



DIY PENCIL “LEAD”

USING MINERAL RESOURCES TO MAKE A PENCIL

Did you know that there is no lead in your pencil? The center of a pencil is often called a “pencil lead”. But does not contain the mineral lead. It is really made of two mineral resources, clay and graphite.

LEAD
GRAPHITE
+
CLAY!



Mineral resources are all the things we dig out of the ground. Sand, gold, copper, salt, clay, and graphite are all mineral resources. We use these mineral resources to make the things we use everyday. Things like sidewalks, light bulbs, smartphones, and pencils!

LET’S MAKE A PENCIL!

In this experiment you will use the mineral resources graphite and clay to make a pencil “lead.”

DIFFICULTY: EASY

TIME: 10 MINUTES TO MIX + DRY TIME

MESS-LEVEL: VERY MESSY - GRAPHITE POWDER WILL LEAVE BLACK MARKS EVERYWHERE IT TOUCHES

CLEAN UP: MODERATE - GRAPHITE POWDER AND CLAY WASH OFF MOST SURFACES WITH SOAP AND WATER. GRAPHITE CAN STAIN CARPET. CLAY CAN GET STUCK IN CARPET

SAFETY: GRAPHITE POWDER IS NON-TOXIC. BUT IT IS A POWDER SO DON’T BREATHE IT IN. DO NOT EAT CLAY OR GRAPHITE. WASH HANDS WHEN FINISHED.

PARENT’S AND KIDS SHOULD DO THIS EXPERIMENT TOGETHER!

MATERIALS

To make one pencil “lead” you will need:

- 1 part (10g) graphite powder (sold in hardware stores as “graphite lubricant”)
- 2 parts (20g) air dry clay
- kitchen scale
- old newspaper or cloth (to protect table)
- plastic cups (to hold graphite powder)
- latex/nitrile gloves (to keep hands clean)
- mask (to keep graphite out of mouth)
- water (to add to clay if it gets too dry)

[WATCH IT HERE!](#)



Take a picture of the QR code with your smartphone to watch a video demonstration of this experiment.



LET'S MAKE A PENCIL!

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INSTRUCTIONS

Safety First!

We will be using graphite powder today. It is non-toxic, but like any dust or powder, you don't want to breathe it in. So don't forget to wear a mask for this experiment

Gloves will help keep your hand clean. Graphite powder is messy and will leave black marks everywhere it touches. You can wash it off with soap and water.

Prepare Materials

1. Cover your table with the *old newspaper* to protect it. Put on your *gloves* and your *mask*.
2. Put the *kitchen scale* on top of the *old newspaper* and turn it on. Set the display to "grams" (it should say "g" or "grams" after the number). Put an empty *plastic cup* on top of the scale. Press the "tare" or "zero" button to set the scale to "0." Put around 10 grams of graphite powder into the cup. Remove cup from the scale and set it aside. (This is our "1 part" of graphite.)
3. Press the "tare" or "zero" button on your scale to set the scale to "0." Put some clay on the scale until the scale reads "20g" (This is our "2parts" clay).
4. Put away the scale, close your graphite bottle, and close your clay bag. It is time to mix!

Time to make the pencil!

5. Roll the 20 grams of clay into a ball. Flatten the ball into a circle with your hand. Place the circle of clay on top of the old newspaper.
6. Pour about half of the graphite powder on top of the circle of clay. Mix the clay and the graphite by folding the clay over the graphite with your hands.
7. When the clay and graphite are mixed well, add some more graphite. Continue mixing. The more graphite you add, the darker your pencil "lead" will be. (If the clay gets too dry and starts falling apart, add a few drops of water) Keep adding graphite until you have the color you want.
8. Roll the clay out until it is long and thin. This will be the final shape of your pencil "lead." Make a fun shape if you want! Like a heart, a car, or a cat.
9. Leave the clay to dry. Look at the label on the clay to find out how long it will take. (Usually about 24 hours).

FINISHED! Once the clay is dry your pencil "lead" is finished. Wrap it in ribbon or colored paper for a cool or cute look. Let's write and draw with the pencil you made!