HW23

Solutions.

Solute – a substance that is dissolved in another substance.
Solvent – a substance that dissolves the solute.
Solution – the substance that is formed when solute dissolves in a solvent.

If we want to prepare the solution of table salt, we take water as our solvent and NaCl as our solute. After we got the solution, we can evaporate water and end up with "intact" NaCl again.

The concentration of a solution is the amount of solute dissolved in a unit volume (it can be liters) of solution.
Molarity (moles per liters) is one of the way to measure the concentration of solutions.
 For example, if we want to prepare 1M (1 molar) solution of NaCl. We need to measure 1 mole of NaCl. According to the molar mass (M, units g/mol) of NaCl (A_r of Na 23, A_r of Cl 35.5; 23+ 35.5=58.5), we have to take
58.5 g of NaCl and dissolve it in 1 L. We have 1 molar solution (1M or 1mol/L) of sodium chloride.
If we have 0.25 L of the solution with the same mass of NaCl (58.5g), the concentration of sodium chloride solution is 4 mol/L.

Questions.

1. Write down the mass (in grams) of 0.5 moles of NaBr.
2. We want to prepare the solution of KNO_3. We need 1 L of this solution, the concentration of KNO_3 should be 0.5 mol/L (0.5M). How many grams of KNO_3 will we take?