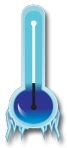
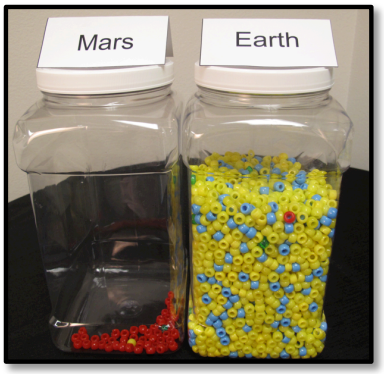
(A) What is Mars Really Like?

What will people need to survive on the Red Planet?

	Mars is COLD! Temperatures at the equator are between 5 and -85°C (41 to -121°F)
	There is no liquid water on the surface of Mars but lots of water ice at the poles and buried beneath the surface around the other places on Mars.
	There are no gas stations on Mars. How will you get power to run vehicles or provide electricity?
	Gravity on Mars is less than half that of Earth.
	Mars is very dusty! Dust is going to get into everything!
	The air is unbreathable for humans! Martian air is 96% Carbon Dioxide (CO_2) and 0.1% Oxygen (O_2) and there is very little of it compared to Earth. Mars only has 1% the amount of air that Earth does.
Online Resources to Learn More	All About Mars http://mars.jpl.nasa.gov/allaboutmars/ Mars-ePedia http://marsed.asu.edu/marsepedia Red Planet Report http://redplanet.asu.edu/

(B) Credible Sources Evaluation

NAME:_____

Instructions: Use the following to identify Credible Resources for your research.

What's the difference between a ***primary source*** and a ***secondary source***? For science research, primary sources are original materials not filtered or interpreted by another person or organization. Examples include papers, dissertations, interviews, lab notebooks, study reported in a journal article, and technical reports. A secondary source provides commentary, analysis, discussion, or opinion on the primary source. Examples include review articles, blogs, opinion editorials, newspapers, and news media sources.

URL #1:			
URL #2:			
URL #3:			
Check if Yes ✔			**Criteria for a Credible Source**
Source #1	**Source #2**	**Source #3**	
			1. Is the website an organization [.org], educational institution [.edu], or government [.gov] site? ***If not, see #2, otherwise go to #3.***
			2. Is the website hosted by a ***periodical***, such as a science journal or magazine that publishes science research?
			3. In **Google**, type ***link://*** in front of the home page URL and hit enter. The number in the search result is how many times that page has been linked to as a reference or resource. Is that a big number, such as hundreds of thousands or more? ***If yes, see #4. Otherwise go to #5.***
			4. Investigate the sources (URL's) that have linked to the page. Start at the first link that is not an internal link. Are most of them considered credible sources, such as other .org, .edu, or .gov sites?
			5. Read the "*About us*" section. Is there a list of names for the contributors to the site? ***If yes, see #6, otherwise go to #7.***
			6. Do a search for one of those contributors. Are you able to find information about that person and verify their experience they are advertising on the website? Does their experience match the purpose of the website?
			7. Do links on the page work, meaning they are unbroken?
			8. Is the source a primary source?
			9. Total Score for each resource (total # of checkmarks for each column)

Check if Yes ✔			Criteria for a ***Non*-Credible Source**
Source #1	**Source #2**	**Source #3**	
			1. Is the website a .com or .net site?
			2. Is the website hosted by a blog, satire site (spoof or parody sites that exaggerate truth using humor), or an opinion editorial page?
			3. Does the site use ***loaded language*** or ***biased language***? (These are words that are chosen to influence the reader to react a certain way that is sympathetic to the author's cause using emotion or stereotypes)
			4. Investigate the sources (URL's) that have linked to the page. Are most of them considered non-credible sources?
			5. Is there a list of sponsors or paid for advertisements for the website? ***If yes, see #6, otherwise go to #7.***
			6. Are the sponsors biased toward one opinion, goal, or cause?
			7. Are links broken and/or has the page not been updated recently?
			8. Is the source a secondary source?
			9. Total Score for each resource (total # of checkmarks for each column)

Now, compare the total checkmarks for each URL. For each URL, put a checkmark in either "*It's Credible, It Might be Credible*, or *It's Not Credible*." You can only choose one.

URL	# of Credible Marks	# of non-Credible Marks	It's Credible (2 or fewer checkmarks in the non-Credible Marks column)	It might be Credible (checkmarks are somewhat even in both columns)	It's Not Credible (5 or more marks in the non-Credible Marks column)
#1					
#2					
#3					

(C) Daily Reflection Sheet

Name: _____

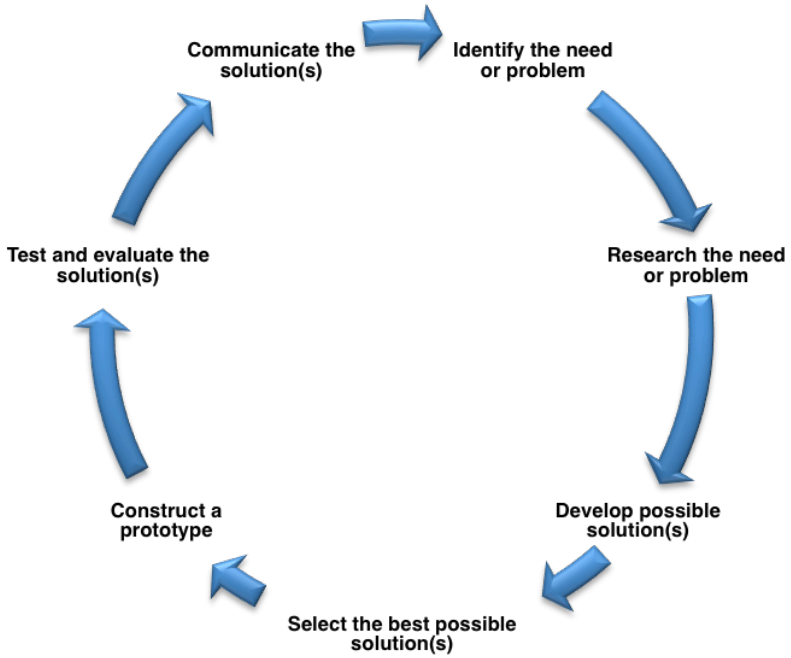
Challenge Name: _____ **Our Problem to Solve**: _____

Meeting #	What obstacle or snag did you solve today?	What new obstacle or snag did you find today?	What is your plan to fix the obstacle/snag tomorrow?

Last edited: April 6, 2015

(D) Engineering Design Cycle Defined

This diagram of the engineering cycle is a simplified version of what actually happens in an engineering task. The actual process is much more iterative, often going from later steps in the cycle and circling back to earlier steps as new information is gathered.



Identify the need or problem
- Specify and prioritize requirements and constraints to better define the need or problem

Research the need or problem
- Examine current state of the issue and current solutions
- Explore other options through resources (Ex: Internet, interviews, periodicals, etc.)
- Identify the constraints

Develop possible solution(s)
- Brainstorm possible solutions
- Draw on mathematics and science
- Explain or describe the possible solutions on paper, computer simulation, or 3D model
- Refine the possible solutions

Select the best possible solution(s)
- Determine, using simple analysis, which solution(s) best meet(s) the original requirements

Construct a prototype
- Model the selected solution(s) on paper, computer simulation, or 3D model

Test and evaluate the solution(s)
- Does it work?
- Does it meet the original design constraints?

Communicate the solution(s)
- Make an engineering presentation that includes a discussion of how the solution(s) best meet(s) the needs of the initial problem, opportunity, or need
- Discuss societal impact and tradeoffs of the solution(s)

(E) Engineering Design Cycle Team Summary

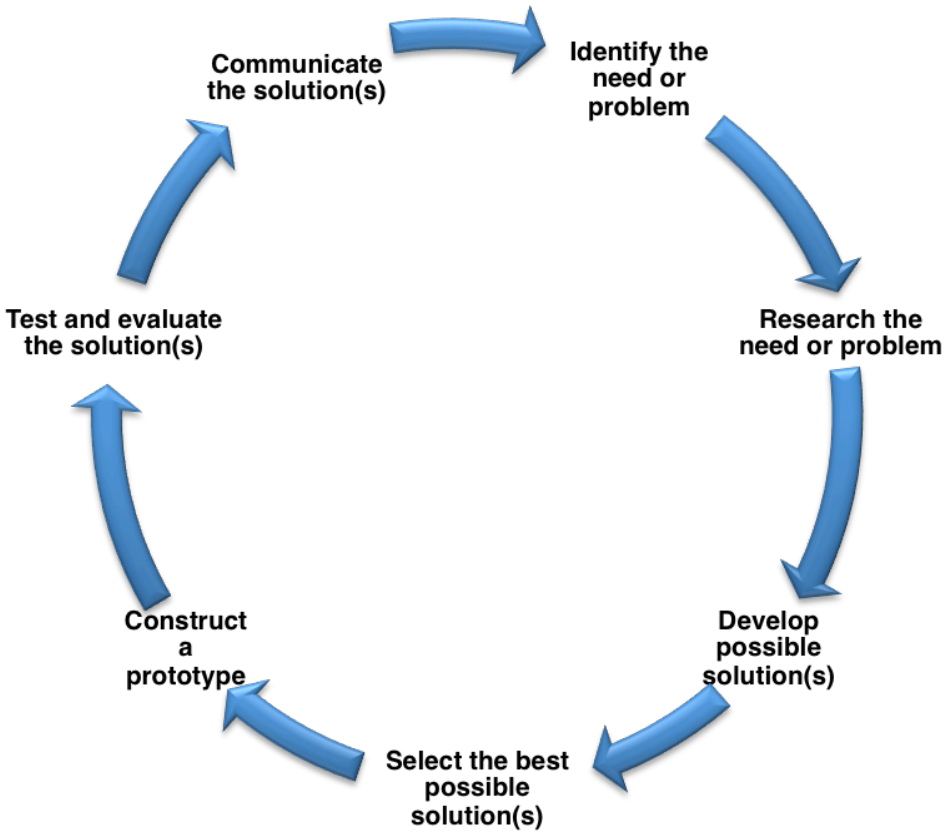
Name: _____

Challenge Name: _____

Our Problem to Solve: _____

Working with your group, discuss and identify where you participated in each part of the Engineering Design Cycle. Review the *(B) Daily Reflection Sheets* for help with this.

Write the event, problem, need, solution, test, etc. your team participated in next to the appropriate section of the cycle. Include arrows between steps if your team needed to go back (iteration) during the planning to test a new solution. There should be at least one example next to each step in the cycle.



(F) About your Prototype

Name: _____

Challenge Name: _____ **Our Problem to Solve**: _____

Draw your Prototype as best you can, using labels to point out key features.

Describe your Prototype and how it works

_____

_____

_____

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_____

Last edited: February 6, 2015

(G) About the Engineering Cycle

NAME:_____

What did you try that didn't work out? How many times did something like this happen?	What did you do when things didn't work out like you expected?
How could you bring technology into your final prototype?	**If given enough time, what would your next step look like?**

(H) About your Thinking

NAME:_____

What were some of the struggles you and your team went through during the project?	What was surprising to you about the engineering cycle?

What do you think you have learned from this process you didn't know before?

Last edited: April 6, 2015