SMART CHELI

STEM challange #03

Lava Lamp

Age: 7yrs above

Time: 30-45 min

STEM Areas: Chemistry + Physics

Difficulty: ★★☆☆☆

Internet needed: No

LAVA LAMP

One day, Mina was helping her grandmother clean her room. While moving some old things from a shelf, she found a closed glass jar tucked away in a corner.
Something inside was wiggling and moving up and down. Mina looked closely. “What is that?” She tilted the jar, and the strange object rose, then slowly sank back down. “Up… down… up… down…”
Fascinated, Mina called her grandmother. “Grandma, what is this?” Her grandmother smiled. “That is a lava lamp! It looks like magic, but there’s some interesting science behind it.” Then she explained, “You can even make your own lava lamp at home using oil, water, food coloring, and a fizzy tablet.” Mina’s eyes lit up. “Really? I wonder if I can make colorful bubbles move just like this!” Mina couldn't wait to try it.

1. EXPLORE

What do you think will happen when you mix baking soda and vinegar?

Think about it:

1. Does the oil mix with the water?
2. Which liquid stays on top?

Don't worry about being right. Scientists make predictions and then test them!

What do you notice?

_____

_____

_____

_____

2. WHAT YOU'LL NEED

Cup

Flash light (optional)

Dropper /plastic pipette

200ml cooking oil

Dark Food color

Vitamin-C fizzy tablet

Water

Tip:
You don't need expensive materials to become an scientist.

Look around your home. What safe materials could you reuse for an experiment?

_____

_____

_____

_____

Safety first:
Ask a grown-up or teacher to supervise, and wipe up any spills right away.

3. IMAGINE

Before you begin, imagine what your lava lamp might look like.

Think about:

- Which liquid will be at the bottom?
- Which liquid will be at the top?
- What color will the bubbles be?
- Which direction will the bubbles move?

What will your lamp look like?

MY LAVA LAMP

4. CREATE

Follow the steps in order. go slowly and watch carefully.

Step 1 – Prepare your workspace

Choose a flat surface that is easy to clean if anything spills. An adult can help you prepare the area.

Step 2 – Add the water

Fill your transparent glass about one-quarter full with water.

Step 3 – Add the oil

- Slowly pour cooking oil into the glass until it is about three-quarters full.
- Leave some space at the top so that the liquid does not overflow.
- Look carefully at the two layers.

Step 4 – Add the color

- Using a dropper, add a few drops of dark food coloring.
- Watch the drops as they move through the oil.

What happens when the food coloring recacts with water?

ANSWER

_____

_____

_____

_____

Step 5 - Add the fizzy tablet

- Break the Vitamin C or effervescent tablet into a few smaller pieces.
- Drop one small piece into the glass.

Step 6 - Watch your lava lamp

- Look at the colorful bubbles moving through the glass.
- Wait until the bubbling slows down, then add another small piece of the tablet.
- Your lava lamp is working!

Step 7 - Make it glow

- For an extra challenge, place a flashlight underneath the glass in a safe position.
- Dim the room and watch your lava lamp glow.
- What do you notice?

5. TEST IT !

Scientists don't just make things!
They observe. They test. They ask questions.

Try changing one thing at a time and observe what happens.

Change the amount

What happens when you use:

A half tablet?

ANSWER

A whole tablet?

ANSWER

6. WHAT'S THE SCIENCE ?

- When oil and water meet, the heavier water settles at the bottom while the lighter oil floats on top.
- When you drop food coloring into the mixture, it skips the oil entirely and mixes into the water below.
- When the fizzy tablet hits the water, it reacts to form rising carbon dioxide bubbles that lift the colored water to the top.
- When those bubbles pop at the surface, the gas escapes and sends the heavy colored water sinking right back down.
- This continuous cycle creates the floating, bubbling lava lamp effect.

Think about it

Why does the colored water move up and down instead of staying still?

WRITE FINDINGS

7. STEM AROUND US

The science you explored today can help us understand many things around us.
Oil and water behave differently because of their density.. Scientists use ideas like these when studying liquids, fuels, medicines, cleaning products, and many other materials.

Can you find three things that contain different liquids?

1. _____
2. _____
3. _____
4. _____

Which liquid would float on water?

WRITE FINDINGS

_____
_____
_____

Which liquid would sink?

WRITE FINDINGS

_____
_____
_____

8. My STEM Discovery

One thing I discovered today:

_____

_____

_____

_____

One thing that surprised me:

_____

_____

_____

_____

REMEMBER

Science can look like magic - but scientists know that there is always a reason behind what we see!
When you predict, observe, test, and ask questions, you are thinking like a scientist.
Keep exploring. Keep experimenting. Keep discovering!