



Jack's Challenges.

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Directions:



1. Pick a challenge

2. Design and explain

3. Share your design

4. Gather feedback from peers

5. Use the feedback to improve your design and explain

Jack's Challenges

The Design Process



Ask a question

The engineering design process starts when you ask the following questions about problems that you observe.

- What is the problem or need?
- Who has the problem or need?
- Why is it important to solve?



Research and imagine

Think about ways you can solve the problem, and build a list of as many solutions as possible. Research ideas, take notes, and explore all possibilities. Check for any previous solution attempts. Where did they fall short?



Plan and design

Use your imagination along with the facts to come up with a step-by-step plan for your prototype. Draw a diagram and gather needed materials.



Create

Follow the plan and diagram to build the model or create the solution. Build and experiment until you have a working solution. Remember, it is ok to fail during this step.



Test

Make sure your model checks all the basic requirements. If it's a physical structure, imagine all the different ways it could be used and plan your testing based on that. Make sure your model solves the problem by having others test it and gathering feedback.



Share and improve

Engineers solve problems, tell us about what you have done! Share the final results with classmates. Explain how the model or solution solved the problem.

Make improvements to your prototype design to make it better. This may be the final step depending on your test results. Your solution either works or doesn't. If it works, look for ways to make it even better. If it's falling short in some areas, find ways to improve it.

Design a blueprint for a treehouse

Explain your design



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Make your design better

Explain how you made it better



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Design a pollution picker-upper

Explain your design

Jack's
Challenges





Make your design better

Explain how you made it better

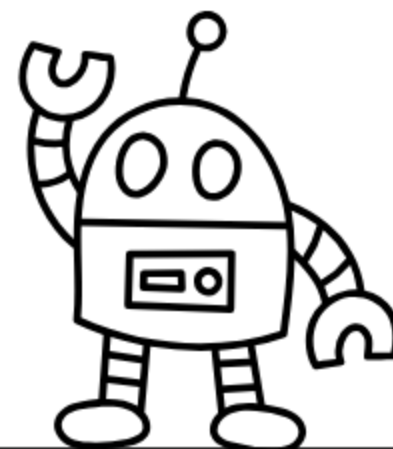


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Design a robot

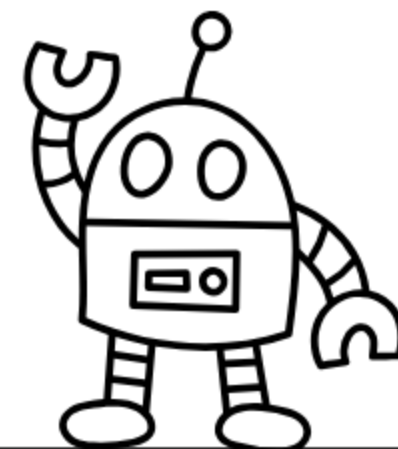
Explain your design



Jack's
Challenges

Make your design better

Explain how you made it better



Jack's
Challenges

Design a Suitcase for an Explorer

Explain your design



Jack's
Challenges

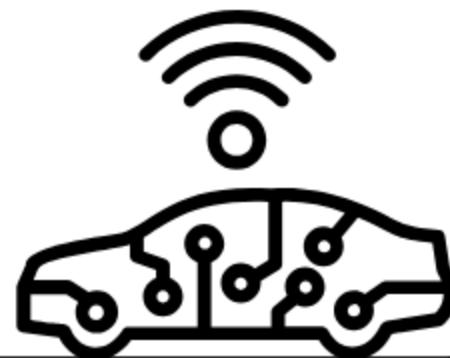
Make your design better

Explain how you made it better

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Design a vehicle for the future

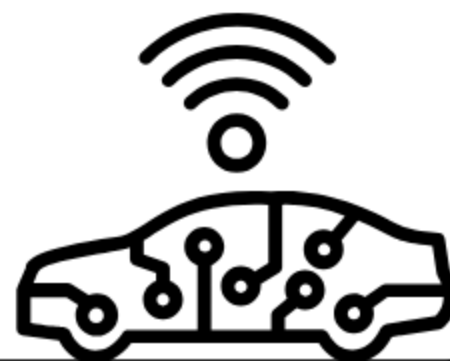
Explain your design



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Challenges

Make your design better

Explain how you made it better



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Think about it:



1. What do you do when something doesn't work the first time?

2. Why is it important to test and refine, or improve your designs?

3. How can working together help solve problems?

4. What part of the design process do you find most interesting?

5. How can you use what you learned from this in your own projects?

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