

**MESA DAY 2022-2023**

ENGINEERING LAB BOOK REQUIREMENT

**TEMPLATE**

NAMES:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*(team member names)*

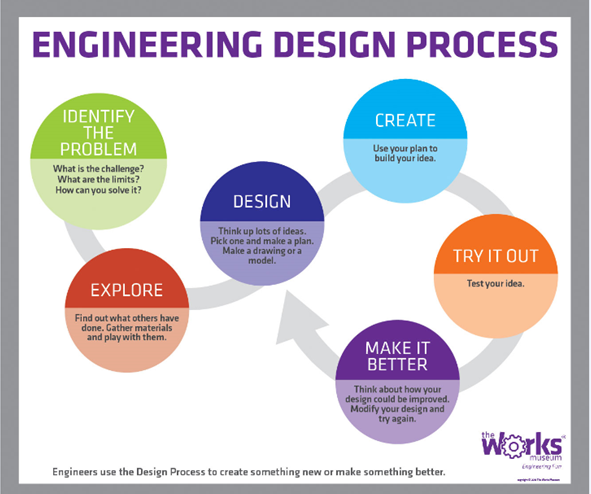
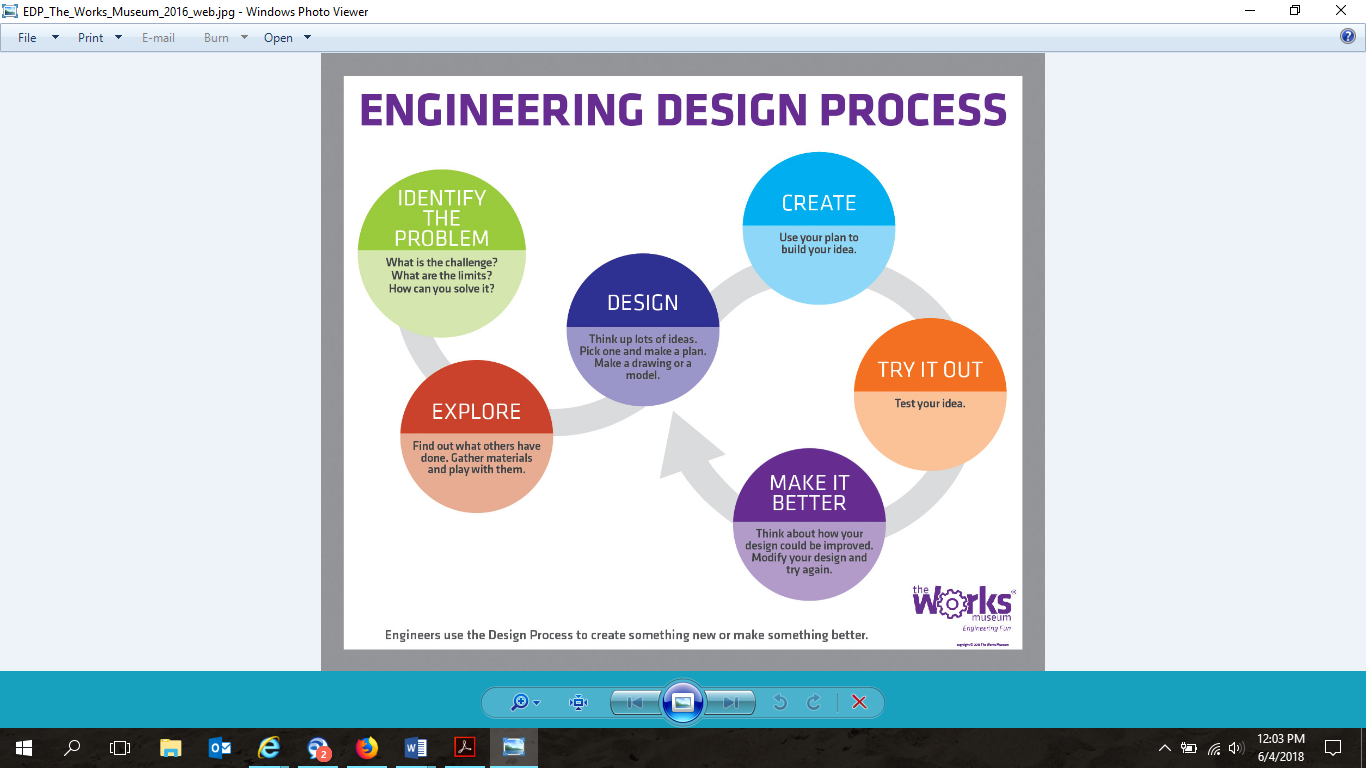
SCHOOL:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CENTER: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

PROJECT: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

*(e.g. Cargo Glider, MESA Machine, Moon Base)*

LEVEL (circle one): 6th gr 7/8th gr 9/10th gr 11/12th gr



1. **IDENTIFY THE PROBLEM**

*What is the challenge being worked on?*

*(what is being designed/built, how will it be evaluated…)*

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*What are the limits/constraints?*

*(what can’t you do per the rules, other constraints…)*

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*How do you think you can solve it?*

*(What will you design and make? What could it be like?)*

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1. **EXPLORE**

*What is a “real-world” example of your project OR concept?*

*(e.g. if building a glider, find a picture of an actual, working glider)*

*Place a picture OR screenshot of a video below:*

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*Briefly describe the example in your picture (location, history, use, etc)*

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*Find out what else has been done to solve your problem (research). Clearly list at least 3 sources (web pages, articles, books, etc.). Identify (cite) and describe each one (one sentence).*

| Source #1  Citation:  Description:  How can this source connect to/inform your project?  Source #2:  Citation:  Description:  How can this source connect to/inform your project?  Source #3:  Citation:  Description:  How can this source connect to/inform your project? |
| --- |

1. **DESIGN**

*Brainstorm ideas (at least 3) and record them. Include a sketch or drawing for each.*

| Idea #1: |
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| Idea #2: |
| Idea #3: |

*Select one of the ideas and describe a plan for building it (at least 5 sentences).*

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*Generate a list of materials for the prototype.*

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1. **CREATE**

*Using your plan, build your prototype (at least five sentences). Include a picture of the actual project prototype built.*

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1. **TRY IT OUT**

*Test your idea/prototype. Describe at least 3 trials/attempts. Use tables/charts as needed.*

| Test #1:  Criteria:  Results: |
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| Test #2:  Criteria:  Results: |
| Test #3:  Criteria:  Results: |









*\*Teams may include additional tables, graphs and charts of their own. Teams are not limited to only using the graph and table shown here.*

*Use of mathematical concepts/equations:*

| Applicable math concept/equation (state concept/equation):  How was the concept/equation used?  (demonstrate use of concept/equation as it pertained to project): |
| --- |

| Applicable math concept/equation (state concept/equation):  How was the concept/equation used?  (demonstrate use of concept/equation as it pertained to project): |
| --- |

1. **MAKE IT BETTER**

*How can you make the project better? What modifications will you be making (state at least 5)?*

| Modification/Improvement #1:  Modification/Improvement #2:  Modification/Improvement #3:  Modification/Improvement #4:  Modification/Improvement #5: |
| --- |

*Build and prepare competition-ready project. Include a picture below.*

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