MAKER MARS



(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.
and the second sec	Mars is very dusty! Dust is going to get into everything!
Mars Earth	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 <u>http://mars.jpl.nasa.gov/allaboutmars/</u> Mars-ePedia <u>http://marsed.asu.edu/marsepedia</u> Red Planet Report <u>http://redplanet.asu.edu/</u>

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Student Guide

(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:		
Ch	eck if Y	es	
	1		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 <i>periodical</i> , such as a science journal or
			magazine that publishes science research?
			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? <i>If yes, see #4.</i>
			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 " <i>About us</i> " section. Is there a list of names for the
			contributors to the site? <i>If yes, see #6, otherwise go to #7.</i>
			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)

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CI	neck if Y	es	
	 Image: A start of the start of		Criteria for a <i>Non</i> -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?
			 Does the site use <i>loaded language</i> or <i>biased language</i>? (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?
			 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?
			 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					

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Student Guide

(C) Daily F	MAKER MARS
Reflection Sheet	S
Sheet	

Name:

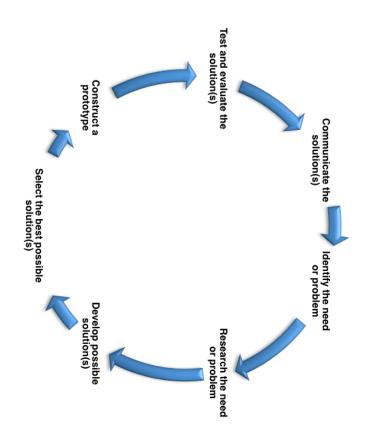
Meeting What obstacle or snag did you What new obstacle or snag did you What is your plan to fix the obstacle/snag tomorrow? # Solve today? find today? obstacle/snag tomorrow? Image: Solve today Image: Solve today obstacle/snag tomorrow? Image: Solve today Image: Solve today obstacle/snag tomorrow? Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today Image: Solve today </th <th></th> <th></th> <th></th>			
	 at obstacle or snag did you ve today?	obstacle or snag did you	What is your plan to fix the obstacle/snag tomorrow?

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(D) Engineering Design Cycle Defined

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



Identify the need or problem

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

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,
- Refine the possible solutions computer simulation, or 3D model
- Select the best possible solution(s)
- Determine, using simple analysis, which solution(s) best
- Construct a prototype meet(s) the original requirements
- Model the selected solution(s) on paper, computer
- Test and evaluate the solution(s) simulation, or 3D model
- Does it work?
- Does it meet the original design constraints?
- Communicate the solution(s) Make an engineering presentation that includes a
- the initial problem, opportunity, or need discussion of how the solution(s) best meet(s) the needs of
- Discuss societal impact and tradeoffs of the solution(s)

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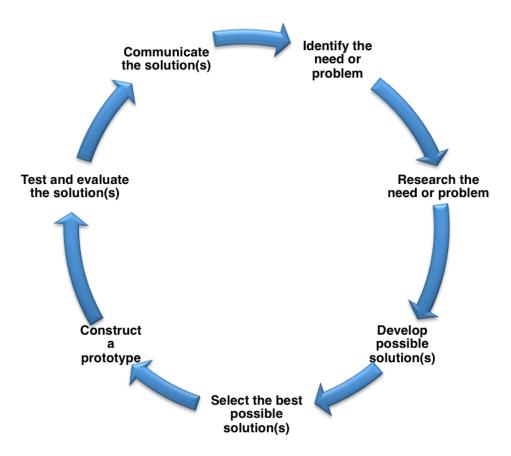
(E) Engineering Design Cycle Team Summary
Name: _____

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.



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(F) About your Prototype

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Name:	
Challenge Name:0	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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MAKER MARS (G) About the Engineering Cycle

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ы	How could you bring technology into your final prototype?	What did you try that didn't work out? How many times did something like this happen?	
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tv's Mars Education Program, under contract to NASA's Jet Propulsion Laboratory.	iven enough time, what would your next step look like?	hat did you do when things didn't work out like you (pected?	NAME:
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(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?	n't know before?
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