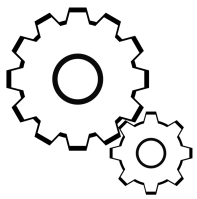
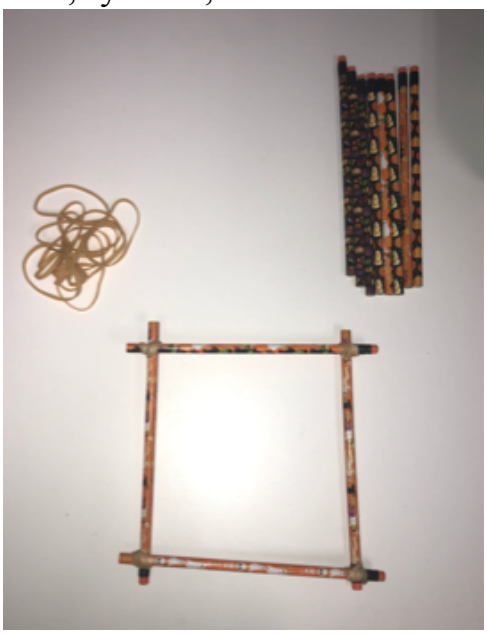
GRAND VALLEY STATE UNIVERSITY

Age: 10+



E is for... Engineering

What is engineering?
It is the process of building and creating products, systems, and structures. Engineers use math and science to solve problems. There are many types of engineering, including electrical, mechanical, civil, cyber, and chemical engineering.

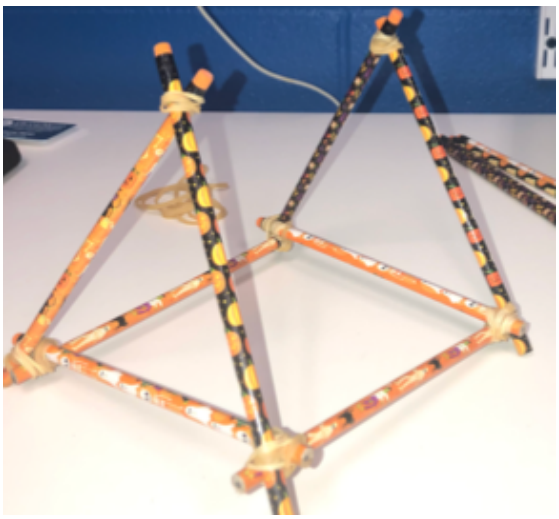


Activity: Build a catapult
Supplies: 12 pencils; 20 rubber bands

Instructions:
Step 1: Build your base. You will need 4 pencils and 4 rubber bands. Make a square out of the pencils and rubber band the end of the pencils together on each corner

Step 2: Next, create two triangles on opposite sides of the square base. Start by tying one pencil upright to a corner. Repeat on the other side to create a triangle. Rubber band the top of the pencils together to form the triangle. Repeat on the opposite side.

Step 3: Put a pencil on top connecting the top of the triangles. Rubber band both sides of pencil to the top of the triangles



Step 4: Grab 2 pencils and rubber band them together at the end near the erasers and in the middle. Attach the double pencil to the square base, perpendicular to the triangles.

Step 5: Next, turn your catapult so the pencils you just secured on the base are facing the opposite way. Add a single pencil parallel to the square base halfway up and secure with rubber bands on both sides. Once completed take two rubber bands and stretch the band out it reaches the width of the pencil you just secured

Job Exploration:

Mechanical Engineer: An engineer designs and builds complex products, machines, and system. A mechanical engineer works with how things are made and how machines operate. They also design and builds complex products, machines, and systems. Mechanical engineers also help with the invention of many machines, including the early inventions of simple machines like the wheel and axle.

Computer Engineering: Computer hardware engineers research, design, develop, and test computer systems and components such as circuit boards. Computer hardware engineers research, design, develop, and test computer systems and components such as processors, circuit boards, memory devices, networks, and routers.

Chemical Engineer: Chemical engineers use chemistry, biology, physics, and math to solve problems that involve the production or use of chemicals, fuel, drugs, food, and many other products. They design processes and equipment for large-scale manufacturing, plan and test production methods and byproducts treatment, and direct facility operations.

Biomedical Engineering: Biomedical engineers combine engineering principles with medical and biological sciences to design and create equipment, devices, computer systems, and software used in healthcare.

Civil Engineer: Civil engineers conceive, design, build, supervise, operate, construct and maintain infrastructure projects and systems in the public and private sector. This includes roads, buildings, dams, and bridges.

For additional help, view this video:

https://www.youtube.com/watch?v=lA6a2EgGi_E&t=297s