

## Set C : Determining saturated amount

*Objective: To test your ability to use the Solubility Reference Table G to determine amount of solute that will form a saturated solution.*

*Based on the given information, determine the amount of the solute needed to form a saturated solution. Use Reference Table G.*

14. In 100 g of H<sub>2</sub>O at 70°C, what amount of KNO<sub>3</sub> will make a saturated solution? \_\_\_\_\_
15. In 100 g of H<sub>2</sub>O at 50°C, what amount of NH<sub>4</sub>Cl will form a saturated solution? \_\_\_\_\_
16. In 100 g of H<sub>2</sub>O at 30°C, what amount of HCl will make a saturated solution? \_\_\_\_\_
17. In 50 g of H<sub>2</sub>O at 20°C, what amount of NaNO<sub>3</sub> will form a saturated solution? \_\_\_\_\_
18. In 200 g of H<sub>2</sub>O at 60°C, what amount of KClO<sub>3</sub> will make a saturated solution? \_\_\_\_\_
19. In 50 g of H<sub>2</sub>O at 10°C, what amount of KI will make a saturated solution? \_\_\_\_\_
20. In 300 g of H<sub>2</sub>O at 90°C, what amount of NH<sub>3</sub> will form a saturated solution? \_\_\_\_\_
21. In 25 g of H<sub>2</sub>O at 80°C, what amount of NaCl will make a saturated solution? \_\_\_\_\_

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## Set D: Determining types of solution

*Objective: To test your ability to use the Solubility Curve Reference Table G to determine type of solution.*

*Base on the given information, determine the type of solution that is formed. Write "Saturated", "Supersaturated", or "Unsaturated" in the line provided.*

22. 80 g of NaNO<sub>3</sub> is dissolved in 100 g of H<sub>2</sub>O at 10°C. \_\_\_\_\_
23. 75 g of NaNO<sub>3</sub> is dissolved in 100 g of H<sub>2</sub>O at 10°C. \_\_\_\_\_
24. 90 g of NaNO<sub>3</sub> is dissolved in 100 g of H<sub>2</sub>O at 10°C. \_\_\_\_\_
25. 90 g of KNO<sub>3</sub> is dissolved in 100 g of H<sub>2</sub>O at 50°C. \_\_\_\_\_
26. 5 g of KClO<sub>3</sub> is dissolved in 100 g of H<sub>2</sub>O at 5°C. \_\_\_\_\_
27. 40 g of KCl is dissolved in 50 g of H<sub>2</sub>O at 60°C. \_\_\_\_\_
28. 40 g of NaNO<sub>3</sub> is dissolved in 50 g of H<sub>2</sub>O at 10°C. \_\_\_\_\_
29. 120 g of NH<sub>3</sub> is dissolved in 200 g of H<sub>2</sub>O at 10°C. \_\_\_\_\_
30. 90 g of NaCl is dissolved in 200 g of H<sub>2</sub>O at 80°C. \_\_\_\_\_

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Set E: Soluble and insoluble compounds

Objective: To test your ability to use the Solubility Guideline Table F to determine soluble and insoluble compounds

Write "soluble" next to those compounds that are soluble in water.  
Write "insoluble" next those compound that are insoluble in water.

Use the Solubility Guideline Reference Table F

<p>28. NaCl _____</p> <p>29. PbBr<sub>2</sub> _____</p> <p>30. CaSO<sub>4</sub> _____</p> <p>31. NH<sub>4</sub>NO<sub>3</sub> _____</p> <p>32. MgCO<sub>3</sub> _____</p> <p>33. K<sub>3</sub>PO<sub>4</sub> _____</p>	<p>34. Calcium hydroxide _____</p> <p>35. Lithium hydroxide _____</p> <p>35. lead (II) sulfate _____</p> <p>36. Ammonium sulfide _____</p> <p>37. lead (II) nitrate _____</p> <p>38. Potassium chromate _____</p>
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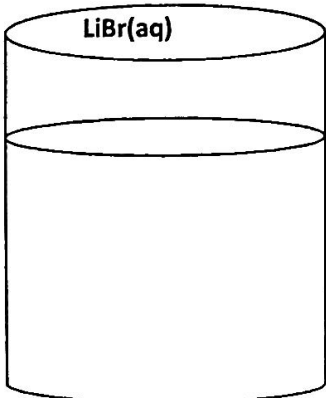
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Set F: Hydration of ions

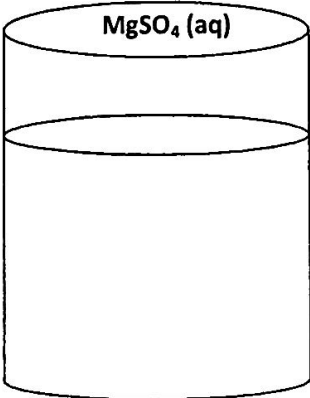
Objective: To test your ability to show the attraction between water molecules and ions of the solute (molecule-ion attraction)

In each of the given solution, draw a diagram showing interaction (or attraction) between the ions of the solute and water molecules. Remember: Opposites attract!

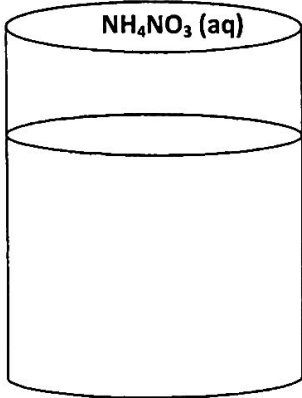
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Key

## Set C : Determining saturated amount

*Objective: To test your ability to use the Solubility Reference Table G to determine amount of solute that will form a saturated solution.*

Based on the given information, determine the amount of the solute needed to form a saturated solution. Use Reference Table G.

- |  |               |
|--|---------------|
| ✓ 14. In 100 g of H <sub>2</sub> O at 70°C, what amount of KNO <sub>3</sub> will make a saturated solution?                                    | <u>135 g</u>  |
| ✓ 15. In 100 g of H <sub>2</sub> O at 50°C, what amount of NH <sub>4</sub> Cl will form a saturated solution?                                  | <u>52 g</u>   |
| 16. In 100 g of H <sub>2</sub> O at 30°C, what amount of HCl will make a saturated solution?   | <u>67 g</u>   |
| 17. In 50 g of H <sub>2</sub> O at 20°C, what amount of NaNO <sub>3</sub> will form a saturated solution?                                      | <u>44 g</u>   |
| 18. In 200 g of H <sub>2</sub> O at 60°C, what amount of KClO <sub>3</sub> will make a saturated solution?<br>$\frac{28}{100} = \frac{x}{200}$ | <u>56 g</u>   |
| 19. In 50 g of H <sub>2</sub> O at 10°C, what amount of KI will make a saturated solution?<br>$\frac{135}{100} = \frac{x}{50}$                 | <u>67.5 g</u> |
| 20. In 300 g of H <sub>2</sub> O at 90°C, what amount of NH <sub>3</sub> will form a saturated solution?<br>$\frac{10}{100} = \frac{x}{300}$   | <u>30 g</u>   |
| 21. In 25 g of H <sub>2</sub> O at 80°C, what amount of NaCl will make a saturated solution?<br>$\frac{39}{100} = \frac{x}{25}$                | <u>9.75 g</u> |

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## Set D: Determining types of solution

*Objective: To test your ability to use the Solubility Curve Reference Table G to determine type of solution.*

Base on the given information, determine the type of solution that is formed.

Write "Saturated", "Supersaturated", or "Unsaturated" in the line provided.

- |   |                       |
|---|-----------------------|
| 22. 80 g of NaNO <sub>3</sub> is dissolved in 100 g of H <sub>2</sub> O at 10°C.  | <u>saturated</u>      |
| 23. 75 g of NaNO <sub>3</sub> is dissolved in 100 g of H <sub>2</sub> O at 10°C.  | <u>unsaturated</u>    |
| 24. 90 g of NaNO <sub>3</sub> is dissolved in 100 g of H <sub>2</sub> O at 10°C.  | <u>Supersaturated</u> |
| 25. 90 g of KNO <sub>3</sub> is dissolved in 100 g of H <sub>2</sub> O at 50°C.   | <u>Supersaturated</u> |
| 26. 5 g of KClO <sub>3</sub> is dissolved in 100 g of H <sub>2</sub> O at 5°C   | <u>saturated</u>      |
| 27. 40 g of KCl is dissolved in 50 g of H <sub>2</sub> O at 60°C. $\frac{40}{50} = \frac{80}{100}$<br>45 g/100 mL = saturated                       | <u>unsaturated</u>    |
| 28. 40 g of NaNO <sub>3</sub> is dissolved in 50 g of H <sub>2</sub> O at 10°C. $\frac{80}{100}$ ?  | <u>saturated</u>      |
| 29. 120 g of NH <sub>3</sub> is dissolved in 200 g of H <sub>2</sub> O at 10°C. $\frac{120}{200} = \frac{x}{100}$ (60)<br>70 g/100 mL for saturated | <u>unsaturated</u>    |
| 30. 90 g of NaCl is dissolved in 200 g of H <sub>2</sub> O at 80°C. $\frac{90}{200} = \frac{x}{100}$ (45)<br>39 g/100 mL = saturated                | <u>Supersaturated</u> |

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**Set E: Soluble and insoluble compounds**

**Objective:** To test your ability to use the Solubility Guideline Table F to determine soluble and insoluble compounds

Write "soluble" next to those compounds that are soluble in water.  
Write "insoluble" next those compound that are insoluble in water.

Use the Solubility Guideline Reference Table F

- |                                     |                  |                                  |                  |
|-------------------------------------|------------------|----------------------------------|------------------|
| 28. NaCl                            | <u>soluble</u>   | 34. Calcium hydroxide            | <u>soluble</u>   |
| 29. PbBr <sub>2</sub>               | <u>insoluble</u> | 35. Lithium hydroxide            | <u>soluble</u>   |
| 30. CaSO <sub>4</sub>               | <u>insoluble</u> | 35. Lead <sup>(II)</sup> sulfate | <u>insoluble</u> |
| 31. NH <sub>4</sub> NO <sub>3</sub> | <u>soluble</u>   | 36. Ammonium sulfide             | <u>soluble</u>   |
| 32. MgCO <sub>3</sub>               | <u>insoluble</u> | 37. Lead <sup>(II)</sup> nitrate | <u>soluble</u>   |
| 33. K <sub>3</sub> PO <sub>4</sub>  | <u>soluble</u>   | 38. Potassium chromate           | <u>soluble</u>   |

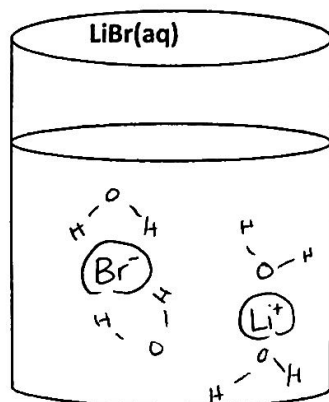
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**Set F: Hydration of ions**

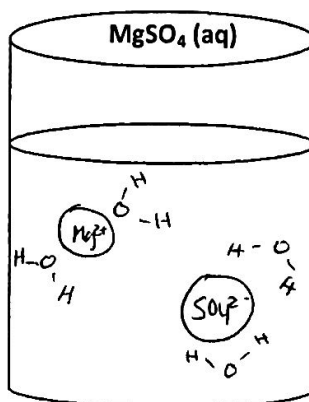
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In each of the given solution, draw a diagram showing interaction (or attraction) between the ions of the solute and water molecules. Remember: Opposites attract!

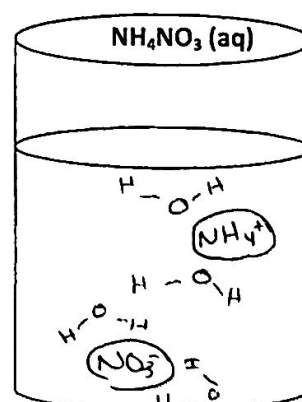
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