Solubility Curves

New Regents original practice • Name: _____ Date: _____
Show your work for written answers.

The solubility of a solid is the maximum mass that dissolves in a specified mass of solvent at a given temperature.

1 A salt has a solubility of 25 g per 100 g water at 30 °C. What is the maximum mass of salt that can dissolve in 200 g water at that temperature?

(1) 12.5 g

(2) 25 g

(3) 50 g

(4) 200 g

2 At a given temperature, a salt has a solubility of 40 g per 100 g water. A solution contains 25 g dissolved in 100 g water at that temperature. Explain why the solution is unsaturated. [1]

Answer and work

_____

_____

3 A saturated solution cools without losing water. Its solute is less soluble at the lower temperature. What can happen as it reaches equilibrium?

(1) Some dissolved solute crystallizes.

(2) More solute must dissolve from the air.

(3) All dissolved solute stays dissolved regardless of the new limit.

(4) The mass of solvent doubles.

4 A plotted point lies below a salt’s solubility curve. What does the point tell you about the amount of salt dissolved at that temperature? [1]

Answer and work

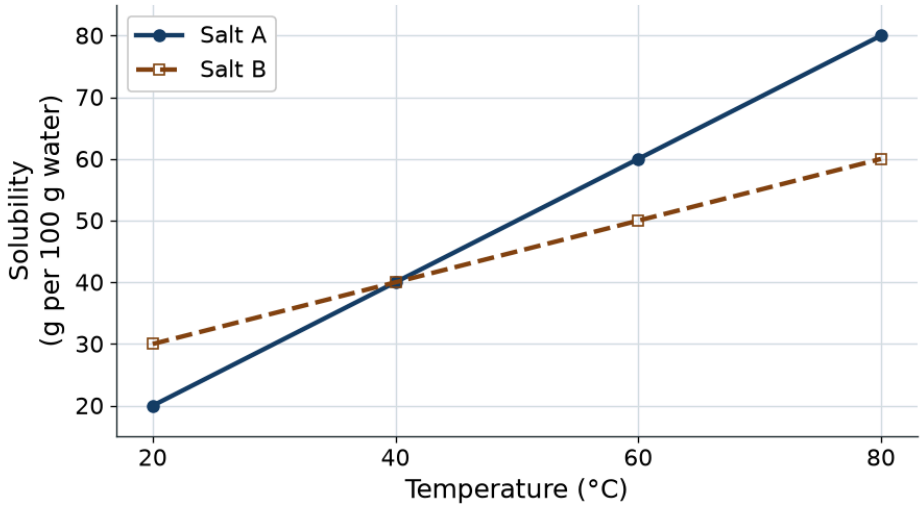
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Cooling a Salt Solution

Use the information below to answer the questions.

A model compares two salts in water. The graph shows each salt's solubility per 100 g of water at the marked temperatures.



Model solubility curves for two salts.

5 At what temperature shown do salt A and salt B have the same solubility?

(1) 20 °C

(2) 40 °C

(3) 60 °C

(4) 80 °C

6 A saturated solution of salt A in 100 g water cools from 80 °C to 40 °C. How much salt crystallizes at equilibrium if no water evaporates? Use the graph. [1]

Answer and work

7 At 60 °C, what is the difference between the solubilities of the two salts per 100 g water?

(1) 0 g

(2) 5 g

(3) 10 g

(4) 20 g

8 Which salt's solubility changes less from 20 °C to 80 °C? Use data from the graph. [1]

Answer and work