Background Research Plan Worksheet

for an Engineering Design Project

Name: _____

1. Define the **problem** you intend to solve. [*Who*] need(s) [*what*] because [*why*]:

_____

_____

2. List the **keywords** and phrases from your problem and the topic in general. (Hint: Use an encyclopedia to help you.)

_____ _____ _____ _____

_____ _____ _____ _____

_____ _____ _____ _____

3. Now use your keywords to build some **questions to guide your background research**. Develop at least two or three from each "question word." Don't worry about whether you already know the answer to the question—you'll find the answers when you do your background research. And don't forget to "network" with knowledgeable adults who can help guide you toward good materials!

Question Area	Possible Questions (you can think of others)	Substitute your keywords (or variations of your keywords) for the blanks in the previous column. Write down the relevant questions, and use them to guide your background research.
Target User	Who needs _____? Who wants _____? Who buys _____? What does my target user (a child, an elderly person, whoever your target user is) need or want in a _____? How much would my target user be willing to pay for a _____? What size should I make _____ for my target user?	

Question Area	Possible Questions (you can think of others)	Substitute your keywords (or variations of your keywords) for the blanks in the previous column. Write down the relevant questions and use them to guide your background research.
How It Works, How to Make It	Who invented _____? How does a _____ work? What are the different parts of a _____? What are the important characteristics of a _____? How is performance measured for a _____? Where does _____ get used? What is _____ made of? Why is _____ made from or using _____? What is the best material, component, or algorithm for building _____? (You may even ask this separately for the different parts of your device or program.)	

4. Ask questions to help you understand products or programs that fill similar needs to the need you identified:

- What products fill a similar need?
- What are the strengths and weaknesses of products that fill a similar need?
- What are the key, must-have features of products that fill a similar need?
- Why did the engineers that built products that fill a similar need design them the way they did?
- How can I measure my design's improvement over existing designs?