

## Answer on the question #47559, Chemistry, Physical Chemistry

### Question:

How many grams of concentrated nitric acid solution should be used to prepare 250mL of 2.0M HNO<sub>3</sub>? The concentrated acid is 70%HNO<sub>3</sub>.

- (1)90.g concHNO<sub>3</sub>
- (2)70.0gconchNO<sub>3</sub>
- (3)54.0gconc. HNO<sub>3</sub>
- (4)45.0g conc.HNO<sub>3</sub>

### Solution:

The molar concentration of the solution:

$$c = \frac{n(\text{HNO}_3)}{V}$$

$$n(\text{HNO}_3) = cV = 0.25 * 2.0 = 0.5 \text{ mol}$$

$$m(\text{HNO}_3) = n(\text{HNO}_3) * M = 0.5 * 63.0128 = 31.5064 \text{ g}$$

The concentrated acid weight fraction:

$$\omega = \frac{m(\text{HNO}_3)}{m(\text{solution})}$$

$$m(\text{solution}) = \frac{m(\text{HNO}_3)}{\omega} = \frac{31.5064}{0.7} = 45.01 \text{ g}$$

**Answer:** 45.01 g. 4)