NAME_____
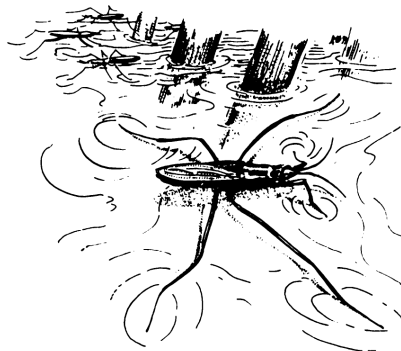
1. Write the formula for each of the following compounds, and state whether they are soluble (aq) or insoluble (s) in water.

   (a) potassium nitride   /2

   (b) ammonium hydroxide   /2

   (c) chromium carbonate   /2

2. Explain why water striders (shown below) are able to walk on the surface of water.

 /2

3.
   (a) State the two positive ions which cause hard water.   /2

   (b) Describe one undesirable effect of hard water.   /2

   (c) State one difference between temporary and permanent hardness.   /1

4.
   (a) List the steps of one water treatment process in correct order.   /2

   (b) Choose one step from the list. Suggest how the final water would be different without it.   /1

5. Write balanced *ionic* equations for the following reactions:

   (a) magnesium bromide solution + silver sulphate solution   /3

   (b) nitric acid solution + sodium carbonate solution   /3

   (c) hydrochloric acid solution + iron metal   /3

MORE QUESTIONS ON OTHER SIDE

6.

   (a) State the effect increased temperature has on the particles in a substance.   /1

   (b) Explain why adding heat energy to a substance will not always increase its temperature.   /2

   (c) Calculate the energy change if 200 g of icecream melts.
       Assume icecream has the same heat properties as water.   /2

   (d) State whether the energy moves *out of* the icecream or *into* the icecream during melting.   /1

   (e) If the icecream is melting in a 1.0 L beaker of water which starts at 25°C, calculate the final temperature of the water.
       Assume that 1 mL of water has a mass of 1 g.   /3

BONUS QUESTION
Marks will be given for answers that use chemistry words and concepts correctly.

Use a diagram of water molecules to show either:

A) Why water forms snowflakes when it freezes
 or
B) Why water forms round droplets