

ENGINEERING LESSON PLANS

Bridge, tower, invention, and structure planning lessons.



WHAT STUDENTS LEARN

- **Problem Solving** Find challenges and create solutions.
- **Creativity** Design and build original ideas.
- **Measurement** Use tools and units accurately.
- **Teamwork** Communicate and work together.
- **Perseverance** Test, improve, and try again!

THE ENGINEERING DESIGN PROCESS

1. **ASK** What is the problem?
2. **IMAGINE** Brainstorm ideas and plan.
3. **PLAN** Draw a design and list materials.
4. **CREATE** Build your solution.
5. **TEST** Try it out! Collect data.
6. **IMPROVE** What worked? What can be better?



- Work as a team
- Be safe
- Test fairly
- Make improvements



ENGINEERING TOOLS

Ruler

.Tape Measure

Protractor

Scissors

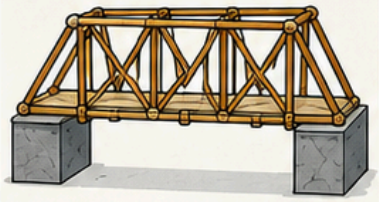
Hot Glue Gun

Pencil

ENGINEERING LESSON IDEAS

BRIDGE LESSON

Goal: Build a bridge that holds the most weight.



MATERIALS IDEAS

- Craft sticks
- Straws
- Cardboard
- String
- Tape or glue

THINK ABOUT:

- What shape is strongest?
- How will the weight be supported?
- How can you make it more stable?

TOWER LESSON

Goal: Build the tallest tower that stands on its own.



MATERIALS IDEAS

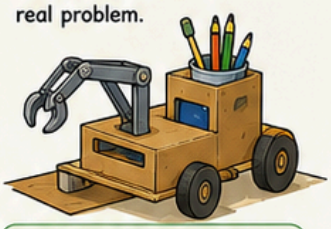
- Straws
- Index cards
- Paper
- Tape
- Clips

THINK ABOUT:

- How can you build tall and stable?
- What base shape will you use?
- How will you test it?

INVENTION LESSON

Goal: Design and build an invention that solves a real problem.



MATERIALS IDEAS

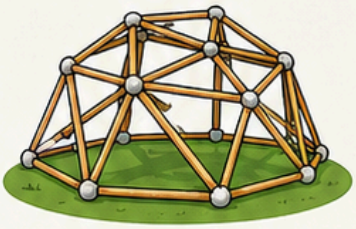
- Recycled materials
- Cardboard
- Bottle caps
- Rubber bands
- Other craft supplies

THINK ABOUT:

- What problem will your invention solve?
- How will it work?
- What materials will you need?

STRUCTURE LESSON

Goal: Design a structure that is strong and useful.



MATERIALS IDEAS

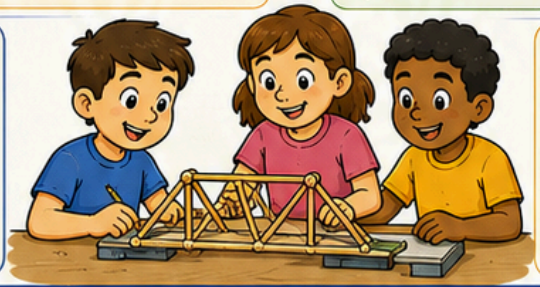
- Toothpicks
- Marshmallows or connectors
- Cardboard base

THINK ABOUT:

- What shapes are strong?
- How will the pieces connect?
- How will you test its strength?

PLAN YOUR LESSON

- ✓ Choose a challenge
- ✓ Set clear goals
- ✓ Gather materials
- ✓ Build and test
- ✓ Reflect and improve



TIPS FOR SUCCESS

- ★ Plan before you build.
- ★ Test your ideas.
- ★ Keep trying new things.
- ★ Learn from mistakes.
- ★ Have fun and be creative!



ENGINEERS SEE PROBLEMS, THINK OF IDEAS, AND BUILD A BETTER WORLD!