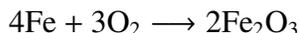


Print this document. Answer in the space provided. Show both the algebraic work needed to solve the problem AND draw the resulting graph on paper (like in Geogebra). For full credit, be sure to indicate your units. Don't forget your equal signs. Please keep your work organized, in order, and neat.

1. On a map, the distance in inches is proportional to the actual distance between places in miles. In particular, we know that the distance from Primeville to Composite Junction in real life is 45 miles. On the map, they are 1.8 inches apart.

How far is it from Primeville to Unitown if the distance between them on the map is 2.9 inches?

2. In Chemistry, iron combines with oxygen to form iron(III) oxide (rust) with the following equation



The reactants iron and oxygen are on the left side of the equation. The coefficients of 4 and 3 means there should be 4 moles of iron to react with 3 moles of oxygen in this reaction.

- (a) A scientist has 197 moles of iron. How many moles of oxygen does she need to react with all of this iron?
  
  
  
  
  
  
  
  
  
  
- (b) Suppose now that the scientist has 369 moles of iron and 288 moles of oxygen. Because this proportion is off from the actual reaction proportion in the chemical equation, one of the elements will not be completely used to make rust. Which element is the excess element and how much of that element is left over?