

PRACTICE

Activity 6: Mass Conservation Problems

Name _____

Date _____

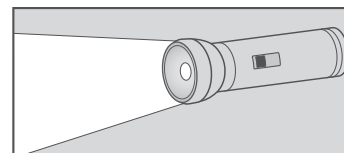
Class _____

Multiple Choice

- Which experiment done in class provided evidence about whether volume is conserved or not?
 - Mixing water and alcohol showed that volume *was not* conserved.
 - Mixing water and vinegar showed that volume *was not* conserved.
 - Mixing water and alcohol showed that volume *was* conserved.
 - Every experiment we did showed that volume *was* conserved.
- Which statement is true for an *open system*?
 - There is no mass input into the system and there is no mass output from the system.
 - Either mass is input into the system, or mass is output from the system, or both.
 - Some mass is always input into the system.
 - Some mass is always output from the system.
- What happens to the mass of objects in open and closed mass systems after they interact?
 - The mass always stays the same in both an open system and a closed system.
 - The mass always stays the same in an open system only.
 - The mass always stays the same in a closed system only.
 - The mass can change in both open systems and closed systems.
- In which situation would the *mass* of the system change?
 - Oil and vinegar are shaken up and mixed in a sealed glass jar for a salad dressing. The system is the jar with the oil and vinegar.
 - A long stick of taffy candy is pulled apart into bite-sized pieces. The system is the taffy.
 - A basketball bounces along the ground until it stops bouncing and rolls to a stop. The system is the basketball.
 - A car tire blows out on the road and the driver carefully brings the car to a stop. The system is the car, including the tires and the driver.

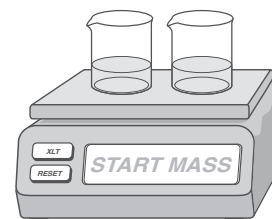
5. While a cake is cooking, gas bubbles up through the cake batter to escape. How does the mass of the cake change as the cake bakes and why?
- The mass increases because as the gas bubbles escape, the cake increases in its density.
 - The mass increases because when the batter cooks, it gets bigger.
 - The mass decreases because the gas that bubbled out of the cake has mass.
 - The mass stays the same because the escaped gas has no mass.

6. On Friday, Hai starts an experiment by measuring the mass of a flashlight and batteries system as 358.0 g. She turns the flashlight on and leaves it on for the weekend. When she returns on Sunday, the flashlight is no longer shining because the batteries have run down. The mass of the system is 358.2 g.

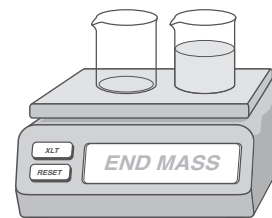


If the uncertainty of the scale is 0.5 g, what can you conclude about Hai's experiment?

- You cannot conclude that the masses are different because of the uncertainty of the scale.
 - The mass increases because the mass change is greater than the uncertainty.
 - The mass decreases because the mass change is greater than the uncertainty.
 - The mass increases because the mass change is within the uncertainty of the scale.
7. A weak solution of an acid and a solution of sodium carbonate in separate beakers are placed on a mass scale. The mass is 603.9 g. The sodium carbonate solution is added to the other acid solution and a chemical interaction occurs.



After some time, the mass of the new solution and the beakers is measured as 601.7 g. If the uncertainty of the scale is 0.5 g, what can you conclude about this experiment?



- You cannot conclude that the masses are different because of the uncertainty of the scale.
- The mass of the system increases.
- The mass of the system decreases.
- The mass of the system stays the same.

8. At Ed's deli, sliced Swiss cheese is a popular seller. At the beginning of the week, Ed started out with 11.5 kg of this cheese. He ends the week with only 4.5 kg of Swiss cheese, even though he received 10.0 kg from Fred's House of Cheese. How much Swiss cheese did Ed sell during the week?
- a) 3.0 kg
 - b) 6.0 kg
 - c) 14.5 kg
 - d) None of the others is correct.
9. What idea did you apply to solve the previous problem?
- a) Swiss cheese is a popular cheese at Ed's deli.
 - b) Fred's House of Cheese sent more cheese than it was supposed to.
 - c) The mass of Swiss cheese is conserved.
 - d) The volume of Swiss cheese is not conserved.