

Inquiry Lab: The Candle in the Jar - Debrief
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Problem I Why does the candle go out?

Guess: The candle burns oxygen

Hypothesis #1: If the candle goes out because it burns oxygen in the air, then a similar candle in a larger jar of air will burn longer because it has more oxygen.

Hypothesis #2: If the candle goes out because it burns oxygen in the air, then a similar candle in the same jar full of oxygen will burn longer because it is 100% oxygen. It should burn 5 times longer because pure oxygen has 5 times the amount of oxygen as air.

Problem II Why does the water rise?

Guess: The oxygen gets consumed.

Hypothesis #1: If the water rises because the oxygen in the air is burned up, then the water should rise more in a larger jar because it has more air and more oxygen.

Hypothesis #2: If the water rises because the oxygen in the air is burned up, then different sized jars should have the water rise 20% into the jar because there is 20% oxygen in air.

Hypothesis #3: If the water rises because the oxygen is removed, then a rusting reaction (e.g., wet steel wool oxidizing) in the jar should make it rise the same amount.

Problem III Why does the water rise more after the candle goes out? Shouldn't it rise when the candle is burning and stop when the candle goes out?

Guess: The Gas Laws (Charles's Law) says increasing the temperature of a gas causes the air to expand and decreasing the temperature causes the air to contract. Perhaps the burning only heats the air, causing it to expand, and some leaves the jar when the candle goes out

Hypothesis #1:

Problem IV The Law of Conservation of Matter/Mass suggests that when oxygen is consumed in a combustion reaction, carbon dioxide is also produced.

Guess:

Hypothesis: