 25g$
a solution that contains 50g of NH_4Cl at 50°C (in 100 mL H_2O) $\frac{50g\ NH_4Cl}{100g\ H_2O}$	Saturated	$50 + x = 50$ $x = 0g$
a solution that contains 20g of $KClO_3$ at 50°C (in 100 mL H_2O) $\frac{20g\ KClO_3}{100g\ H_2O}$	Saturated	
a solution that contains 70g of KI at 0°C (in 100 mL H_2O) $\frac{129g\ KI}{100g\ H_2O}$	Unsaturated	$70g + x = 129g$ $x = 59g$

Additional Practice:

1. a. At 90°C, you dissolved 10 g of KCl in 100. g of water. Is this solution saturated or unsaturated?

   b. How do you know?
   53g KCl dissolve in 100g H_2O at 90°C is saturation.

2. A mass of 100 g of $NaNO_3$ is dissolved in 100 g of water at 80ºC. 145g $NaNO_3$ / 100 g H_2O = sat at 80°C

   a) Is the solution saturated or unsaturated?

   b) As the solution is cooled, at what temperature should solid first appear in the solution? Explain. At 35°C 100.g is saturation for $NaNO_3$. See graph.

3. Use the graph to answer the following questions:

   Which compound is **most** soluble at 20 ºC? KI
   Which is the **least** soluble at 40 ºC? $Ce_2(SO_4)_3$
   Which substance on the graph is least soluble at 10°C? $KClO_3$

4. A mass of 80 g of KNO_3 is dissolved in 100 g of water at 50 ºC. The solution is heated to 70ºC. How many more grams of potassium nitrate must be added to make the solution saturated? Explain your reasoning. $80g + Xg = 130g$ (saturation at 70°C) $X = 50$ additional grams