Conservation of Mass

New Regents original practice • Name: _____ Date: _____
Show your work for written answers.

In an ordinary chemical reaction, atoms are rearranged and total mass is conserved. Define which substances a measurement includes.

1 A sealed container and its contents have a mass of 150.0 g before a reaction. What mass should the same sealed system have afterward?

(1) Less than 150.0 g because new substances formed

(2) 150.0 g

(3) More than 150.0 g because atoms gained bonds

(4) Zero if a gas formed

2 Two reactants of 6.0 g and 9.0 g react in a closed model. One product has mass 12.0 g. What is the mass of the other product? [1]

Answer and work

_____

_____

3 An open flask becomes lighter when a reaction releases a gas. Explain how conservation can still hold. [1]

Answer and work

_____

_____

4 What happens to the atoms during the chemical reaction?

(1) They disappear from the entire system.

(2) They are rearranged among substances.

(3) They change into different elements.

(4) They all gain the same mass.

Comparing Container Records

Use the information below to answer the questions.

Two model trials start with equal masses of reactants that form a gas. Each table value is the net mass of material included in the measurement. The sealed trial retains its gas, and the open trial allows gas to escape.

Trial	Starting mass (g)	Final measured mass (g)
P, sealed	20.0	20.0
Q, open	20.0	17.6

5 What accounts for Q’s lower final measured mass under the stated conditions?

(1) Gas left the measured container.

(2) Atoms were destroyed in the reaction.

(3) The sealed trial formed no gas.

(4) The starting mass was lower in Q.

6 Assuming gas is the only material that leaves Q, calculate its mass. [1]

Answer and work

7 Describe a measurement change that would allow a test of total mass conservation for Q. [1]

Answer and work

8 Which sum includes all modeled products of Q?

(1) 17.6 g only

(2) 17.6 g plus the escaped gas mass

(3) 20.0 g plus the escaped gas mass

(4) 20.0 g minus the sealed trial mass