



Flint Regional Science & Engineering Fair

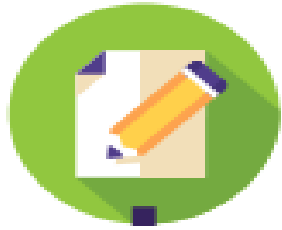
Inspiration, Invention, Innovation

TOPIC 4: CRITERIA & CONSTRAINTS



Criteria & Constraints – We will...

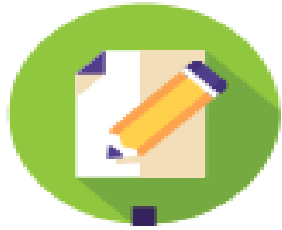
Specify Any
Requirements



- **Identify criteria**
 - How must the prototype look and function?
- **Identify constraints**
 - What limitations do you have while completing this project?
 - What things might make achieving the goal hard?
- **Identify ways to overcome constrains**
 - Who can help?
- **By the end of this step, you will:**
 - Be able to clearly state how a successful project will function.

Criteria: How will we know if a design is successful?

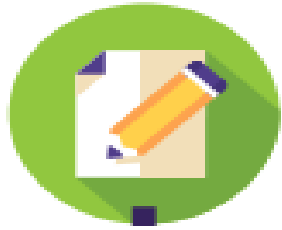
Specify Any Requirements



- The criteria are the specific functions that must be met in order for the project to be successful.
- Two categories:
 - **Primary criteria** are those that constitute a successful project; the project will be unsuccessful if it does not meet these goals.
 - **Secondary criteria** are those features that are highly desirable but not absolutely essential.
- Keep the criterial list as short and specific as possible.
- No vague language!

Constraints: What are some real-world limits to designing solutions for this problem?

Specify Any Requirements



These are the “issues” you may or will have to deal with.

These are “real-world” limits.

These will include:

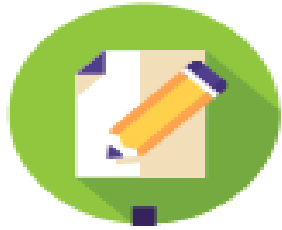
- Time
- Money
- Knowledge
- Materials
- Tools needed

These could include:

- Human and/or environmental impact
- Other potential problems – there are an endless supply of problems & issues

Criteria vs Constraints

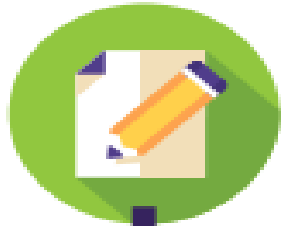
Specify Any Requirements



<https://www.youtube.com/watch?v=c-QRgVgCpCg>

Criteria vs Constraints

Specify Any
Requirements

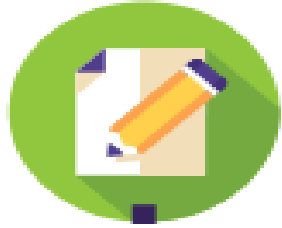


CRITERIA

CONSTRAINTS

Sample: Criteria vs Constraints

Specify Any
Requirements



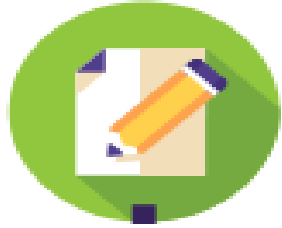
Project Goal: A smoke detector with a low battery light

Criteria:

Constraints:

Sample: Criteria vs Constraints

Specify Any
Requirements



Project Goal: A smoke detector with a low battery light

Criteria:

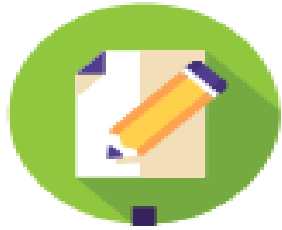
- The light must come on when the battery is low.
- The light must not affect the function or safety of a smoke detector.
- The light must be added to an existing smoke detector.

Constraints:

- The budget is \$50.
- The final prototype and presentation needs to be finished within 2 months.
- I only have a few hours per week to work on it.
- I need to learn how to wire a light to a battery.
- I don't know how to make the light come on when battery is low.

Sample: How to Overcome Constraints

Specify Any
Requirements



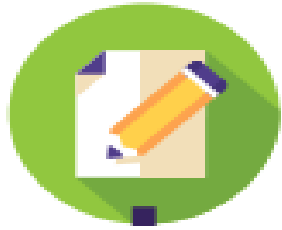
Project Goal: A smoke detector with a low battery light

Constraints:

- The budget is \$50.
 - Don't waste supplies
 - Work with supplies around the house
 - Ask XXX (person or business) if they can donate supplies
- The final prototype and presentation needs to be finished within 2 months
- I only have a few hours per week to work on it.
 - Use time effectively
 - Don't put off starting project
- Need to learn how to wire a light to a battery. – YouTube
- Don't know how to make light come on when battery is low.
 - Internet Research/YouTube
 - Ask XXX for help

To Do:

Specify Any Requirements



- Journal all work on project– be sure to include all:
 - In your journal, identify the criteria and constraints for the **3 problems** you identified last week.
 - Criteria - must have at least ONE, shouldn't have more than 2 or 3
 - Constraints – need at least 4, should have more!
 - List ways to overcome those constraints!
 - Be as specific as possible in these lists!
 - The more specific you are now, the better your project will be later!