4. Synthesis of a copper oxide

Get a piece of copper wire, heat it up
in the hottest part of the flame
of a Bunsen burner,
watch to see what color it turns
(greenish or black).

Check the 2 types of copper oxide
in these jars, match the color to the
correct name of product.

5. Decomposition of copper (II) carbonate

Get a clean and DRY test tube,
put about 2 cm of the green powder
into a test tube.

Using a test tube clamp, point the tube
to the left or right (not at your face).
Heat it with the Bunsen burner.
It changes color and it releases a gas.
Test this gas with a burning splint.

SOAP and WATER to clean the tube
when it cools down.

6. Synthesis of magnesium oxide

Get a piece of magnesium metal, twist it around your pencil to make is a spiral.

Get a crucible and mass it empty, and with a piece of magnesium wire.

Put crucible on black table, pick up Bunsen burner in hands, point hot fire into the crucible to ignite the metal.

When cool, mass the crucible, do some subtractions.

7 and 8 and 9 and 10

Four double replacement reactions.

Do these in any order, but do not mix them up!

Get a clean and DRY watch glass.
Put on the black table (or on white paper).

Get the 2 small bottles (they are labeled) you need for the first reaction

2 drops of the first solution into watch glass, then add 2 drops of second solution.
LOOK.

One partner washes (soap & water, then dry)

Second partner returns bottles, and
gets the next two that you need. *Repeat 3X.*

READ bottle LABELS carefully

11. Magnesium and Hydrochloric Acid….

Put about 1 inch of this strong $HCl_{(AQ)}$ into a large test tube. Get a 2nd empty one before you add the magnesium.

Rip metal into small bits (scissors or hands).

Catch the invisible gas, and test it with a flame!

12. Iron and sodium chloride solution….

Put about 1 inch of the solution into a small test tube, carefully insert the non-pointy end of the iron nail into the tube.

Wait at least five minutes to evaluate and observe.

14. Iron and copper (II) sulfate solution….

Put about 1 inch of the solution into a small test tube, carefully insert the non-pointy end of the iron nail into the tube.

Wait at least five minutes to evaluate and observe.

18. Combustion of Butane gas

Attempt to spark the
clicker lighter,
make the flame come out
of the tip of the lighter.

Not much to see, but it is hot!

1. Decomposition of water

Observe the demo of the
Hoffmann Apparatus,
watch the tests for gases —
“Carbon Dioxide, Oxygen, and Hydrogen.

Get some of each gas, and test
each one yourself.

2. Synthesis of water

Capture some hydrogen gas, and “test”
it for hydrogen. That toot is the proof
that it is hydrogen.

Look inside the tube after the toot.
Do you see that condensation?
That is your water.

3. Combustion of wood

Light a piece of wood on fire, observe.

Wood is not a pure substance with a formula.
It's many kinds of hydrocarbons and many more oxygenated hydrocarbons.

It does combust, but the "formula"
is a bit generic.
Good enough for our purposes.

16. Combustion of candle wax

Demonstration

Check mass of a candle at the start,
then burn it for 15 minutes.

Check the mass of the candle at the end.

The difference is the “missing mass”

Or the mass of the wax that combusted.

17. Combustion of ethanol

We will combust some ethanol but in a “fun” way. We will burn it ON TOP of some lithium chloride salt.

The salt ions will get “excited” by the added heat energy, causing them to move to an “excited state”.

That, as you remember is unstable and temporary. The flame will become brightly colored. That has NOTHING to do with the burning of the ethanol.

Ethanol burning will release a boring, Bunsen Burner colored flame. This one is fun and reminds you about Niels Bohr!

19. Tricky #19

Get 40 mL (about) of deionized water into a 100 mL sized beaker. This water is in the beakers near the white jug out back.

Get a thermometer, and measure the temperature of the water

TO THE NEAREST 10th centigrade.

Put in the beaker a scoop of the

potassium nitrate salt.

Carefully stir with the thermometer and check the temperature in 45 and 60 seconds. Record them both.

Clean up is down the sink drain,
soap and water, clean the thermometer too.

20. Tricky #20

Put a small aluminum nail into
a small test tube
that you have already filled HALF WAY
with potassium chloride solution.

Observe in 4 minutes.

Clean up is soap and water, save the nail.