

STEM Design Challenge Cards

STEM design challenges are prompts that ask learners to build something new for a specific reason or purpose. Each card includes questions to support you as you plan, design, and reflect.

Directions: Print and assemble these cards. Then choose a design challenge to complete.

1. Cut along the solid lines.
2. Fold along the dotted line.
3. Paste or tape the sides together. You will have 16 cards total.

<p>BOAT CHALLENGE</p> <p>How can I build an unsinkable boat with only two materials?</p>	<p>BOAT CHALLENGE QUESTIONS</p> <ul style="list-style-type: none"> • What is the size of the boat? What things would fit in the boat? • What is the size of the boat? What things would fit in the boat? • How much weight can the boat maintain? • Can you think of other materials you could use to make a new boat?
<p>CEREAL BOX CHALLENGE</p> <p>How can I make something useful with a cereal box?</p>	<p>CEREAL BOX CHALLENGE QUESTIONS</p> <ul style="list-style-type: none"> • What is the purpose of your design? • How does the size of your chosen cereal box limit what you can create? • How does your design help someone? • What materials did you use in addition to the cereal box? • What materials would you like to add and why?
<p>MUSICAL SCULPTURE CHALLENGE</p> <p>How can I create a sculpture that makes music in the wind?</p>	<p>MUSICAL SCULPTURE CHALLENGE QUESTIONS</p> <ul style="list-style-type: none"> • What materials did you use? • Does the sculpture stand up on its own? • How tall is the sculpture? • How does it play music? When or how long does the music play? • Can the sculpture withstand outside weather?
<p>HELPFUL TOOL CHALLENGE</p> <p>How can I make a tool to help me _____?</p> <p>(Fill in the blank!)</p>	<p>HELPFUL TOOL CHALLENGE</p> <ul style="list-style-type: none"> • What does your tool help you do? • How does the size affect its usefulness? • Why create this tool instead of using something that already exists? • Can you use this tool in more than one way? • Is this tool child-friendly?

fold

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<p>NEW SPORT CHALLENGE</p> <p>How can I invent a new sport with kitchen tools?</p>	<p>NEW SPORT CHALLENGE</p> <ul style="list-style-type: none"> • What is the purpose of the game? • How would someone win? • Justify why you would have certain rules? • Can you think of another way to make the game more challenging?
<p>FURNITURE CHALLENGE</p> <p>How can I build a piece of furniture with up to 5 pieces?</p>	<p>FURNITURE CHALLENGE</p> <ul style="list-style-type: none"> • What is the purpose of the furniture? • Can the new piece of furniture support your weight? • What is the maximum amount of weight this piece of furniture can hold? How might you test this? • Can you use a different material to make the furniture stronger?
<p>SHOE DESIGN CHALLENGE</p> <p>How can I design shoes inspired by nature?</p>	<p>SHOE DESIGN CHALLENGE</p> <ul style="list-style-type: none"> • What is the purpose of the shoes? • When would someone use these shoes? • How could you use these shoes in various environments? • Are the shoes appropriate for exercise or the beach?
<p>PROBLEM-SOLVING CHALLENGE</p> <p>How can I solve a problem using just the materials I have on hand at home? (Choose 5-8 materials.)</p>	<p>PROBLEM-SOLVING CHALLENGE</p> <ul style="list-style-type: none"> • What problem do you want to solve? • What's your plan to solve the problem? • Can this tool solve more than one problem? • What materials do you wish you had to make your invention better?

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