

Scoring Form – Rover Weight**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____**ROVER WEIGHT (10% of composite score)**

ROVER DRIVER: _____

ROVER ASSISTANT: _____

EMERGENCY MECHANIC: _____

Rover Weight _____ grams (Circle appropriate weight category below)					
	400 grams or below +10 points	401 - 500 grams +8 points	501 - 600 grams +6 points	601 - 700 grams +4 points	701 grams & above +2 points
Total Points for Rover Weight					/10 pt

Rover Inspection (Please check box when confirmed)

- Rock Collection Device
- Rock Storage Unit
- No more than 3 battery boxes – OR – 3 motors
(3 battery boxes – OR – 3 motors are allowed).
- Motors are only 9-volt simple motors
(NO geared-down motors and/or non-LEGO® power sources allowed).
- Non - LEGO® components used in Rover construction are listed (see back of scoring form for list), sorted into the correct category, and are allowable.

Other Comments Regarding Rover Construction:

Scoring Form – Hill Climb

GROUP NAME: _____

TEAM NAME: _____

TEAM SPOKESPERSON: _____

HILL CLIMB (10% of composite score)

ROVER DRIVER: _____

ROVER ASSISTANT: _____

EMERGENCY MECHANIC: _____

Climbed minimum 20° incline	Yes +2 pts.	No +0 pts.		
Circle each degree of incline as it is successfully completed (up to 60°)				
	30° +2 pts.	40° +2 pts.	50° +2 pts.	60° +2 pts.
If team is unable to complete a degree of incline above - complete appropriate intermediate 5° incline for 1 pt and conclude test				
Circle maximum incline completed	25° +1 pts.	35° +1 pts.	45° +1 pts.	55° +1 pts.
Total points for Hill Climb (add all circled points above)				/10 pts

Catastrophic Breakdown

Do not record minor catastrophic breakdowns – teams are allowed an unlimited amount of minor breakdowns. A team is allowed ONE major catastrophic breakdown..

- Major Catastrophic Breakdown declared.
- Re-attempt of course completed.

Scoring Form – Poster Presentation**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____**POSTER PRESENTATION (15% of composite score)**

Poster Presentation – Team should use poster and lab notebook as a guide.

(A) Mars Rover Design (process and final design justification)	Possible Points	Points Awarded
1 Steps in the design process (what was done and the order it was done)	0 - 2 pt.	
2 Major turning points in design process (good and bad)	0 - 2 pt.	
3 Reason for choosing final Rover design	0 - 1 pt.	
4 Strengths of Rover	0 - 1 pt.	
5 Weaknesses of Rover	0 - 1 pt.	
(B) Additional Teamwork and Rover Design Information		
1 Explanation of Pie Charts (both the group and individual pie charts)	0 - 2 pt.	
2 Ideas for improving their Rover if time, budget, allowable items, etc. constraints were not present	0 - 1 pt.	
3 Material presented in an organized, thorough and convincing manner through quality of delivery, visual aids and team participation (please add comments below)	0 - 5 pt.	
Total points for Poster Presentation (add sections A and B)	Total	/15 pts.

*Half points are allowable in this event. Please write your score for each item in the right-hand column, total the verbal score, and then total the overall event score when complete.

Please feel free to write additional comments below as necessary

Scoring Form – Poster Display**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____

POSTER DISPLAY (10% of composite score)		
Poster Display – Team should summarize and illustrate the contents of the lab notebook.		
(A) Display provides evidence of the entire design process	Possible points	Points Awarded
1. Identifies the problem(s) – purpose of designing the Mars Rover	0 – 1 pt.	
2. States the goal(s) of the engineering team – (what Rover should be able to do)	0 – 1 pt.	
3. Presents brainstorming of ideas	0 – 2 pt.	
4. Shows selection and construction of the design	0 – 1 pt.	
5. Shows testing and revising of Rover design	0 – 1 pt.	
(B) Display reflects cooperation and teamwork		
1. Display is organized, arranged in a logical order, and contains descriptions such as picture captions, narratives, etc. to illustrate the overall project design process	0 – 2 pt.	
2. Pie chart for the whole team that shows the work divided between team members and indicates what individual members did	0 – 2 pt.	
Total points for Poster Display (add sections A and B)	Total	/10 pt.

*Half points are allowable in this event. Please write your score for each item in the right-hand column, and total your score when complete.

Please feel free to write additional comments below as necessary

Scoring Form – Martian Rock Collection**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____**MARTIAN ROCK COLLECTION TEST (15% of composite score)**

ROVER DRIVER: _____

ROVER ASSISTANT: _____

EMERGENCY MECHANIC: _____

Time Limit - 5 minute maximum						
Rock Collection Attempted (collector device <u>moved</u> AND <u>touched</u> one rock)	YES +5 pts.		NO +0 pts.			
Rocks Collected (team's goal is to collect one rock from each color group)						
<i>Circle color(s) of rock(s) collected present on Rover at end of event</i>	Yellow +2 pts.	White +2 pts.	Black +2 pts.	Blue +2 pts.	Red +2 pts.	
Penalty Points (-1 for every time team must advance one vehicle length due to trap or tip over)	Subtract (-) points					
Total Points for Martian Rock Collection Test (add all points and subtract penalty points)					TOTAL	/15 pts
Marvin the Martian collected (attempt can only be made after one rock from each color group is collected)	YES		NO			
Additional rocks collected (attempt(s) can only be made after one rock from each color group is collected)						

Catastrophic Breakdown

Do not record minor catastrophic breakdowns – teams are allowed an unlimited amount of minor breakdowns. A team is allowed ONE major catastrophic breakdown..

- Major Catastrophic Breakdown declared.
- Re-attempt of course completed.

Scoring Form – "Blind Driving" Test**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____**"BLIND DRIVING" TEAMWORK TEST (10% of composite score)**

ROVER DRIVER: _____

ROVER ASSISTANT: _____

EMERGENCY MECHANIC: _____

Obstacles (circle each obstacle after it is successfully completed)

	Obstacle #1 +2 pts.	Obstacle #2 +2 pts.	Obstacle #3 +2 pts.	Obstacle #4 +2 pts.	Obstacle #5 +2 pts.
Penalty for trap or tip over - advance Rover to next obstacle without awarding points for obstacle that was being attempted					
Course Time (5 minutes max.)				min. _____	sec. _____
Total Points for Blind Driving (add all circled points above)					Total _____ /10 pts

Catastrophic Breakdown

Do not record minor catastrophic breakdowns – teams are allowed an unlimited amount of minor breakdowns. A team is allowed ONE major catastrophic breakdown..

- Major Catastrophic Breakdown declared.
- Re-attempt of course completed.

Scoring Form – Speed Test**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____**ROVER SPEED TEST (10% of composite score)**

ROVER DRIVER: _____

ROVER ASSISTANT: _____

EMERGENCY MECHANIC: _____

Course completed within 5 minutes				Yes +5 pts.	No +0 pts. (Go to *)
Course Time (5 minutes max.)				min. _____	sec. _____
Circle appropriate course time range	0 - 0:59 +5 pts.	1:00 - 1:59 +4 pts.	2:00 - 2:59 +3 pts.	3:00 - 3:59 +2 pts.	4:00 - 4:59 +1 pts.

*** Course NOT completed in 5 minutes - points determined by distance from finish line**

Distance from Finish Line (in feet)	<i>within 5 ft.</i> +1 pt.	<i>within 4 ft.</i> +2 pt.	<i>within 3 ft.</i> +3 pt.	<i>within 2 ft.</i> +4 pt.	<i>within 1 ft.</i> +5 pt.
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Total Point Penalties (-1 for every time team advanced one vehicle length due to trap or tip over)	Tally penalties Box -	Subtract (-) _____ points
Total Points for Rover Speed Test (add all points and subtract penalty points)		/10 points

Catastrophic Breakdown

Do not record minor catastrophic breakdowns – teams are allowed an unlimited amount of minor

- Major Catastrophic Breakdown declared.
- Re-attempt of course completed.

Scoring Form – Lab Notebook**GROUP NAME:** _____**TEAM NAME:** _____**TEAM SPOKESPERSON:** _____

LAB NOTEBOOK & BUDGET (20% of composite score)		
	Possible points	Points Awarded
1. Lab notebook includes information about the Team, the signed commitment to responsibilities, the checklist of activities, and evidence of some Team-Building Activities.	0 – 3 pt.	
2. Lab notebook includes a timeline and three itemized budgets, as well as a summary of the Mars research and how it affected design choices	0 – 5 pt.	
3. Pie charts of what individuals did themselves (% display, % design, % leadership, etc.) are present. There should be a pie chart for EACH member of the team.	0 – 3 pt.	
4. Lab notebook day-to-day entries reflect the engineering design process (identifies problem(s); states goals; demonstrates brainstorming; details Rover design selection / construction; details Rover testing / revising)	0 – 5 pt.	
5. Lab notebook day-to-day entries are handwritten and maintained throughout the team's work on its Rover, notebook is organized, chronological and legible, and entries are labeled appropriately (date – team members – activity(s)/design process step(s))	0 – 4 pt.	
Total Points for the Lab Notebook / Budget	Total	/20 pts.

*Half points are allowable in this event. Please write your score for each item in the right-hand column, then total the overall event score when complete.

- Team did not spend more than \$75 on additional LEGO® parts.
If more than \$75 was spent, team is disqualified from the competition.
- Team did not spend more than \$30 for construction of display.
If more than \$30 was spent, team receives 0 points for the Poster Presentation & Display.

Please feel free to write additional comments below as necessary

Level: ___ E OR ___ MS

Level: ___ E OR ___ MS

Level: ___ E OR ___ MS

5.

5.



5.