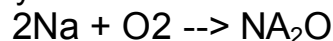


How many grams of Na do you need to make .6548 moles of Na₂O?



known:

0.6548 moles Na₂O

2molesNa/1mole Na₂O

molar masses Na and Na₂O,
(if needed)

what is needed:

grams Na

1. Find # of moles Na needed to make 0.6548 moles Na₂O

$$0.6548\text{molesNa}_2\text{O}\left(\frac{2\text{molesNa}}{1\text{moleNa}_2\text{O}}\right)=1.3096\text{molesNa}$$

(The ratio of moles Na to moles Na₂O comes from the chemical equation. The ratio of the coefficients will always tell how many moles of reactants or products you need relative to another reactant or product. These ratios that let you relate the amount of one of the chemicals in the equation to another chemical in the equation are why balanced equations are so important.)

2. Find # of grams Na in 1.3096 moles Na

$$1.3096\text{molesNa}\left(\frac{22.9898\text{gNa}}{1\text{moleNa}}\right)=30.107\text{gNa}$$

If you look back at what we were given, there should be 4 significant figures in the answer. This means that final answer should be written, 30.11 g Na.

In answering this problem, and in all of the calculation problems we are doing, whether to multiply or divide is determined by matching and canceling units. This method has been shown to be much more effective than memorizing equations, and using algebra to solve them. This is particularly true in chemistry and nursing where there are many different types of calculations that use the same type of information.