PROBLEM STATEMENT
Did you know your home is full of inventions? An invention is something new that has been created. There are complex machines like a computer or car, but inventions can also be simple like a cup to hold water or paper to write on. Inventions can also help people. Often simple machines are used in inventions because they can help do the work. Can you create an invention that uses a simple machine and helps others?

CRITERIA & CONSTRAINTS
- Learn about simple machines.
- Use one or more simple machines in your invention.
- Draw or build your invention.
- Use your core values to help others.

ENGINEERING DESIGN PROCESS & FIRST® CORE VALUES

Explore FIRST Core Values

Engineering Design Process
Explore – The problem
Create – Solutions to the problem
Test – Find ways to test your solutions
Share – Communication what you learned
BUILDING THE BACKGROUND & BRAINSTORMING
Start EXPLORING your simple machine journey here

- Watch PBS Kids and learn about simple machines.
- Can you identify any simple machines in your home?
- Choose one or more simple machines to explore.

SKETCH YOUR DESIGN

Choose one simple machine to use in your invention. What is the purpose of this object? How does it help others?

CREATE - brainstorm and compete your design below.

<table>
<thead>
<tr>
<th>Simple Machine</th>
<th>Your Invention Design</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</table>

TEST – Optional build a model of your design and see how well it works

SHARE – Who will your invention help? What simple machine did you use?

REFLECTION QUESTIONS

1. Why did you choose this simple machine?

2. What work is your simple machine doing?

3. How did the engineering design process help you think about your design?
**GO FURTHER!**
- Have more than one person improve upon your design.
- Build a prototype if you have not already.

## CORE VALUES SELF-REFLECTION

<table>
<thead>
<tr>
<th></th>
<th>Amazing Skill</th>
<th>Great Job</th>
<th>Making Progress</th>
<th>Could Be Better</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Discover</strong></td>
<td>I approached the tasks looking for all possible answers independently and used perseverance to discover the answer on my own.</td>
<td>I approached the tasks and asked questions from one other person but persevered to discover the answer on my own.</td>
<td>I approached tasks but needed assistance multiple times to reach a point of discovery.</td>
<td>I depended on others to make the discovery for me.</td>
</tr>
<tr>
<td><strong>Innovation</strong></td>
<td>I used creativity and perseverance to solve problems on my own, coming up with unique solutions for the tasks I was given.</td>
<td>I used creativity and perseverance to solve problems on my own coming up with different solutions for the tasks I was given.</td>
<td>I used creativity but struggled with perseverance to solve problems on my own.</td>
<td>I struggled with being creative and only used the information given and needed a lot of encouragement from others to complete the task.</td>
</tr>
<tr>
<td><strong>Impact</strong></td>
<td>I approached the tasks applying understanding of the information with the impact it can have on me and my future as well as how I could help others.</td>
<td>I approached the tasks knowing and applying the information with impact it can have on me and my future.</td>
<td>I understand the tasks but struggle to apply how it will help me in my future or to influence others.</td>
<td>I understand the tasks but did not approach it with understanding the impact it can have on my future or others.</td>
</tr>
<tr>
<td><strong>Inclusion</strong></td>
<td>I approached all tasks with inclusion of others’ ideas, I showed tremendous kindness by including others’ views in my projects and work. I approached my solution thinking how all people would interact with the solution.</td>
<td>I approached most with inclusion of others’ ideas, I tried to understand others’ views and include them in my projects and work. My solution mostly incorporates needs of others.</td>
<td>I approached some tasks with inclusion of others’ ideas, I tried to understand others’ views and include them in my projects and work. My solution meets only a few needs of others.</td>
<td>I did not approach tasks with inclusion of others’ ideas, I tried to understand others’ views and include them in my projects and work. My solution is not inclusive of different types of people.</td>
</tr>
<tr>
<td><strong>Teamwork</strong></td>
<td>I used collaboration, communication and project management to get all tasks accomplished for myself as well as the others.</td>
<td>I used collaboration, communication and project management to get most tasks accomplished for myself as well as the others.</td>
<td>I used collaboration, communication and project management to get some tasks accomplished for myself as well as the others.</td>
<td>I only sometimes used collaboration, communication and project management and accomplished a few tasks for myself as well as the others.</td>
</tr>
<tr>
<td><strong>Fun</strong></td>
<td>I kept a positive attitude throughout and found opportunities to have fun even through struggle. I looked for additional opportunities to have fun in my tasks.</td>
<td>I kept a positive attitude throughout and found opportunities to have fun even through struggle.</td>
<td>I saw the enjoyment and fun after the activity but struggled to see it during.</td>
<td>I only saw struggle in completing my tasks and did not look for times to have fun.</td>
</tr>
</tbody>
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