a student was asked to find the relative atomic mass of element X. crystals of the chloride of X were know to have the formula $XCl_2 \cdot 6H_2O$.the
student dissolved 2.03g of the crystals in water, and then added an excess
of silver nitrate solution to the solution formed. a white precipitate of
silver chloride was formed, which was filtered, dried and weighed. 2.87g
were formed. Ag+Cl---AgCl calculate: the number of moles of silver chloride
formed? the number of moles of X chloride in the solution? the mass of 1
mole of $XCl_2 \cdot 6H_2O$? the relative atomic mass of X?

$$XCl_2 + 2AgNO_3 \rightarrow 2AgCl + X(NO_3)_2$$
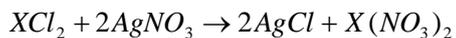
$$v(AgCl) = \frac{2.87}{143} = 0.02mol$$

$$v(XCl_2) = 0.01mol$$

$$\omega(XCl_2) = \frac{X + 71}{X + 71 + 18*6}$$

$$m(XCl_2) = 2.03 * \frac{X + 71}{X + 179}$$

$$v(XCl_2) = \frac{2.03}{X + 71} * \frac{X + 71}{X + 179} = 0.01mol$$

$$0.01X + 1.79 = 2.03$$

$$X = 24$$

$$M(XCl_2) = 96g/mol$$

$$M(X) = 24g/mol$$

$$X - Mg$$