Model Scout Robotics

Model Scouts Lunar Challenge Game
MoonBots 2012 Mission

In the Model Scouts Lunar Challenge Game, your robot will attempt a set of tasks on the Lunar Landscape. These tasks revolve around the following topics:

- Google Lunar X-Prize Mission
- Heritage Artifacts
- Solar Power on the Moon

The game starts with the referee announcing "Go" and the players signaling the robot to begin. Once the robot has been started, it must act autonomously to perform mission tasks without further assistance from the players. If a robot must be rescued and restarted, it incurs a 25 point penalty (see "Touch penalty" below).

After four minutes from the start, the game ends and the Starting Base enters lunar night. The robot's game score is then calculated based on the tasks performed during the four minutes. Note that there are other penalties possible if the robot solves the wrong problem or disturbs the Heritage Artifacts.

TASK: LOWER RAMP AT STARTING BASE
Description: At the beginning of the game, the Starting Base ramp is upright. Robot lowers the ramp to enable access to and from the Starting Base.
SCORING:

- Ramp no longer upright: 10 points
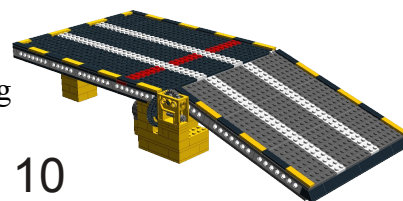
TASK: LANDER DISMOUNT
Description: Robot successfully leaves the Starting Base and drives on the lunar surface.
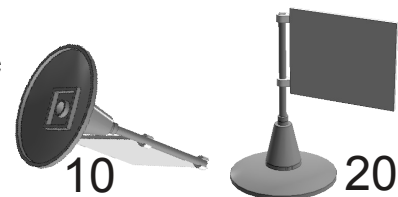SCORING:

- Robot drives anywhere on the lunar surface: 10 points

TASK: PLACE FLAG ON RIDGE
Description: Robot places flag mission model on the High Ridge to commemorate its landing. The flag can be placed anywhere on the ridge to earn points.
SCORING:

- Robot leaves flag on ridge lying on its side: 10 points
- Robot leaves flag on ridge standing upright: 20 points

TASK: EXPLORE LAVA TUBE

Description: Robot lowers a probe into the lava tube on the west end of the High Ridge.

SCORING:

- Robot lowers anything into the hole (below the ridge surface): 20 points

TASK: CROSS HIGH RIDGE

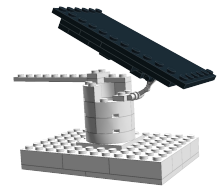Description: Robot successfully navigates across the High Ridge.

SCORING:

- Robot drives on the lunar surface north of the High Ridge: 20 points

TASK: FIX SOLAR COLLECTOR

Description: Robot turns the solar collector to face the Sun (east).

SCORING:

- Solar collector (black panel) facing east: 20 points

TASK: HERITAGE ARTIFACT REDISCOVERY

Description: Robot navigates to Heritage Artifact area on lunar surface north of the High Ridge and west of the area markers, then gets a close-up image of the Heritage Artifacts.

SCORING:

- Robot captures image of Heritage Artifacts while in Heritage Artifact area: 40 points
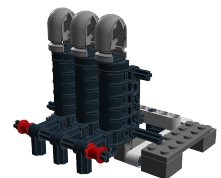- PENALTY: Robot disturbs (touches) any Heritage Artifacts: -30 points
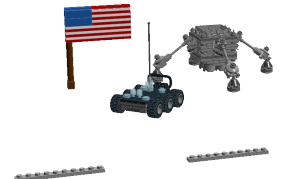
TASK: LUNAR MINE EXPLOSION

Description: Robot sets off an explosion to mine lunar ores.

SCORING:

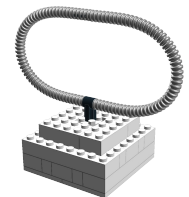- Robot triggers mine explosion model: 25 points

TASK: COLLECT ICE CORE

Description: Robot discovers ice at the bottom of the large crater and returns an ice core sample to the Starting Base.

SCORING:

- Ice core returned to Starting Base: 25 points

TASK: MINE TITANIUM

Description: Robot returns titanium (blue) mission models to the starting area.

SCORING:

- Titanium (blue) models in Starting Base: 5 points each
- At least one Titanium model loaded on Space Elevator: 20 additional points
- PENALTY: Returning non-titanium (red) rocks to Starting Base or Space Elevator: no task points
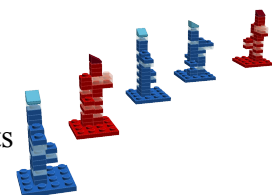
TASK: SPACE ELEVATOR

Description: Robot raises Space Elevator platform to make cargo available for return trip to Earth.
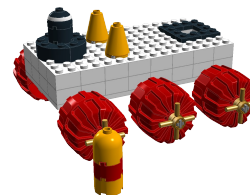SCORING:
- Robot raises elevator so top of elevator car is in top section: 15 points

TASK: ROVER RESCUE

Description: A rover from a previous landing has stranded itself south of the High Ridge. Robot flips rover upright and performs maintenance.
SCORING:
- Rover is standing upright on lunar surface: 20 points
- Battery mission model placed into slot on rover: 20 points

TASK: ROBOT SOLAR POWER

Description: Robot carries a Dexter Industries Solar Panel.
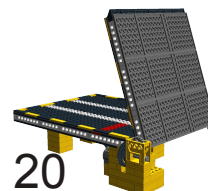SCORING:
- Robot carries solar panel and returns to Starting Base with panel intact: 30 points

TASK: RETURN TO BASE

Description: Robot returns to the Starting Base before the lunar night begins (4 minutes after start of game).
SCORING:
- Robot in Starting Base at the 4:00 minute mark: 20 points
- Robot raises Starting Base ramp: 20 points

The maximum theoretical score is 350 points:

Lower ramp at starting base	10
Lander dismount	10
Place flag upright on ridge	20
Lava tube exploration	20
Cross High Ridge	20
Solar collector	20
Heritage Artifact picture	40
Lunar mine explosion	25
Ice core	25
Titanium mining (3 @ 5 points each)	15
Titanium on space elevator	20
Raise space elevator	15
Rescue rover	20
Battery in rover	20
Robot solar power	30
Return to starting base	20
Raise Starting Base ramp	20
Total	350