Balancing Equations Worksheet

1) _____ Al(NO₃)₃ + _____ (NH₄)₃PO₄ → _____AlPO₄ + _____ NH₄NO₃

2) _____ AgF + _____ CaCl₂ → _____ AgCl + _____ CaF₂

3) _____ ZnBr₂ + _____ Pb(NO₂)₂ → _____ Zn(NO₂)₂ + _____ PbBr₂

4) _____ C₂H₄O₂ + _____ O₂ → _____ CO₂ + _____ H₂O

5) _____ Ca + _____ CuF₂ → _____ CaF₂ + _____ Cu

6) _____ H₂SO₄ + _____ B(OH)₃ → _____ B₂(SO₄)₃ + _____ H₂O

7) _____ S₈ + _____ O₂ → _____ SO₂

8) _____ H₂O₂ → _____ O₂ + _____ H₂O

9) _____ K + _____ F₂ → _____ KF

10) _____ AgNO₃ + _____ Ga → _____ Ag + _____ Ga(NO₃)₃

11) _____ N₂ + _____ H₂ → _____ NH₃

12) _____ NaCl + _____ H₂SO₄ → _____ NaHSO₄ + _____ HCl

13) _____ KMnO₄ → _____ K₂MnO₄ + _____ MnO₂ + _____ O₂

14) _____ Fe + _____ AgNO₃ → _____ Fe(NO₃)₂ + _____ Ag

15) _____ Li₂SO₄ + _____ K₃PO₄ → _____ Li₃PO₄ + _____ K₂SO₄
Balancing Equations Answers

Before giving you the answers, I just want to give a quick reminder about things you should do to balance the equations, and things you should try if the balancing isn't going too well.

How to balance equations (the very brief version):
- Write down a chart of all the elements before and after the arrow
- Count the number of atoms of each element and put in the chart
- Change one coefficient in the equation
- Redo the chart
- If it's not balanced, change another coefficient and repeat until it is

Things to try if the equation doesn't balance:
- Start over from the very beginning. It's likely that you either messed up the inventory or are stuck in a rut and can't see what you're doing wrong. Start over and get a fresh start.
- Show your work. If you're doing this in your head, you're probably making mistakes at some point. Yes, I know that it messes up your paper, and I know that it looks sloppy, but it works.
- If that doesn't work, start over again, but put a “2” in front of the most complicated looking formula. This often forces you to get a fresh perspective on the problem. If that doesn't work, try putting a “3” and so on.
- Use your gut instincts. What's the worst that can happen? It's not like you can get more wrong or anything. This isn't a big deal, so take some chances!
- Go get a snack. And then come back and try again.

The biggest thing to remember is that you're not an idiot if you can't solve the equation. Yes, I know that your friend Heidi could balance the equation, but some people take longer to figure this out than others. Once it clicks in your head, you'll be just as good as she is. And who cares about Heidi anyway – her boyfriend is totally messing around with Stephanie and she doesn't even know! Plus she had a crush on the kid who eats his boogers in the third grade – what's the deal with that?

That's enough of that. Let's look at the answers on the next page:
Balancing Equations Answers

1) \[ \text{1 Al(NO}_3\text{)}_3 + \text{1 (NH}_4\text{)}_3\text{PO}_4 \rightarrow \text{1 AlPO}_4 + \text{3 NH}_4\text{NO}_3 \]

2) \[ \text{2 AgF} + \text{1 CaCl}_2 \rightarrow \text{2 AgCl} + \text{1 CaF}_2 \]

3) \[ \text{1 ZnBr}_2 + \text{1 Pb(NO}_2\text{)}_2 \rightarrow \text{1 Zn(NO}_2\text{)}_2 + \text{1 PbBr}_2 \]

4) \[ \text{1 C}_2\text{H}_4\text{O}_2 + \text{2 O}_2 \rightarrow \text{2 CO}_2 + \text{2 H}_2\text{O} \]

5) \[ \text{1 Ca} + \text{1 CuF}_2 \rightarrow \text{1 CaF}_2 + \text{1 Cu} \]

6) \[ \text{3 H}_2\text{SO}_4 + \text{2 B(OH)}_3 \rightarrow \text{1 B}_2(\text{SO}_4)_3 + \text{6 H}_2\text{O} \]

7) \[ \text{1 S}_8 + \text{8 O}_2 \rightarrow \text{8 SO}_2 \]

8) \[ \text{2 H}_2\text{O}_2 \rightarrow \text{1 O}_2 + \text{2 H}_2\text{O} \]

9) \[ \text{2 K} + \text{1 F}_2 \rightarrow \text{2 KF} \]

10) \[ \text{3 AgNO}_3 + \text{1 Ga} \rightarrow \text{3 Ag} + \text{1 Ga(NO}_3\text{)}_3 \]

11) \[ \text{1 N}_2 + \text{3 H}_2 \rightarrow \text{2 NH}_3 \]

12) \[ \text{1 NaCl} + \text{1 H}_2\text{SO}_4 \rightarrow \text{1 NaHSO}_4 + \text{1 HCl} \]

13) \[ \text{2 KMnO}_4 \rightarrow \text{1 K}_2\text{MnO}_4 + \text{1 MnO}_2 + \text{1 O}_2 \]

14) \[ \text{1 Fe} + \text{2 AgNO}_3 \rightarrow \text{1 Fe(NO}_3\text{)}_2 + \text{2 Ag} \]

15) \[ \text{3 Li}_2\text{SO}_4 + \text{2 K}_3\text{PO}_4 \rightarrow \text{2 Li}_3\text{PO}_4 + \text{3 K}_2\text{SO}_4 \]