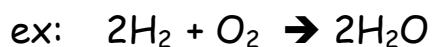


STOICHIOMETRY: MOLE to MOLE Conversions

The coefficients in a balanced chemical equation give the mole-to-mole conversion factor that allows the conversion from one substance to another. This mole-to-mole conversion factor will be used in every stoichiometry problem...



- 1.) What is the mole-to-mole conversion factor which relates:
- A) H_2 to H_2O
 - B) O_2 to H_2O
 - C) H_2 to O_2



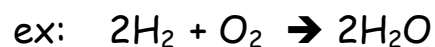
- 2.) What is the mole-to-mole conversion factor which relates:
- D) H_2 to H_2O
 - E) O_2 to H_2O
 - F) H_2 to O_2

1. A) 2 moles H_2 = 2 moles H_2O (conversion factor, *cf*)
B) 1 mole O_2 = 2 moles H_2O (*cf*)
C) 2 moles H_2 = 1 mole O_2 (*cf*)

2. If 5.6 moles of H₂ react, how many moles of H₂O can be formed?...

$$5.6 \text{ moles H}_2 \times \frac{2 \text{ moles H}_2\text{O}}{2 \text{ moles H}_2}$$

$$= 5.6 \text{ moles of H}_2\text{O}$$



2 moles H₂ = 2 moles H₂O (conversion factor, *cf*)

1 mole O₂ = 2 moles H₂O (*cf*)

2 moles H₂ = 1 mole O₂ (*cf*)

3. How many moles of O₂ are needed to react with 0.18 moles of H₂?

$$0.18 \text{ moles H}_2 \times \frac{1 \text{ mole O}_2}{2 \text{ moles H}_2}$$

$$= 0.090 \text{ moles O}_2$$