How many grams of Na do you need to make .6548 moles of Na_2O?

$2Na + O2 \rightarrow NA_2O$

known:
0.6548 moles Na_2O
2molesNa/1mole Na_2O
molar masses Na and Na_2O,
(if needed)

what is needed:
grams Na

1. Find # of moles Na needed to make 0.6548 moles Na_2O

$$0.6548 molesNa_2O\left(\frac{2molesNa}{1moleNa_2O}\right) = 1.3096 molesNa$$

(The ratio of moles Na to moles Na_2O 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

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

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.