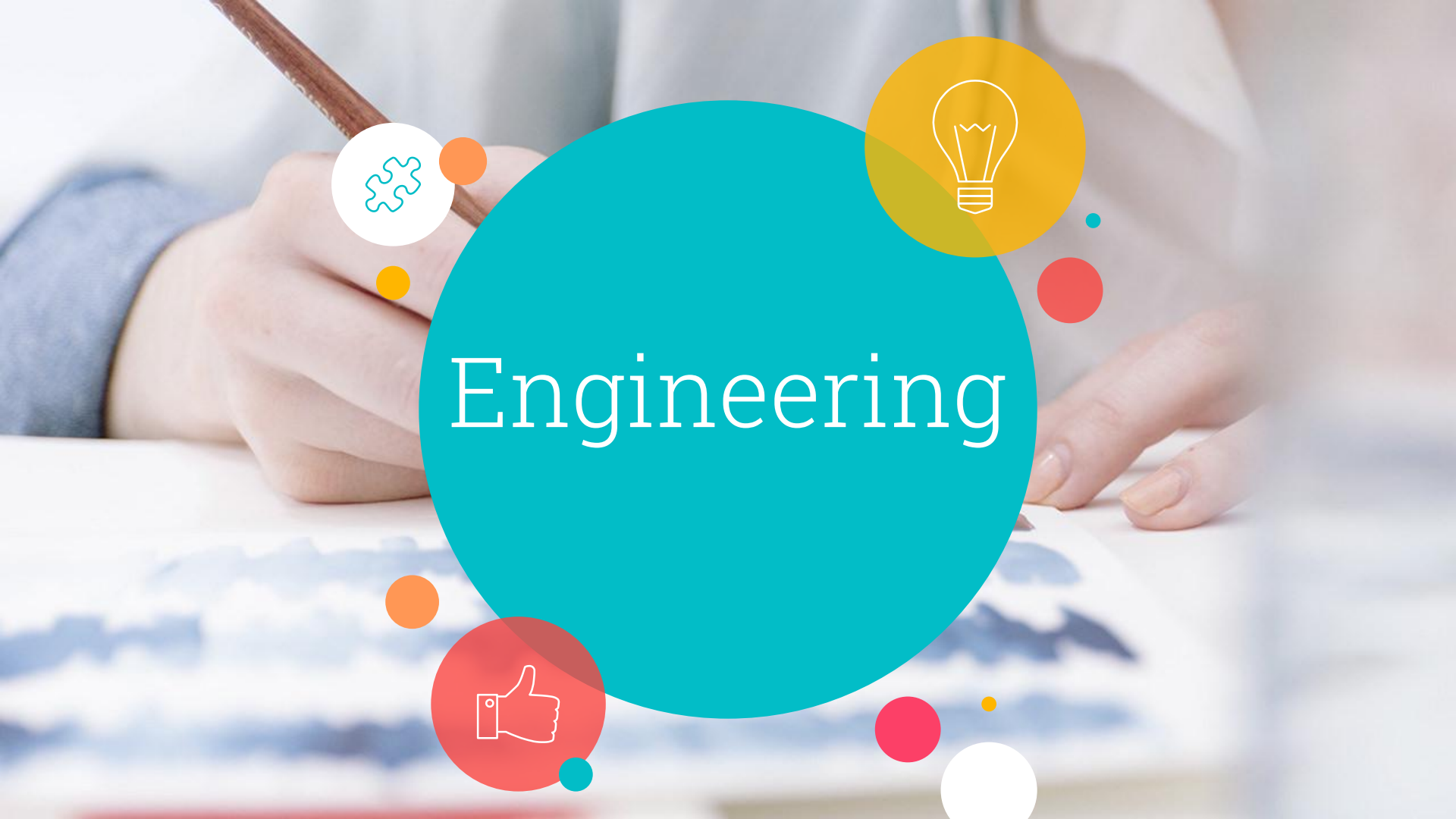
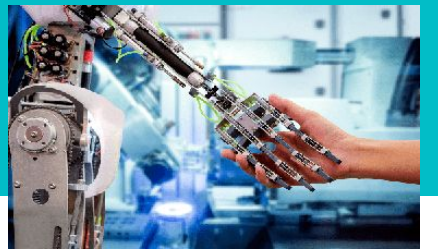

Engineering

There’s over 40 types of engineering!



Let’s start with the main branches of engineering

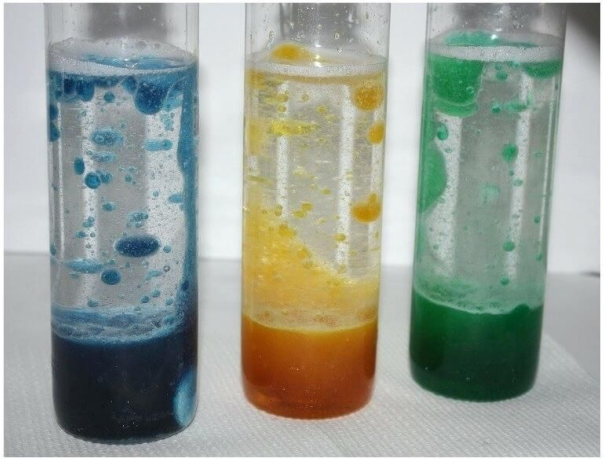
6 Branches of Engineering

- **Chemical Engineering:** Uses chemistry, physics, and math along with engineering tools to solve problems relating to the production and use of chemicals.
- **Mechanical Engineering**: the branch of engineering dealing with the design, construction, and use of machines
- **Civil Engineering**: Relating to the design, construction, and upkeep of the physical and naturally built environment

6 Branches of Engineering

- **Electrical Engineering:** Electrical engineering is a technical discipline concerned with the study, design and application of equipment, devices and systems which use electricity, electronics, and electromagnetism
- **Management Engineering**: utilizes industrial **engineering** knowledge and skills to provide internal consulting services for all departments in an organization in order to develop, implement, and monitor more efficient, cost-effective business processes and strategies
- **Geotechnical Engineering**: Relating to the design, construction, and upkeep of the physical and naturally built environment

Chemical engineering



Lava Lamp Demonstration


HandMade
KIDSArt

Get into groups of four!

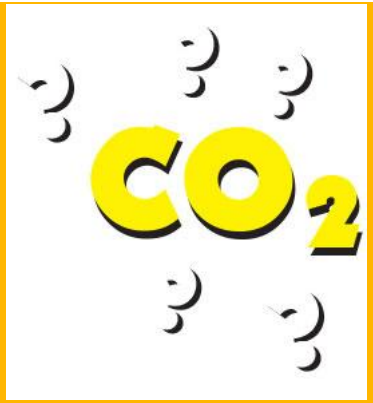
The science behind Lava Lamps!

- When pouring Oil and water and the beginning of the experiment, why does oil float on top of the water?
- Why do the two liquids not mix?

Discuss with your table partners and come up with a explanation!!

- Oil floats on top of the water because it is lighter than the water

The tablet sinks to the bottom and dissolves to make a gas: **carbon dioxide**

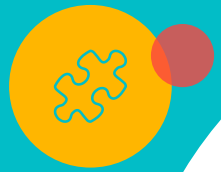


Carbon Dioxide

Carbon dioxide is a colorless, odorless gas found in our atmosphere. Its chemical formula is CO2

- When the gas and colored water blob come to the top, it becomes heavy and sinks back to the bottom (convection)
- This continues until the tablet’s gas is dissolved

Mechanical Engineering



Balloon rockets

Definitions

Force: the amount of push or pull on an object

Pressure: the amount of force exerted on an area

EXPERIMENTAL PROCEDURE

1. Tie one end of a string to a chair, doorknob, or other support.
2. Put the other end of the string through a straw. Then pull the string tight, and tie it to another support in the room.
3. Blow up the balloon, and pinch the end of the balloon to keep the air inside. Do not tie the balloon.
4. Tape the balloon to the straw so that the opening of the balloon is horizontal with the ground. You may need two students for this: one to keep the air pinched inside the balloon and the other to tape the balloon to the straw.
5. Have one student pull the balloon all the way back to the end of the string (the starting line), so the balloon opening is against one support. That student should hold the balloon opening closed. Have another student use the marker to draw a finish line near the other end of the string.
6. Let go of the balloon and watch it move along the string!

Famous Engineer Spotlight

Yari Golden-Castaño

- One of the 100 finalists for the Mars One project, which aims to select the first 24 settlers on Mars.
- Golden-Castaño herself is an MIT engineer specializing in laser communication, the main technique Mars settlers will use to reach Earth once a colony is formed.
- Yari has contributed to the design of an optical module for an expandable nano-satellite, she worked with a software team on software development and controls for a laser communication

Thanks for coming!