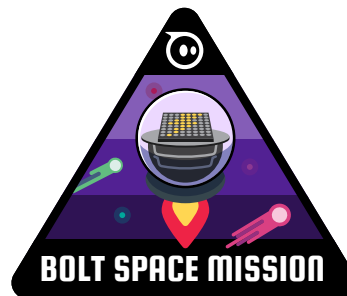




sphero

GLOBAL CHALLENGE

SCORING RUBRICS



RVR+littleBits Mars Mission

CODE+Engineering Design Infographic				
	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Infographic Submitted in proper format: Y or N			
Creativity	0-20 Basic text used no images/icons infographic is black/white	21-50 Simple design; Minimal color used; one or two graphical elements used to enhance the infographic	51-80 Utilizes supplied infographic template; some icons/images used with effective design choices	81-100 Original infographic design created by team; design choices are inspiring; Contains necessary level of words, but isn't text heavy
Content	0-20 Missing content or elements required	21-50 Infographic and/or engineering designs are not detailed	51-80 Infographic contains all elements in the prompts	81-100 Engineering Build List includes all items and pricing; documentation of the submission is thorough and detailed
littleBits Schematics	0-20 Missing littleBits schematics for one or more of the mission objectives	21-50 A littleBits schematic is included for each mission objective, but is missing callouts explaining the function of each bit	51-80 littleBits schematics are included for each mission objective with callouts for explanation of how it functions as part of the mission objective	81-100 littleBits schematics are included with callouts and a detailed explanation of function; shows additional creativity through the use of different Bits

MISSION OBJECTIVES

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Mission Objective Functions are defined as outlined in the Rules guidelines: Y or N Mission Objective Variables are defined as outlined in the Rules document: Y or N			
Mission Objective #1 : Survey And Patrol your Base	0-20 RVR Misses one of the targets; AND/OR littleBits physical interaction is missing	21-50 RVR passes over a boundary line of the competition field; AND/OR RVR passes over a martian terrain block: AND/OR RVR completes mission in longer than 90 seconds portrayed	51-80 RVR reaches each of the 4 targets; littleBits invention/interaction is apparent; RVR completes the mission under 90 seconds AND RVR doesn't pass over boundary or martian terrain lines	81-100 RVR reaches each the 4 targets; littleBits interaction is inventive/creative/unique; AND RVR competes the mission in less than 70 seconds
Mission Objective #1 BONUS	Bridge buildover terrain and RVR travels over bridge			
Mission Objective #2 : Prepare the Landing Zone	0-20 Competition field not set up accurately; OR RVR doesn't complete the mission	21-50 RVR passes over a boundary line of the competition field; AND/OR RVR passes over a martian terrain block: AND/OR RVR comes in contact with a piece of "debris" (foam balls); OR RVR completes mission in over 120 seconds	51-80 RVR completes mission in less than 120 seconds littleBits Invention is basic, but clears the landing zone	81-100 RVR completes the mission effectively; littleBits invention uses motion to clear the landing zone Time to complete mission is less than 90 seconds creative elements added to competition field
Mission Objective #3 : Relocate Supply Cargo	0-20 Competition field not set up accurately; OR RVR doesn't complete the mission	21-50 RVR passes over a boundary line of the competition field; AND/OR RVR passes over a martian terrain block: AND/OR RVR comes in contact with the supply cargo	51-80 RVR completes the mission completely; littleBits invention is basic, but assists in the mission objective	81-100 Creative elements are added to the competition field; littleBits is engineered to use motion to assist in the mission objective

MISSION OBJECTIVES

	Developing	Improving	Accomplished	Exemplary
Mission Objective #4 : Rescue your Martian Friend	0-20 Competition field not set up accurately; OR RVR doesn't complete the mission	21-50 RVR passes over a boundary line of the competition field; AND/OR RVR passes over a martian terrain block	51-80 RVR completes mission, but returns martian friends to base one at a time	81-100 RVR returns both martian friends to the base at the same time; creative elements added to the competition field enhance the mission
Mission Objective #5 : Open-Ended Sensor Mission	0-20 littleBits are not part of the mission objective	21-50 RVR passes over a boundary line of the competition field; AND/OR RVR passes over a martian terrain block	51-80 Sensor data is used to create a believable computational model;	81-100 Creative use of sensor data as part of program; littleBits invention is unique/creative; Program uses advanced programming blocks (functions, variables) to highlight the computational model

VIDEO

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Video Submitted in proper format: Y or N			
	0-40 Video submission missing one or more of the 5 mission objectives; robots are not in frame during much of the video	41-100 Video submission contains all 5 of the mission objectives; robots occasionally go out of video frame; nothing is added to the video submission aside from the Misison objectives	101-160 Video submission contains all 5 of the mission objectives; titles and/or captions are used to announce/indicate mission being completed; robots stay in the frame all of the time; sound effects in programs are audible and undestandable	161-200 Video Submission contains all of the 5 mission objectives; creative titles and/or captions are used to announce/indicate mission being completed; Robts are focused in the frame the whole time; Competition field is established in the frame for each mission objective before filming a program

COMMENTS:**TOTAL SCORE:**

(out of 1,000)

BOLT Space Mission

CODE+Engineering Design Infographic				
	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Infographic Submitted in proper format: Y or N			
Creativity	0-20 Basic text used no images/icons infographic is black/white	21-50 Simple design; Minimal color used; one or two graphical elements used to enhance the infographic	51-80 Utilizes supplied infographic template; some icons/images used with effective design choices	81-100 Original infographic design created by team; design choices are inspiring; Contains necessary level of words, but isn't text heavy
Content	0-20 Missing content or elements required	21-50 Engineering Budget list doesn't include pricing; AND/OR Infographic missing some details	51-80 Engineering Build List includes items and pricing; Infographic contains all elements in the prompts	81-100 Engineering Build List includes all items and pricing; documentation of the submission is thorough and detailed

MISSION OBJECTIVES

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Mission Objective Functions are defined as outlined in the Rules guidelines: Y or N Mission Objective Variables are defined as outlined in the Rules document: Y or N			
Mission Objective #1 : Ambient Light Sensor	0-20 Competition field not set up accurately or mission objective not completed	21-50 Competition Field is set up with an enclosure and light source, BOLT travels to Pluto and Sun, but luminosity values aren't accurately portrayed	51-80 Competition field is set up accurately; enclosure over S10 is 8" x 8" x 5" or smaller; Luminosity readings are accurate to each location; Mission complete message is present	81-100 Competition field is set up accurately; BOLT begins on I2, travels to S10 & A1; Luminosity Readings are accurate to space; Creative elements are added to the enclosure, light source, and the competition field; Program utilizes sound and matrix animations
Mission Objective #2 : Asteroid Belt	0-20 Competition field not set up accurately or mission objective not completed	21-50 BOLT #1 comes in contact with obstacles (Cup or BOLT #2); OR BOLT #2 goes outside of the competition field	51-80 Competition field set up accurately; BOLT #1 travels from I2 to S10 and E1 without coming in contact with any obstacles; BOLT #2 travels in a loop between L1-L7 (some drift acceptable)	81-100 Competition field is set up accurately; BOLT #1 begins on I2 travels to S10 and E1 through BOLT #2; BOLT #2 Loops between L1 & L7; BOLT #1 avoids contact with all objects on competition field; Creative elements are added to the competition field; Program utilizes sound and matrix animations
Mission Objective #3 : IR Communications	0-20 Competition field not set up accurately or mission objective not completed	21-50 BOLT #1 sometimes misinterprets which region that BOLT #2 is in; OR BOLT #2 isn't placed on the coordinates in the appropriate order	51-80 BOLT #1 determines which region BOLT #2 is in	81-100 Competition Field is set up accurately; BOLT #1 remains on I2 for the duration of the program; BOLT #2 is placed on the correct coordinates in the correct order; BOLT #1 determines accurately which region BOLT #2 is in; Creative elements are added to the competition field to enhance the mission; Program utilizes sound and matrix animations

MISSION OBJECTIVES

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Mission Objective Functions are defined as outlined in the Rules guidelines: Y or N Mission Objective Variables are defined as outlined in the Rules document: Y or N			
Mission Objective #4 : Rescue Mission	0-20 Competition field not set up accurately or mission objective not completed	21-50 BOLT #1 comes in contact with some obstacles (doesn't apply to small cups); OR BOLT #2 comes in contact with obstacles	51-80 Competition field is set up accurately according to challenge guide; BOLT #1 does not come in contact with any obstacles; BOLT #2 does not come in contact with any obstacles	81-100 Competition field is set up accurately; BOLT #1 does not hit any obstacles (doesn't apply to small cups); BOLT #2 does not hit any obstacles BOLT #2 follows BOLT #1 to I2 (within 1 grid around); Creative elements are added to the competition field to enhance the mission; Program utilizes sounds and matrix animations
Mission Objective #5 : Engineering Challenge	0-20 Competition field not set up accurately or mission objective not completed	21-50 BOLT #1 comes in contact with obstacles; OR BOLT #2 comes in contact with obstacles	51-80 Competition Field is set up accurately; BOLT #1 completes the obstacle	81-100 Competition field is set up accurately; BOLT #1 and its chariot does not come into contact with any obstacles BOLT #2 does not come into contact with any obstacles; Variable 'boltMO5time' announces time elapsed is less than 20 seconds
Mission Objective #5 BONUS	Remaining budget after build: each dollar left is worth .25 points			
	0-20 non-approved craft supplies used in engineering of chariot	21-50 Engineering budget goes above \$30	51-80 Engineering budget falls under \$30	81-100 Engineering budget falls under \$30; Inventive chariot design to transport materials

VIDEO

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL Video Submitted in proper format: Y or N			
	0-40 Video submission missing one or more of the 5 mission objectives; AND/OR robots are not in frame during much of the video;	41-100 Video submission contains all 5 of the mission objectives; robots occasionally go out of video frame; nothing is added to the video submission aside from the Misison objectives	101-160 Video submission contains all 5 of the mission objectives; titles and/or captions are used to announce/indicate mission being completed; robots stay in the frame all of the time; sound effects in programs are audible and undestandable	161-200 Video Submission contains all of the 5 mission objectives; creative titles and/or captions are used to announce/indicate mission being completed; Robts are focused in the frame the whole time; Competition field is established in the frame for each mission objective before filming a program

COMMENTS:**TOTAL SCORE:**

(out of 1,000)

littleBits Invent 4 Good: Mission Earth

CREATE				
	Developing	Improving	Accomplished	Exemplary
Problem Definition	Is the problem clearly defined and is it suitable for littleBits Invent 4 Good?			
	0-20 Not clearly Defined OR Not Suitable for LBi4G	21-50 Clearly defined OR suitable AND Somewhat defined OR somewhat suitable	51-80 Clearly defined AND suitable	81-100 Clearly defined AND suitable for Earth's most challenging problems
Analysis & Research	Is there documented analysis of the problem and research on existing and/or attempted solutions?			
	0-20 No analysis OR no research on existing/attempted solutions	21-50 Well documented analysis OR research AND lightly documented analysis OR research	51-80 Well documented analysis and research	81-100 Extensive documented analysis AND research on existing/attempted solutions

COMMENTS:

PLAY

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	<p>PASS / FAIL The invention follows all materials usage rules in section 3b: Y or N The invention uses a minimum of 1 Power Bit, 1 Input Bit, and 1 Output Bit: Y or N</p>			
Solution Effectiveness	<p>How effective is the invention in solving the chosen problem?</p>			
	<p>0-40 Solves the basic problem for a specific subset of individuals</p>	<p>41-100 Solves the basic problem for most affected individuals</p>	<p>101-160 Solves the basic problem for all affected individuals</p>	<p>161-200 Solves the basic problem and potential related problems for all affected individuals.</p>
Coding Effectiveness	<p>Has the team effectively used coding to enhance the invention?</p>			
	<p>0 No Coding</p>	<p>1-20 Simple block program with no functions</p>	<p>21-40 Block program with at least one function call</p>	<p>41-50 Advanced text programming with multiple function calls</p>
Aesthetic Appeal	<p>Does the final invention have aesthetic and artistic appeal?</p>			
	<p>0-20 Minimal to slight aesthetic and artistic appeal</p>	<p>21-50 Minimal to slight aesthetic and artistic appeal</p>	<p>51-80 Nice aesthetic and artistic appeal</p>	<p>81-100 Exceptionally beautiful work of art</p>
Bit Creativity	<p>Does the invention make creative use of Bits?</p>			
	<p>0-20 Uses only 1-2 Bits over the minimum required OR no Bit from Section Y used.</p>	<p>21-50 Uses at least one, Bit from Section Y in a way that enhances the invention.</p>	<p>51-80 Uses several Bits from Section Y that clearly enhance the invention's usefulness.</p>	<p>81-100 Uses several Bits from Section Y that make the invention essential to the intended user.</p>

COMMENTS:

REMIX

	Developing	Improving	Accomplished	Exemplary
Solution Iterations	Has the team demonstrated and/or described various iterations leading up to the final iteration?			
	0-20 Little, to no description of iterations leading up to final solution.	21-50 Some iterations leading up to final solution, but no description of failed iterations.	51-80 Many iterations prior to final design; failed iterations clearly improved the final invention.	81-100 Iteration center to the invention creation; failed iterations celebrated and highlighted.
Future Improvements	Has the team explained how they would improve their invention given more resources?			
	0-20 Little, to no future improvement suggestions.	21-50 Some suggested improvements; unclear if the suggestions will make intended improvements.	51-80 Clear and concise suggestions for future improvement.	81-100 Clear and concise suggestions for future improvement, including required resources to make improvements.

COMMENTS:

SHARE

	Developing	Improving	Accomplished	Exemplary
Minimum Requirements	PASS / FAIL The Invention Video follows all submission rules in Section 3c: Y or N The invention Infographic follows all submission rules in Section 3d: Y or N			
Video Effectiveness	Does the video effectively communicate the Invention meets the criteria in Section 2 of the Rules?			
	0-20 No video submitted OR video is unclear regarding invention effectiveness.	21-50 Video communicates most requirements, but not all OR is visually distracting/not appealing.	51-80 Video communicates all requirements AND is not visually distracting.	81-100 Video communicates all requirements AND is visually appealing and or entertaining.
Infographic Effectiveness	Does the infographic effectively communicate the Invention meets the criteria in Section 2 of the Rules?			
	0-20 No infographic submitted OR is unclear regarding invention effectiveness.	21-50 Infographic communicates requirements, but not concisely OR is visually distracting.	51-80 Infographic communicates requirements concisely AND is not visually distracting.	81-100 Infographic communicates requirements concisely AND is visually striking.

COMMENTS:

TOTAL SCORE:

(out of 1,000)