



# STEMlympics 2024

## Student Activity Cards



STEM Education Works®

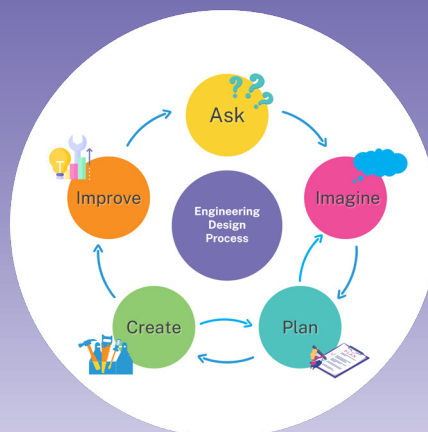
# Getting Started

Welcome to the STEMLympics! Each activity card is filled with exciting challenges and step-by-step instructions designed to guide you through the engineering design process and ignite your problem-solving skills alongside a team.

## 1

### Understand the Engineering Design Process:

- **Ask:** Define the problem and identify the needs.
- **Imagine:** Brainstorm and explore creative solutions.
- **Plan:** Choose the best solution and create a plan or blueprint.
- **Create:** Build a prototype using your plan as a guide.
- **Test & Improve:** Test your prototype, gather feedback, and make improvements.



# Getting Started

---

## 2

### Gather Materials:

Collect a variety of recyclable materials and supplies to bring your STEMlympics projects to life. Here's a list to get you started:

- Cardboard
- Paper towel rolls
- Construction paper
- Popsicle sticks
- Markers
- Glue
- Tape
- Scissors
- Rubber bands
- String or yarn

Feel free to add any other materials you have on hand to enhance your creations!



# Getting Started

---

## 3

### Tips for a Successful Project:

- **Work Together:** Collaborate with your team to generate ideas and solve problems. Teamwork leads to the best results!
- **Be Creative:** Don't be afraid to think outside the box and try new ideas. Innovation is key to success.
- **Stay Positive:** Remember, not every idea will work perfectly the first time. Keep a positive attitude and learn from each attempt.
- **Have Fun:** Enjoy the process and celebrate your creativity and ingenuity.

**Don't forget to follow along with our [STEMlympics videos](#). And be sure to follow us on our socials to stay up-to-date with the latest from STEM Education Works.**



STEM Education Works®



# Activity 1: **Passing the Torch**



The STEMlympic team has hired you as an engineer to help every athlete carry the torch, no matter their abilities.

## **Your Mission:**

Design and build a stable, comfortable, and easy-to-use device for athletes who cannot hold the torch in their hand.





# Activity 1: **Passing the Torch**



**Ask:** Can you design a device to help athletes carry the torch?  
It must be stable, comfortable, and easy to use.



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.





## Activity 2: **Canoeing**



Oh no! The STEMlympic teams have forgotten their paddles and it's up to you to help them out!

### **Your Mission:**

Design and build emergency paddles so the teams can compete.





## Activity 2: **Canoeing**



**Ask:** Can you build a paddle that is strong, lightweight, and efficient in the water?



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.







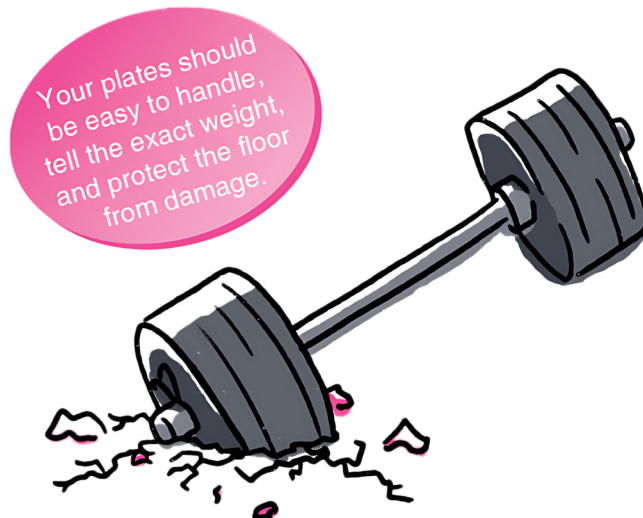
## Activity 3: **Weights**



The weightlifting event needs more weight bumper plates (these are special weights that protect the floor and make lifting heavy things safer).

### **Your Mission:**

Create and test bumper plates that are safe, strong, and perfect for weightlifters.





## Activity 3: **Weights**



**Ask:** Can you create and test bumper plates that are safe, strong, and perfect for weightlifters? These should be easy to handles, tell the exact weight, and protect the floor from damage.



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.





## Activity 4: **Athletics/Running**



The running team needs new and improved shoes to help them run faster and stay comfortable.

### **Your Mission:**

Design and prototype running shoes that combine speed, comfort, and durability for the ultimate STEMlympic performance.





## Activity 4: **Athletics/Running**



**Ask:** Can you create running shoes that combine speed, comfort, and durability? The shoes need to be stylish and optimized for high performance.



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.





## Activity 5: **Fencing**



The fencing team urgently needs new and improved masks that provide better protection and are stylish.

### **Your Mission:**

Create and prototype a fencing mask that is safe, comfortable, and stylish.





# Activity 5: **Fencing**



**Ask:** Can you create and prototype a fencing mask that is safe, comfortable, and stylish for the ultimate fencing experience?



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.





## Activity 6: **Soccer**



Team USA needs a new soccer ball that performs better and lasts longer.

### **Your Mission:**

Design and build a ball that is perfectly balanced, durable, and flies just right.

Imagine you're an engineer creating the best soccer ball ever.





# Activity 6: **Soccer**



**Ask:** Can you design and build a new soccer ball that performs better and lasts longer?



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.







## Activity 7: **Gymnastics**



The gymnastics team needs a new and improved ribbon wand that combines beauty, balance, and durability.

### **Your Mission:**

Design and build a ribbon wand that is perfectly balanced, durable, and easy to use for stunning performances.



*Imagine you are an engineer tasked with creating the best ribbon wand ever.*





# Activity 7: **Gymnastics**



**Ask:** Can you design and build a ribbon wand that is perfectly balanced, durable, and easy to use for stunning performances?



**Brainstorm:** Think up different designs and agree upon the best idea.



**Draw Your Design:** Sketch and label your idea.  
**Gather Materials:** Collect recyclable items.



**Build Your Prototype:** Make your design.



**Test Your Design:** Try it out and see how it works.



**Evaluate Your Prototype:** Find what works and what doesn't.  
**Make Changes:** Adjust your design to improve it.

