

# Balancing Equations Challenge

period: \_\_\_\_\_  
 seat #: \_\_\_\_\_

★1

**Part A: Parts & Pieces**

- (1) Circle each subscript in each chemical formula.
- (2) Draw a square around each coefficient.
- (3) Answer the questions related to each chemical formula.



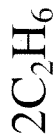
What element does the O represent? \_\_\_\_\_



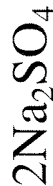
How many atoms of each element are in the formula shown?  
 C = \_\_\_\_\_ O = \_\_\_\_\_



How many atoms of Hydrogen are in this formula as shown? \_\_\_\_\_



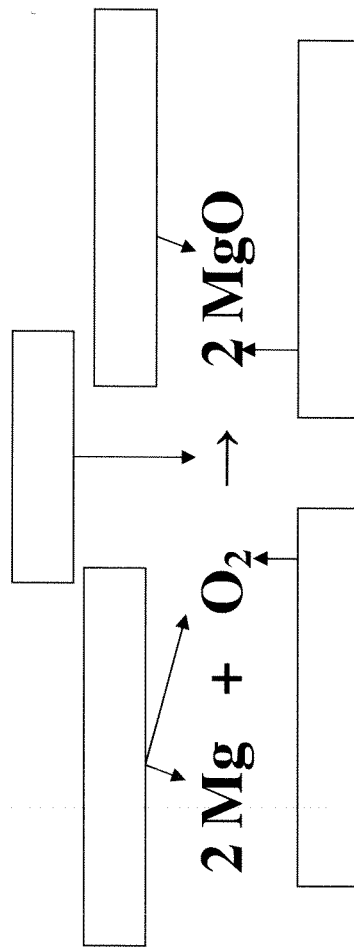
How many atoms each element are in the formula shown?  
 C = \_\_\_\_\_ H = \_\_\_\_\_



How many atoms each element are in the formula shown?  
 Na = \_\_\_\_\_ S = \_\_\_\_\_ O = \_\_\_\_\_

★2

**Part B: Label the chemical equation using PRODUCT, REACTANTS, SUBSCRIPT, COEFFICIENT, and YIELDS.**



## Balancing Equations Tutorial Packet w/keys

- go through the packet in the order indicated by the stated #'s.
- the keys are included to help you.

## Answer Key

# Balancing Equations Challenge

★ 3

### Part A: Parts & Pieces

- (1) Circle each subscript in each chemical formula.
- (2) Draw a square around each coefficient.
- (3) Answer the questions related to each chemical formula.



What element does the O represent?  
OXYGEN



How many atoms of each element  
are in the formula shown?  
C = 1 O = 2



How many atoms of Hydrogen are  
in this formula as shown? 10



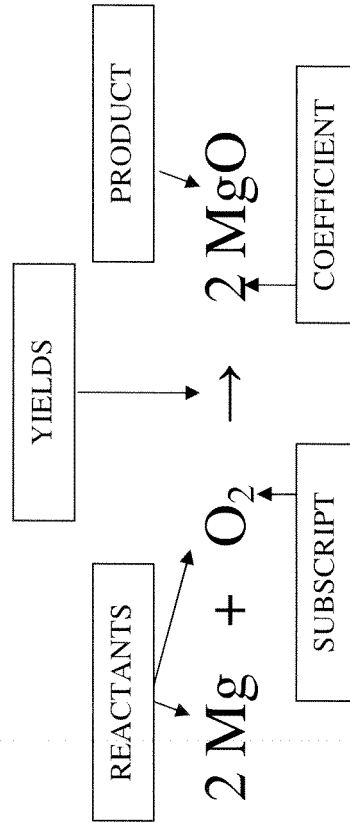
How many atoms each element  
are in the formula shown?  
C = 4 H = 12



How many atoms each element  
are in the formula shown?  
Na = 4 S = 2 O = 8

★ 4

Part B: Label the chemical equation using **PRODUCT, REACTANTS, SUBSCRIPT, COEFFICIENT, and YIELDS.**



# Tutorial

Period: \_\_\_\_\_

Seat #: \_\_\_\_\_

## Balancing Act

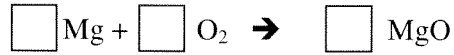
Name \_\_\_\_\_

5  
★

Atoms are not <sup>①</sup> \_\_\_\_\_ or <sup>②</sup> \_\_\_\_\_ during a chemical reaction. Scientists know that there must be the <sup>③</sup> \_\_\_\_\_ number of atoms on each <sup>④</sup> \_\_\_\_\_ of the <sup>⑤</sup> \_\_\_\_\_. To balance the chemical equation, you must add <sup>⑥</sup> \_\_\_\_\_ in front <sup>⑦</sup> \_\_\_\_\_ or <sup>⑧</sup> \_\_\_\_\_ subscripts! \*

★  
7

- 1) Determine number of atoms for each element.
- 2) Pick an element that is not equal on both sides of the equation.
- 3) Add a coefficient in front of the formula with that element and adjust your counts.
- 4) Continue adding coefficients to get the same number of atoms of each element on each side.



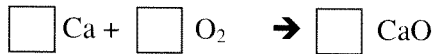
Mg = \_\_\_\_\_ Mg = \_\_\_\_\_

O = \_\_\_\_\_ O = \_\_\_\_\_

\* WORD BANK: ★5  
Add, change, coefficients, created, destroyed, equation, same, side

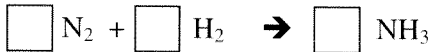
### Try these:

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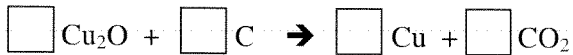
Ca = \_\_\_\_\_ Ca = \_\_\_\_\_

O = \_\_\_\_\_ O = \_\_\_\_\_



N = \_\_\_\_\_ N = \_\_\_\_\_

H = \_\_\_\_\_ H = \_\_\_\_\_



Cu = \_\_\_\_\_ Cu = \_\_\_\_\_

O = \_\_\_\_\_ O = \_\_\_\_\_

C = \_\_\_\_\_ C = \_\_\_\_\_



H = \_\_\_\_\_ H = \_\_\_\_\_

O = \_\_\_\_\_ O = \_\_\_\_\_

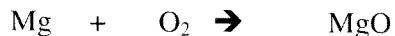
KEY

Balancing Act  
Teacher Notes

Step-by-Step Example Problem:



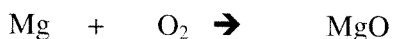
Step 1: Determine number of atoms for each element.



$$\text{Mg} = 1 \qquad \text{Mg} = 1$$

$$\text{O} = 2 \qquad \text{O} = 1$$

Step 2: Pick an element that is not equal on both sides of the equation.

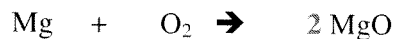


$$\text{Mg} = 1 \qquad \text{Mg} = 1$$

$$\text{O} = 2 \qquad \text{O} = 1$$

Since the O atoms are not equal, we'll target those first!

Step 3: Add a coefficient in front of the formula with that element and adjust your counts.



$$\text{Mg} = 1 \qquad \text{Mg} = 2$$

$$\text{O} = 2 \qquad \text{O} = 2$$

Adding a 2 in front of MgO will change the number of atoms on the product side of the equation.

Step 4: Continue adding coefficients to get the same number of atoms of each element on each side.



$$\text{Mg} = 2 \qquad \text{Mg} = 2$$

$$\text{O} = 2 \qquad \text{O} = 2$$

Now we need to increase the number of Mg atoms we have on the reactant side. Adding a 2 in front of Mg will give us 2 atoms of Mg and balance the equation.



Fill in the blank key:

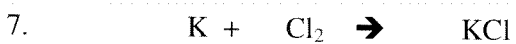
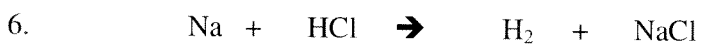
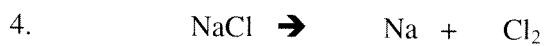
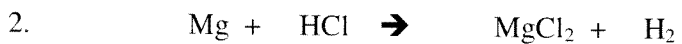
- ① created
- ② destroyed
- ③ same
- ④ side
- ⑤ equation
- ⑥ coefficients
- ⑦ Add
- ⑧ change



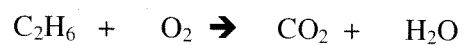
## Balancing Act Practice

Name \_\_\_\_\_

Balance each equation. Be sure to show your lists! Remember you cannot add subscripts or place coefficients in the middle of a chemical formula.



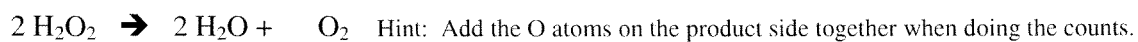
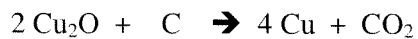
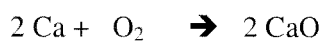
**Challenge: This one is tough!**



**Balancing Act Answer Key:**

★ 10

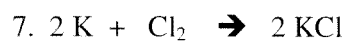
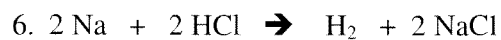
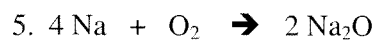
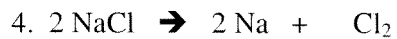
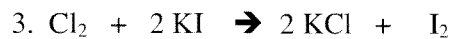
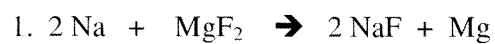
**Page 1 Problems**



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**Page 2 Practice Problems**

★ 12



**Challenge: This one is tough!**

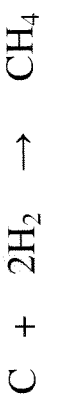
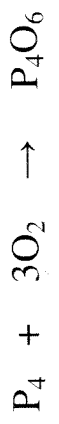
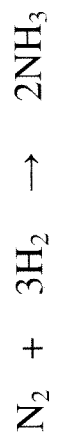
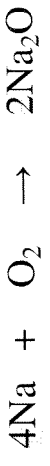
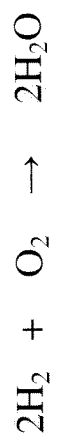


13★

Part C: Balance each of the following equations. Remember → List the atoms, count, and solve!



Part C: Balance each of the following equations.



Remember → List the atoms, count, and solve!

14 ★