Balancing Equations Worksheet

1) _____ $Al(NO_3)_3$ + _____ $(NH_4)_3PO_4$ → _____$AlPO_4$ + _____ NH_4NO_3

2) _____ AgF + _____ $CaCl_2$ → _____ AgCl + _____ CaF_2

3) _____ $ZnBr_2$ + _____ $Pb(NO_2)_2$ → _____ $Zn(NO_2)_2$ + _____ $PbBr_2$

4) _____ $C_2H_4O_2$ + _____ O_2 → _____ CO_2 + _____ H_2O

5) _____ Ca + _____ CuF_2 → _____ CaF_2 + _____ Cu

6) _____ H_2SO_4 + _____ $B(OH)_3$ →_____ $B_2(SO_4)_3$ + _____ H_2O

7) _____ S_8 + _____ O_2 → _____ SO_2

8) _____ H_2O_2 → _____ O_2 + _____ H_2O

9) _____ K + _____ F_2 → _____ KF

10) _____ $AgNO_3$ + _____ Ga → _____ Ag + _____ $Ga(NO_3)_3$

11) _____ N_2 + _____ H_2 → _____ NH_3

12) _____ NaCl + _____ H_2SO_4 → _____ $NaHSO_4$ + _____ HCl

13) _____ $KMnO_4$ → _____ K_2MnO_4 + _____ MnO_2 + _____ O_2

14) _____ Fe + _____ $AgNO_3$ → _____ $Fe(NO_3)_2$ + _____ Ag

15) _____ Li_2SO_4 + _____ K_3PO_4 → _____ Li_3PO_4 + _____ K_2SO_4

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) **1** $Al(NO_3)_3$ + **1** $(NH_4)_3PO_4$ → **1** $AlPO_4$ + **3** NH_4NO_3

2) **2** AgF + **1** $CaCl_2$ → **2** AgCl + **1** CaF_2

3) **1** $ZnBr_2$ + **1** $Pb(NO_2)_2$ → **1** $Zn(NO_2)_2$ + **1** $PbBr_2$

4) **1** $C_2H_4O_2$ + **2** O_2 → **2** CO_2 + **2** H_2O

5) **1** Ca + **1** CuF_2 → **1** CaF_2 + **1** Cu

6) **3** H_2SO_4 + **2** $B(OH)_3$ → **1** $B_2(SO_4)_3$ + **6** H_2O

7) **1** S_8 + **8** O_2 → **8** SO_2

8) **2** H_2O_2 → **1** O_2 + **2** H_2O

9) **2** K + **1** F_2 → **2** KF

10) **3** $AgNO_3$ + **1** Ga → **3** Ag + **1** $Ga(NO_3)_3$

11) **1** N_2 + **3** H_2 → **2** NH_3

12) **1** NaCl + **1** H_2SO_4 → **1** $NaHSO_4$ + **1** HCl

13) **2** $KMnO_4$ → **1** K_2MnO_4 + **1** MnO_2 + **1** O_2

14) **1** Fe + **2** $AgNO_3$ → **1** $Fe(NO_3)_2$ + **2** Ag

15) **3** Li_2SO_4 + **2** K_3PO_4 → **2** Li_3PO_4 + **3** K_2SO_4