

Friday Worksheet

Name:

Gravimetric worksheet 6

- 1) A 12.42 gram sample of ammonium phosphate $(\text{NH}_4)_3\text{PO}_4$ (149.1 g/mol) was placed in a 250 mL volumetric flask and filled to the mark with distilled water. What is the concentration of ammonium ions in the flask?

- 2) Many garden fertilisers contain sulfate ions as one of their components. A 3.21 g sample of fertiliser was crushed dissolved in distilled water and filtered. Lead nitrate was used to precipitate the sulphate as lead sulphate (303.3 g/mol) from the filtrate. The precipitate was filtered, washed and dried. After weighing, it had a mass of 1.34 g.
 - (a) Write the ionic equation for the precipitation reaction.

 - (b) Calculate the number of moles of lead sulfate precipitated.

 - (c) What is the percentage of sulfate by mass present in the fertiliser?

 - (d) What is the percentage, by mass, of sulphur present in the fertiliser?

- (e) A 2.52 g sample of a brand of fertiliser was analysed and found to contain 12.7% by mass of sulphate.
 - i) What should the mass of the precipitate be?

 - ii) A student obtained a precipitate of mass 1.55 grams. Which of the following may have caused this result? Explain
 - a) Failure to wash the precipitate
 - b) Failure to properly crush the fertiliser before dissolving
 - c) Not washing the fertiliser residue in the filter paper thoroughly
 - d) Using too much water to dissolve the fertiliser