## Stoichiometry Practice Problems Answers

1. How many grams of acetylene $\left(\mathrm{C}_{2} \mathrm{H}_{2}\right)$ are produced if you have $5.00 \mathrm{~g} \mathrm{CaC}_{2}$ ?

$$
\mathrm{CaC}_{2(\mathrm{~s})}+2 \mathrm{H}_{2} \mathrm{O}_{(\mathrm{l})} \rightarrow \mathrm{C}_{2} \mathrm{H}_{2(\mathrm{~g})}+\mathrm{Ca}(\mathrm{OH})_{2(\mathrm{aq})}
$$

$$
2.03 \mathrm{~g} \mathrm{C}_{2} \mathrm{H}_{2}
$$

2. How many grams of $\mathrm{H}_{3} \mathrm{PO}_{4}$ react with excess calcium carbonate to produce $3.74 \mathrm{~g} \mathrm{Ca}_{3}\left(\mathrm{PO}_{4}\right)_{2}$ ?
$3 \mathrm{CaCO}_{3(\mathrm{~s})}+2 \mathrm{H}_{3} \mathrm{PO}_{4(\mathrm{aq})} \rightarrow \mathrm{Ca}_{3}\left(\mathrm{PO}_{4}\right)_{2(\mathrm{aq})}+3 \mathrm{CO}_{2(\mathrm{~g})}+3 \mathrm{H}_{2} \mathrm{O}_{(\mathrm{l})}$

## $2.36 \mathrm{~g} \mathrm{H}_{3} \mathrm{PO}_{4}$

3. Calculate the number of grams of carbon dioxide formed when $0.773 \mathrm{~g} \mathrm{H}_{2} \mathrm{O}$ is produced.
$3 \mathrm{CaCO}_{3(\mathrm{~s})}+2 \mathrm{H}_{3} \mathrm{PO}_{4(\mathrm{aq})} \rightarrow \mathrm{Ca}_{3}\left(\mathrm{PO}_{4}\right)_{2(\mathrm{aq})}+3 \mathrm{CO}_{2(\mathrm{~g})}+3 \mathrm{H}_{2} \mathrm{O}_{\text {(1) }}$
$1.89 \mathrm{~g} \mathrm{CO}_{2}$
4. When $15.0 \mathrm{~g} \mathrm{Sb}_{2} \mathrm{~S}_{3}$ reacts with an excess of Fe , how many grams of Sb are produced?

$$
\mathrm{Sb}_{2} \mathrm{~S}_{3(\mathrm{~s})}+3 \mathrm{Fe}_{(\mathrm{s})} \rightarrow 2 \mathrm{Sb}_{(\mathrm{s})}+3 \mathrm{FeS}_{(\mathrm{s})}
$$

10.75 g Sb
5. If this reaction produces 9.84 g Sb , how many grams of Fe are needed?

$$
\mathrm{Sb}_{2} \mathrm{~S}_{3(\mathrm{~s})}+3 \mathrm{Fe}_{(\mathrm{s})} \rightarrow 2 \mathrm{Sb}_{(\mathrm{s})}+3 \mathrm{FeS}_{(\mathrm{s})}
$$

6.77 g Fe
6. How many grams of zinc are needed to react with 1.49 g $\mathrm{HNO}_{3}$ ?
$4 \mathrm{Zn}_{(\mathrm{s})}+10 \mathrm{HNO}_{3(\mathrm{aq})} \rightarrow 4 \mathrm{Zn}\left(\mathrm{NO}_{3}\right)_{2(\mathrm{aq})}+\mathrm{NH}_{4} \mathrm{NO}_{3(\mathrm{aq})}+3 \mathrm{H}_{2} \mathrm{O}_{(\mathrm{l})}$

$$
0.619 \mathrm{~g} \mathrm{Zn}
$$

7. How many grams of $\mathrm{HNO}_{3}$ are needed to form $29.1 \mathrm{~g} \mathrm{NH}_{4} \mathrm{NO}_{3}$ ?
$4 \mathrm{Zn}_{(\mathrm{s})}+10 \mathrm{HNO}_{3(\mathrm{aq})} \rightarrow 4 \mathrm{Zn}\left(\mathrm{NO}_{3}\right)_{2(\mathrm{aq})}+\mathrm{NH}_{4} \mathrm{NO}_{3(\mathrm{aq})}+3 \mathrm{H}_{2} \mathrm{O}_{\text {(1) }}$
$229 \mathrm{~g} \mathrm{NHO}_{3}$
