

## Answer on Question #55401 - Chemistry - General chemistry

### Question:

1. How many moles of BaCl<sub>2</sub> are formed in the neutralization of 196.5 mL of 0.095 M Ba(OH)<sub>2</sub> with aqueous HCl?
2. Lead ions can be precipitated from aqueous solutions by the addition of aqueous iodide: Pb<sup>2+</sup>(aq) + 2I<sup>-</sup>(aq) = PbI<sub>2</sub>(s). Lead iodide is virtually insoluble in water so that the reaction appears to go to completion. How many milliliters of 1.180 M HI(aq) must be added to a solution containing 0.200 mol of Pb(NO<sub>3</sub>)<sub>2</sub> (aq) to completely precipitate the lead?
3. What is the molarity of a NaOH solution if 15.5 mL of a 0.220 M H<sub>2</sub>SO<sub>4</sub> solution is required to neutralize a 25.0 mL sample of the NaOH solution?
4. Aqueous solutions of a compound did not form precipitates with Cl<sup>-</sup>, Br<sup>-</sup>, I<sup>-</sup>, SO<sub>4</sub><sup>2-</sup>, CO<sub>3</sub><sup>2-</sup>, PO<sub>4</sub><sup>3-</sup>, OH<sup>-</sup>, or S<sup>2-</sup>. This highly water soluble compound produced the foul-smelling gas H<sub>2</sub>S when the solution was acidified. This compound is \_\_\_\_\_.

### Solution:



$$C = \frac{n}{V}$$

$$n = V \times C$$

$$n = 1.965 \times 10^{-2} \times 0.095$$

$$n = 1.87 \times 10^{-2}$$

$$n_{Ba(OH)_2} = n_{BaCl_2}$$

**Answer:  $1.87 \times 10^{-2}$  moles**



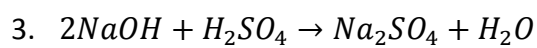
$$C = \frac{n}{V}$$

$$V = \frac{n}{C}$$

$$n(HI) = 2 \times n(Pb(NO_3)_2) = 0.4 \text{ mol}$$

$$V = \frac{0.4}{1.18}$$

**Answer:  $V = 0.34$  ml**



$$n = V \times C$$

$$n = 0.0155 \times 0.220$$

$$n = 0.0341$$

$$n(\text{NaOH}) = 0.0341 \times 2$$

$$n(\text{NaOH}) = 0.0682$$

$$C = \frac{n}{V}$$

$$C = \frac{0.0682}{0.025}$$

$$C = 0.27$$

**Answer: 0.27 mol/L**

