Colligative Properties Worksheet

Solvent	**Normal BP (°C)**	**K_b (°C/m)**	**Normal FP (°C)**	**K_f (°C/m)**
Water, H_20	100.0	0.512	0.0	1.86
Ethanol, C_2H_5OH	78.5	1.22	-117.3	1.99
Benzene, C_6H_6	80.1	2.53	5.5	4.90
Acetic Acid, HCOOH	117.9	3.07	16.6	3.90
Carbon Tetrachloride, CCl_4	76.8	5.02	-22.3	29.8
Chloroform,$CHCl_3$	61.7	3.63	-63.5	4.70

1. Give the number of particles that each compound will make in solution:

NH_3	_____	C_2H_5OH	_____	$AlCl_3$	_____
C_6H_{12}	_____	CO_2	_____	SiO_2	_____
$BaBr_2$	_____	Na_3PO_3	_____	$Al(NO_3)_3$	_____
LiOH	_____	$KHSO_4$	_____	NH_4Br	_____
Si_2Cl_6	_____	$CH_3OCH_2CH_3$	_____		

2. Draw a microscopic representation of CaI_2 in water.

3. If you placed 2.5 g of NaCl in 6.0 kg of water, what would be the boiling point elevation and the new boiling point? What would be the freezing point depression and the new freezing point?

4. If you place 15 g of CH_3CH_2OH in 500 ml of water, what would be the boiling point?

5. If you place 20 g of NH_3 in 400 g of acetic acid, what would be the freezing point?

6. It is –7 °C outside, and you want to keep the 7.25 liters of water on your driveway from freezing. How much $MgCl_2$ do you have to put down?