

- According to your Reference Tables, which substance forms an unsaturated solution when 80 grams of the substance is dissolved in 100 grams of H₂O at 10°C?
 - KI
 - KNO₃
 - NaNO₃
 - NaCl
- The solubility of KClO₃(s) in water increases as the
 - temperature of the solution increases
 - temperature of the solution decreases
 - pressure on the solution increases
 - pressure on the solution decreases
- According to Reference Table G, which of these substances is most soluble at 60°C?
 - NaCl
 - KCl
 - KClO₃
 - NH₄Cl
- Solubility data for four different salts in water at 60°C are shown in the table below.

Salt	Solubility in Water at 60°C
A	10 grams / 50 grams H ₂ O
B	20 grams / 60 grams H ₂ O
C	30 grams / 120 grams H ₂ O
D	40 grams / 80 grams H ₂ O

Which salt is most soluble at 60°C?

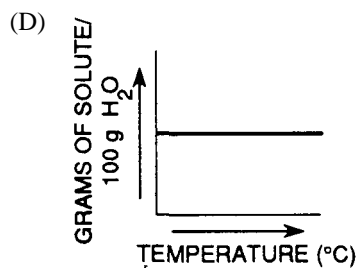
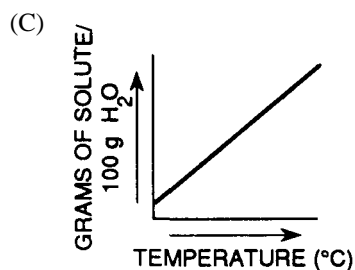
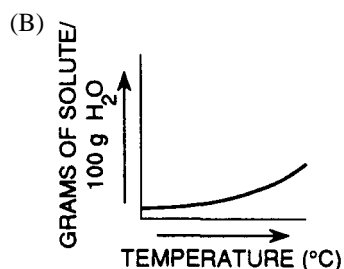
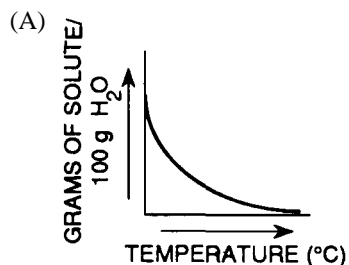
- A
- B
- C
- D

- Which compound is *least* soluble in 100 grams of water at 40°C?
 - SO₂
 - NaCl
 - KClO₃
 - NH₄Cl
- Based on Reference Table G, what change will cause the solubility of KNO₃(s) to increase?
 - decreasing the pressure
 - increasing the pressure
 - decreasing the temperature
 - increasing the temperature
- As the temperature increases from 0°C to 25°C the amount of NH₃ that can be dissolved in 100 grams of water
 - decreases by 10 grams
 - decreases by 40 grams
 - increases by 10 grams
 - increases by 40 grams
- According to Reference Table G, which compound's solubility decreases most rapidly when the temperature increases from 50°C to 70°C?
 - NH₃
 - HCl
 - SO₂
 - KNO₃
- According to Reference Table G, how does a decrease in temperature from 40°C to 20°C affect the solubility of NH₃ and KCl?
 - The solubility of NH₃ decreases, and the solubility of KCl decreases.
 - The solubility of NH₃ decreases, and the solubility of KCl increases.
 - The solubility of NH₃ increases, and the solubility of KCl decreases.
 - The solubility of NH₃ increases, and the solubility of KCl increases.

10. A student obtained the following data in determining the solubility of a substance.

Temperature (°C)	Grams of Solute/ 100 g H ₂ O
10	70
30	45
60	23
90	11

Which graph best represents the solubility curve drawn from the results obtained by the student?



11. A student tested the solubility of a salt at different temperatures and then used Reference Table G to identify the salt. The student's data table appears below.

Temperature (°C)	g of salt per 10 g of water
30	1.2
50	2.2
62	3.0
76	4.0

What is the identity of the salt?

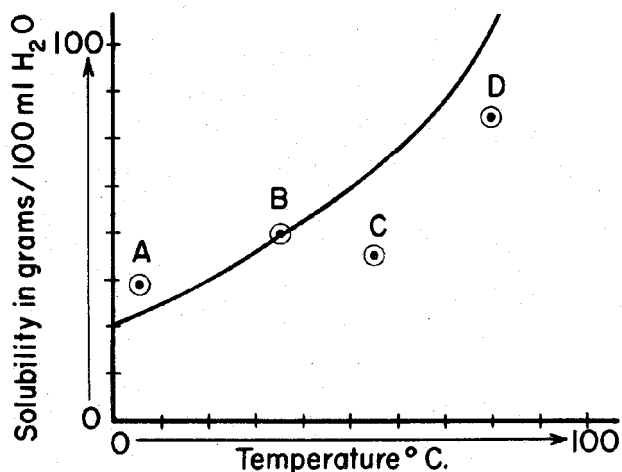
- (A) potassium nitrate (C) potassium chlorate
 (B) sodium chloride (D) ammonium chloride
12. A student obtained the following data in a chemistry laboratory.

Trial	Temperature (°C)	Solubility (grams of KNO ₃ /100 g of H ₂ O)
1	25	40
2	32	50
3	43	70
4	48	60

Based on Reference Table g, which of the trials seems to be in error?

- (A) 1 (C) 3
 (B) 2 (D) 4

Base your answers to questions 13 and 14 on the diagram below which represents the solubility curve of salt X. The four points on the diagram represent four solutions of salt X.



13. Which point represents the most concentrated solution of salt X?
 (A) A (C) C
 (B) B (D) D
14. Which point represents a supersaturated solution of salt X?
 (A) A (C) C
 (B) B (D) D

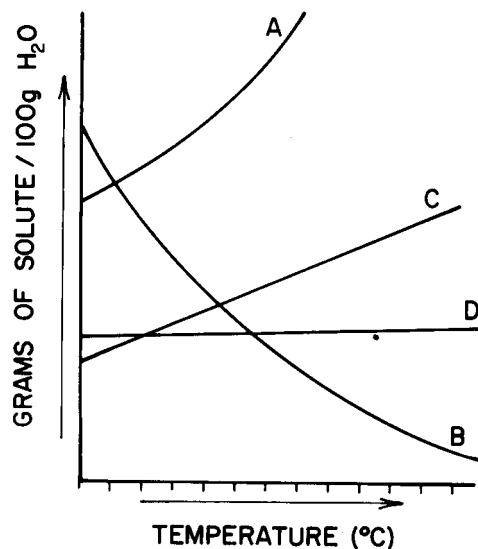
15. A student determined the mass, in grams, of compound X that would saturate 30. grams of water over a temperature range of 40.°C in 10.-degree intervals. The results are tabulated below.

Grams of Dissolved Compound X	Temperature of 30. grams of H ₂ O
2.0 g	10.°C
4.0 g	20.°C
8.0 g	30.°C
16 g	40.°C
32 g	50.°C

If this solubility trend continues, what is the total number of grams of compound X that will dissolve in 30. grams of water at 60.°C?

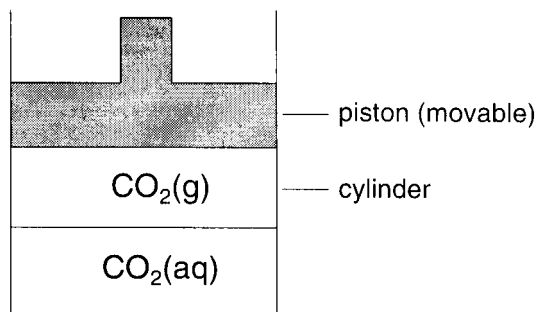
- (A) 16 (C) 48
 (B) 32 (D) 64

16. The graph below represents four solubility curves. Which curve best represents the solubility of a gas in water?



- (A) A (C) C
 (B) B (D) D

17. Given the diagram below that shows carbon dioxide in an equilibrium system at a temperature of 298 K and a pressure of 1 atm:



Which changes *must* increase the solubility of the carbon dioxide?

- (A) increase pressure and decrease temperature
 (B) increase pressure and increase temperature
 (C) decrease pressure and decrease temperature
 (D) decrease pressure and increase temperature
18. At which temperature can water contain the most dissolved oxygen at a pressure of 1 atmosphere?
 (A) 10.°C (C) 30.°C
 (B) 20.°C (D) 40.°C
19. A change in pressure would have the greatest effect on the solubility of a
 (A) solid in a liquid (C) liquid in a liquid
 (B) gas in a liquid (D) liquid in a solid

20. A saturated solution of NaNO_3 is prepared at 60°C using 100. grams of water. As this solution is cooled to 10°C , NaNO_3 precipitates (settles) out of the solution. The resulting solution is saturated. Approximately how many grams of NaNO_3 settled out of the original solution?
- (A) 46 g (C) 85 g
(B) 61 g (D) 126 g
21. What is the total number of grams of potassium chloride needed to saturate exactly 300 grams of water at 10°C ?
- (A) 60 (C) 80
(B) 70 (D) 90
22. Based on Reference Table G, a solution of NaNO_3 that contains 120 grams of solute dissolved in 100 grams of H_2O at 50°C is best described as
- (A) saturated and dilute
(B) saturated and concentrated
(C) supersaturated and dilute
(D) supersaturated and concentrated
23. Oil and water that are poured into a flask together represent a(n)
- (A) solution (C) element
(B) compound (D) mixture
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