

Reactants:

$$\text{C} = \frac{16}{\quad}$$

$$\text{H} = \frac{32}{\quad}$$

$$\text{O} = \frac{48}{\quad}$$

Products:

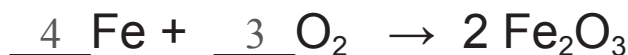
$$\text{C} = \frac{1-16-16}{\quad}$$

$$\text{H} = \frac{2-2-32}{\quad}$$

$$\text{O} = \frac{3-33-48}{\quad}$$

*Teachers: This one requires two changes. 1st change carbon which results in the second set of numbers. 2nd change hydrogen (3rd set) and that balances the equation.

- Based on the products, determine the number of molecules for each reactant.



Reactants:

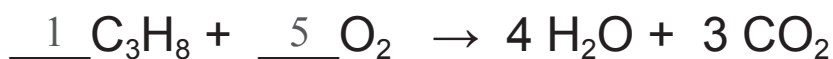
$$\text{Fe} = \frac{1-4-4}{\quad}$$

$$\text{O} = \frac{2-2-6}{\quad}$$

Products:

$$\text{Fe} = \frac{4}{\quad}$$

$$\text{O} = \frac{6}{\quad}$$



Reactants:

$$\text{C} = \frac{3-3}{\quad}$$

$$\text{H} = \frac{8-8}{\quad}$$

$$\text{O} = \frac{2-10}{\quad}$$

Products:

$$\text{C} = \frac{3}{\quad}$$

$$\text{H} = \frac{8}{\quad}$$

$$\text{O} = \frac{10}{\quad}$$



Reactants:

$$\text{H} = \frac{2-6-6}{\quad}$$

$$\text{C} = \frac{1-1-3}{\quad}$$

$$\text{O} = \frac{3-5-9}{\quad}$$

Products:

$$\text{H} = \frac{6}{\quad}$$

$$\text{C} = \frac{3}{\quad}$$

$$\text{O} = \frac{9}{\quad}$$

Activities

- Challenge Exercise:** Balance these equations by determining BOTH the reactants and the molecules. Remember that increasing the coefficient (the number of molecules) multiplies each number of atoms in the molecule by that number. Start with the element of which there are fewest, and work through one element at a time.



Reactants:

$$\text{H} = \frac{2-2-4}{\quad}$$

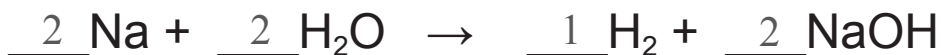
$$\text{O} = \frac{2-2-2}{\quad}$$

Products:

$$\text{H} = \frac{2-4-4}{\quad}$$

$$\text{O} = \frac{1-2-2}{\quad}$$

*Teachers: The only thing that is off is the O in the products, so you change it by making it 2 H₂O. This then throws the H off because you now have 4 H in the products and 2 in the reactants. You then just change the H in the reactants to 2 H₂.



Reactants:

$$\text{H} = \frac{2-4-4-4}{\quad}$$

$$\text{Na} = \frac{1-1-1-2}{\quad}$$

$$\text{O} = \frac{1-2-2-2}{\quad}$$

Products:

$$\text{H} = \frac{3-3-4-4}{\quad}$$

$$\text{Na} = \frac{1-1-2-2}{\quad}$$

$$\text{O} = \frac{1-1-2-2}{\quad}$$

For the second equation, adjust in this order: H(2 steps)- O- Na