

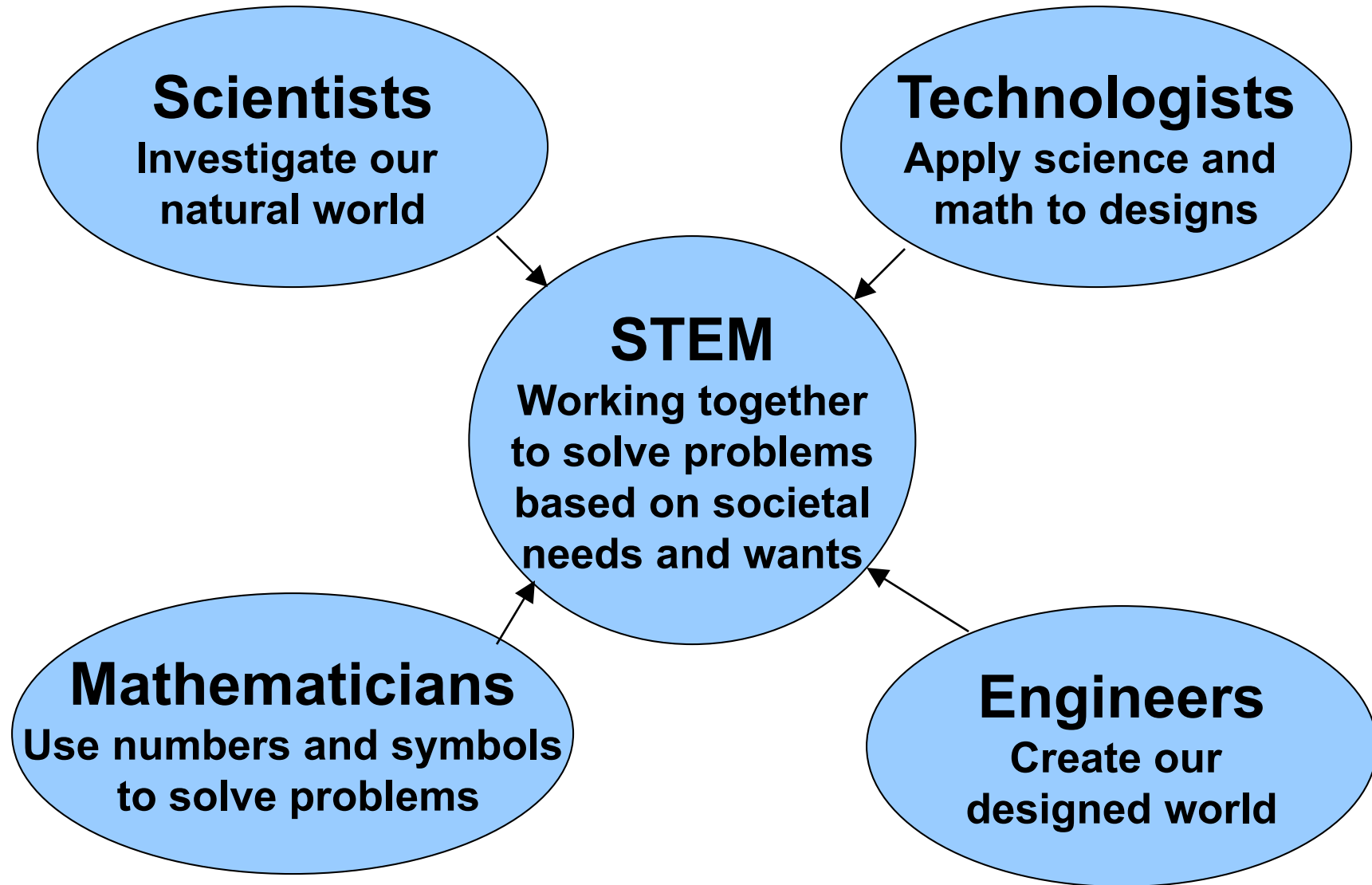
What is **S**cience?

What is **T**echnology?


What is **E**ngineering?

What is **M**athematics?

What is **STEM**?



How are they all needed to Create a Product?

Example	Science	Technology	Engineering	Math
<p>Pencil</p> 	Discovery of graphite and the fact that rubber (eraser) will remove graphite	Creating a writing device that doesn't use ink	Designing a device with graphite insert, exterior holder, and attached eraser	What is the optimal length, diameter, or shape for the device?

Problems That Solve Our Needs and Wants



What are our human needs?

PHYSICAL NEEDS:	BIOLOGICAL NEEDS:	PSYCHOLOGICAL NEEDS:
<ul style="list-style-type: none">• Basic shelter• Basic clothing• Can you think of more?	<ul style="list-style-type: none">• Water• Food• Can you think of more?	<ul style="list-style-type: none">• Family• Friends• Can you think of more?

Problems That Solve Our Needs and Wants



What are our human wants?

PHYSICAL WANTS:

- Nice house
- Nice car
- Nice clothes
- Can you think of more?

BIOLOGICAL WANTS:

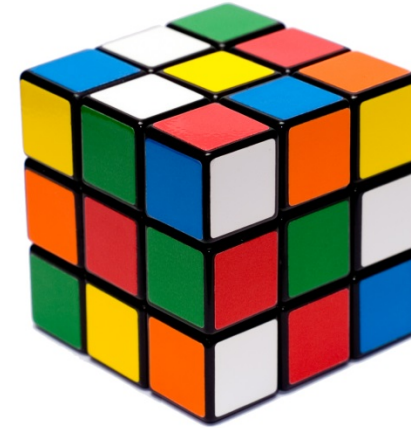
- Fresh water
- Fancy food
- Healthy living
- Can you think of more?

PSYCHOLOGICAL WANTS:

- Talk with family
- See friends
- Entertainment
- Can you think of more?

WHAT IS ENGINEERING?

- A body of knowledge
- A practice
- A field
- A way to solve today's challenges





Engineering

Engineering uses scientific, technological, and mathematical knowledge to solve practical problems.

Engineers Can Do Anything

- **Invent** – Develop a new product, system, or process that has never existed before
- **Innovate** – Improve an existing technological product, system, or method

Invent
Analyze
Build
Orchestrate
Create
Conceive
Evaluate
Improve
Design

Engineers Work to Solve Many Kinds of Problems

- An electrical engineer may design a GPS for your vehicle.
- A pharmaceutical/chemical engineer may find a cure for disease.
- A computer engineer may build a computer the size of your watch.
- A mechanical engineer may create a robot to discover water on a planet.
- An agricultural engineer may evaluate the effects of global warming on food production.

Engineers make our lives better

Discussion Questions

- What product or system would make your life better?
- Is this an invention or an innovation?
- What type(s) of engineer(s) might work on this project?

