An example of Lavoisier’s work is his study of the heating of the metal mercury. In this reaction, the reddish-orange product formed has more mass than the original metal. Lavoisier placed some mercury in a jar, sealed the jar, and recorded the total mass of the setup. After the mercury had been heated in the jar, the total mass of the jar and its contents had not changed.

Lavoisier showed that the air left in the jar would no longer support burning—a candle flame was snuffed out by this air. He concluded that a gas in the air, which he called oxygen, had combined with the mercury to form the new product.

Lavoisier conducted many experiments of this type. He found in all cases that the mass of the reactants is equal to the mass of the products. His conclusion, called the law of conservation of mass, states that in a chemical reaction, atoms are neither created nor destroyed. All atoms present in the reactants are also present in the products.

Check Your Reading  How did Lavoisier investigate the conservation of mass?

INVESTIGATE Conservation of Mass

Why is it important to measure the masses of reactants and products?

PROCEDURE
1. Measure 2 tsp of baking soda. Use a funnel to put the baking soda in a balloon.
2. Pour 2 tsp of vinegar into the plastic bottle.
3. Secure the balloon over the mouth of the bottle with the balloon hanging to the side of the bottle. Find and record the mass of the experimental setup.
4. Lift the balloon so that the baking soda drops into the bottle. Observe for five minutes, and then find and record the mass of the setup again.

WHAT DO YOU THINK?
• Did the mass of the experimental setup change?
• How do your observations demonstrate the conservation of mass?

CHALLENGE What do you think you would have observed if you had not used the balloon? Explain.