

# DynaNotes Grade 8 Science STAAR Review & Intervention Program

## 66-page Student Activity Book – Four Sample Answer Key Pages

Name \_\_\_\_\_ Date \_\_\_\_\_

Activity 6 – Conservation of Mass Project (page 1 of 2)

**Student Instructions**

- Use scissors to cut out the atoms below and to the right.
- Glue the correct number of atoms in the boxes to represent each reactant and each product (you can "make molecules").
- Write the totals for each element in the reactants and in the products on the blanks provided below the boxes.
- Answer the question at the bottom using the space provided.

CH<sub>4</sub> + 2O<sub>2</sub> → CO<sub>2</sub> + 2H<sub>2</sub>O

+

→

+

**reactants**

**C** = 1

**O** = 4

**H** = 4

**products**

**C** = 1

**O** = 4

**H** = 4

Is the equation balanced? Explain. **Yes. There are an equal number of carbon atoms, oxygen atoms, and hydrogen atoms on each side of the equation.**

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Activity 6 – Conservation of Mass Project (page 2 of 2)

The law of conservation of mass states that in an ordinary chemical reaction mass is neither created nor destroyed. A balanced chemical equation obeys the law of conservation of mass. It has the same number of each type of atom present in the reactants as it does in the products. For each reaction shown below, identify the reactants and products. Use the table to record the number of each type of atom present in the reactants and products. Determine whether each equation is balanced and explain your reasoning.

**Example**

HCl + 2NaOH → NaCl + H<sub>2</sub>O

Element	# Atoms in Reactants	# Atoms in Products	Is the equation balanced? Explain.
H	3	2	No. There are more H
Cl	1	1	Na, and O atoms in the
Na	2	1	reactants than there are in
O	2	1	the products.

  

1. 4Al + 3O<sub>2</sub> → 2Al<sub>2</sub>O<sub>3</sub>

Element	# Atoms in Reactants	# Atoms in Products	Is the equation balanced? Explain.
Al	4	4	Yes. There are an equal
O	6	6	number of Al and O
			atoms on each side of the
			equation.

  

2. 6CO<sub>2</sub> + H<sub>2</sub>O → C<sub>6</sub>H<sub>12</sub>O<sub>6</sub> + 6O<sub>2</sub>

Element	# Atoms in Reactants	# Atoms in Products	Is the equation balanced? Explain.
C	6	6	No. There are more O and H
O	13	18	atoms in the products than
H	2	12	there are in the reactants.

  

3. SnO<sub>2</sub> + 2H<sub>2</sub> → Sn + 2H<sub>2</sub>O

Element	# Atoms in Reactants	# Atoms in Products	Is the equation balanced? Explain.
Sn	1	1	Yes. There are an equal
O	2	2	number of Sn, O, and H
H	4	4	atoms on each side of the
			equation.

  

4. 4Fe + 3O<sub>2</sub> → 2Fe<sub>2</sub>O<sub>3</sub>

Element	# Atoms in Reactants	# Atoms in Products	Is the equation balanced? Explain.
Fe	4	4	Yes. There are an equal
O	6	6	number of Fe and O
			atoms on each side of the
			equation.

  

5. Circle the statement about the following chemical equation that is false: Zn + 2HCl → H<sub>2</sub> + ZnCl<sub>2</sub>

A It obeys the law of conservation of mass.

B There are more chlorine (Cl) atoms in the products than there are in the reactants.

C It involves three different elements.

D It is a balanced chemical equation.

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Activity 12 – Forms of Energy

Use the diagram of the hydroelectric plant to answer the following questions. Circle the letter of the correct answer.

1. The water is still in both the lake above the dam and the lake below the dam. Which of the following statements is not true?

A A water molecule located at position A has more kinetic energy than a water molecule at position C.

B A water molecule located at position B has more kinetic energy than a water molecule at position A.

C A water molecule located at position B has more kinetic energy than a water molecule at position C.

D A water molecule located at position A has the same kinetic energy as a water molecule at position C.

2. Which of the following statements is not true?

A A water molecule located at position A has more potential energy than a water molecule at position C.

B A water molecule located at position B has more potential energy than a water molecule at position A.

C A water molecule located at position B has more potential energy than a water molecule at position C.

3. What device uses the kinetic mechanical energy of the falling water?

A power lines

B generator

C water molecule

D turbine

4. What device transforms mechanical energy into electrical energy?

A power lines

B generator

C water molecule

D turbine

5. Fill in the blanks with the correct steps (1, 2, or 3).

Mechanical energy is converted into electrical energy between steps 2 and 3.

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Activity 23 – Lunar Cycle

Follow the instructions below to complete the moon phase calendar. Then, answer the following questions.

- Label August 2nd and August 24th with the correct names for the moon phases shown.
- Draw the moon's appearance inside the boxes for August 9th and August 17th. Write "first quarter moon" or "new moon" on the line under each drawing.
- Label August 5th and August 14th as either "waxing crescent" or "waning crescent."
- Draw the moon's appearance inside the boxes for August 21st and August 28th. Write "waxing gibbous" or "waning gibbous" on the line under each drawing.

1. How many times will Earth rotate on its axis in August 2086? 31 times

2. If a second full moon occurs in a single month, it is called a blue moon. Will there be a blue moon in August 2086? no

**Moon Phase Calendar for August 2086**

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
			1	2 last quarter moon	3	4
5 waning crescent	6	7	8	9 new moon	10	11
12	13	14 waxing crescent	15	16	17 first quarter moon	18
19	20	21 waxing gibbous	22	23	24 full moon	25
26	27	28 waning gibbous	29	30	31 last quarter moon	31

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