How is matter recycled?

1. Atoms cannot be created or destroyed.
2. For example, a carbon atom can be inside a fat molecule.
3. When the fat is broken down, the carbon can become part of a protein.
4. When the protein is broken down, carbon dioxide waste can be emitted.
5. This waste is then reused by plants for photosynthesis.
6. The carbon atoms have been recycled.
7. This is just one example of how atoms can be recycled.

How did chemists find the formula for photosynthesis?

1. To learn about photosynthesis, chemists created radioactive carbon atoms and used them to create radioactive carbon dioxide molecules.
2. They filled a tank, a sealed environment, with these carbon dioxide molecules and grew plants in it.
3. Because the carbon atoms were radioactive, it was very easy for the chemists to track it.
4. They found that the carbon atoms were reused to form glucose.
5. Doing the same thing for hydrogen and oxygen atoms, they found that the chemical formula for photosynthesis is:

6 CO2 + 6 H2O + sunlight = C6H12O6 + 6O2

How did chemists find the formula for cellular respiration?

1. They followed the same process of creating radioactive hydrogen, oxygen, and carbon atoms.
2. The carbon atoms in glucose became the carbon atoms in carbon dioxide.
3. The formula for cellular respiration is:

C6H12O6 + 6 O2 = 6 H2O +6 CO2 + energy (ATP)