RVR MISSIONS

MISSION MANUAL

26-27 RVR Missions: Smart City



💡 A note about this Mission Manual

This Mission Manual receives ongoing updates (major and minor). Each published version is official and mandatory for all Sphero Robotics Competition Events. New versions immediately supersede the preceding ones.

For any questions related to this Mission Manual, please email support@teamalliance.org.

Version History:

Version 1.0 - May 11, 2026 - initial release

Version 2.0 - July 15, 2026- Major Update

- **Added 26-27 Smart City Season Logo**
- **Changed page numbering to match PDF numbering**
- **Added hyperlinks to TEAM Alliance Student-Powered Policy and Code of Conduct**
- **Added clarification to RVR-MFR1 related to In-Person Mission Field**
- **Added that Online Submission scores are not shared with a team or displayed publicly under Participation Guidelines**
- **Removed Mission 3**
- **Changed Mission 4 to Mission 3**
- **Changed Mission 5 to Championship Mission**
- **Championship event timing**
- **Rename Remote Submissions with Online Submissions**
- **Mission #1 Overview update where "cannot" was added to the last sentence**
- **Score minimums**
- **Updates to RVR-M2-2**
- **Updates to RVR-M2-4 and RVR-M2-5**
- **Updates to RVR-M2-6**
- **Updates to RVR-M3-7 - Penalty assessment**
- **Changed Creativity and attention to detail with "Theme Story Points" for RVR–M1-9, RVR-M2-8, RVR-M3-11, and RVR-MC-11**
- **Changed "Thoroughly understands code and strategy to "Implementation Points" for Live and Live Remote Events for RVR–M1-10, RVR-M2-9, RVR-M3-12, and RVR-MC-12**

Version 2.1 - September 21, 2026 - Minor Update

- **Updated SRM-CR1 - Expanded Student-Powered enforcement**
- **Updated SRM-CR3 - Expanded Code of Conduct requirements**
- **Updated RVR-RHR2 - Added that Blueprint Engineering and 3D-printed versions of the listed Blueprint pieces are acceptable in competition.**
- **Implementation Scoring - Removed "Online Submission Only" documentation**
- **Theme Story Points - Clarified that Theme Story Points reward "unique, non-functional features" beyond mission requirements.**
- **Fixed typos and rule numbering**

Version 2.2 - October 14, 2026

- **Added RVR-MR3, RVR-MR4, RVR-MR5 regarding Mission Objective completion**
- **Updated RVR-RHR2 for clarification on functional vs. non-functional 3D printing and craft materials**
- **Updated submission directions for RVR-MR3 and RVR-MR5**
- **Updated qualifying criteria for Qualifying Online Submission Events**
- **Added "Implementation Points' section for each Mission Objective**

Version 2.3 - November 16, 2026

- **Updated Mission Objective #1 Field Setup grid coordinates**
- **Added language to clarify Placement Guide is not part of Mission Field setup**
- **Added language to RVR-RHR1 that additional electronics/motors are permitted in *non-functional* uses**
- **Clarified the intent for rules RVR-M1-5 & RVR-M1-6 to disallow scoring after time limit**

- **RVR-M2-7 - Removed language that teams can only go to Bus Barn after second loop**
- **Changed language in RVR-M3-2 to say drops instead of flips**
- **Changed language in RVR-M3-3 to say toggling instead of flipping**
- **Fixed step 4 in Mission Objective #4 Setup so that the description matches the diagram.**
- **Added maximum height for bonus in RVR-MC-1**
- **Added TEAM Ready to glossary**

Sphero Robotics Mission Common Rules	
SRM-CR1	Student-Powered™: ***Mission*** solutions are designed, built, coded, and executed by students. If competition work was designed, built, or coded by an adult instead of the Students, the ***Team*** will first be given an opportunity to remove the adult contribution and make corrections using only ***Student*** work. If the ***Team*** can make the necessary corrections, they may continue participating in the Event. If the adult contribution cannot reasonably be removed or corrected, the ***Team*** will not be able to continue competing at that Event. The ***Head Evaluator*** makes the final on-site determination and may work with the ***Event Host*** or ***TEAM Alliance*** when needed.
SRM-CR2	Single Participation: A ***Student*** can only be on one ***Team*** per ***Program*** per ***Season***.
SRM-CR3	TEAM Alliance Code of Conduct: ***Students***, ***Team Coordinators***, volunteers, and spectators are expected to treat others with kindness and respect and follow the ***TEAM Alliance*** Code of Conduct and any additional Event or venue policies. The ***Event Host*** is responsible for addressing conduct or behavior concerns. Serious or continued behavior that does not meet these expectations may result in a ***Student***, adult, or ***Team*** being asked to leave the Event. ***TEAM Alliance*** may be contacted for assistance when needed.
SRM-CR4	Iterative Excellence: Celebrate learning from failure.
SRM-CR5	Creative Autonomy: Teams are encouraged to interpret the ***Mission Objectives*** through the lens of their own unique strategy. The Mission Manual provides the "What" (the objective) and the "Constraints" (the kit limits), but the "How" is entirely up to the ***Students***. The rules in this ***Mission Manual*** are the only rules.
SRM-CR6	3D printing is allowed as long as it follows Student-Powered <SRM-CR1>
SRM-CR7	Autonomous Solutions: Once a robot's program has started, no ***Student*** interaction is permitted with the robot until the ***Mission*** is complete unless a specific rule in a ***Mission Manual*** allows it. An unpermitted ***Student*** interaction voids the results of that ***Mission***.

Safety Rules	
SRM-SR1	Signed Waivers: Any ***Student*** participating in the ***Sphero Robotics Missions*** must have a signed waiver.
SRM-SR2	Adult Supervision: A ***Team Coordinator*** must accompany a ***Team*** at all times.

In-Person Event Rules	
SRM-IPE1	At all ***In-Person Events*** or ***Live Remote Events***, ***Teams*** have timed rounds to attempt a ***Mission Objective*** as many times as desired. Teams must tell the ***Evaluator*** which attempt to record for their ***Individual Mission Score***.
SRM-IPE2	If a ***Team*** has begun their code before the round time is called, the ***Team*** will be allowed to let their code finish.
SRM-IPE3	A ***Team*** may only challenge the results of an ***Individual Mission Score*** before they leave the ***Mission Field*** area.
SRM-IPE4	All rounds of ***Mission Objectives*** remain Student-Powered**.** ***Team Coordinators*** may not provide assistance to a ***Team*** during ***Mission Objectives*.**

RVR Mission Rules:	
RVR-MR1	***Teams*** in ***RVR Missions*** are classified as ***U15 Student***
RVR-MR2	There are four (4) ***Mission Objectives*** in the ***RVR Missions***. Each ***Mission Objective*** is scored according to the points outlined in this document.
RVR-MR3	***Teams*** will conduct ***Mission Objectives*** 1 - 3 for ***In-Person*** and ***Online Submission Qualifying Events***.
RVR-MR4	***Teams*** will conduct ***Mission Objectives*** 1 - 4 for ***In-Person Championship Events***.
RVR-MR5	Online Submission Finalists will conduct ***Mission Objective*** 4 only for the ***Online Submission Championship Event***.

Robot and Hardware Rules	
RVR-RHR1	***Teams*** may use either RVR or RVR+ robots for the **RVR Missions**. Additional electronics are not permitted except for non-functional use. The choice of robot may impact a ***Team's*** score based on a robot's capabilities. For the rest of this document, RVR is a reference to either robot.
RVR-RHR2	***Teams*** must build the functional portions of all ***Field Objects*** and ***Field Elements*** as specified in the ***Mission Objectives*** using parts from the Blueprint Snap Sphero Robotics Missions Kit. A missing kit part may be replaced with a functionally equivalent 3D-printed part. Additional Blueprint Snap pieces, craft materials, 3D printed parts, and decorative items may be used only for non-functional purposes unless the Mission Objective indicates they can be used for functional purposes. They may not support, strengthen, position, move, guide, trigger, or otherwise affect a ***Field Object***, ***Field Element***, ***Robot*** to contribute to a scoring action. ***Teams*** must verbally confirm compliance during inspection. At an ***Evaluator's*** request, a ***Team*** must demonstrate that an additional item is non-functional or remove it before completing the associated ***Mission Objective***. If an element's purpose is unclear, Evaluators should give the ***Team*** the benefit of the doubt. **A Note About Creativity:** Make your ***Mission Field*** your own! ***Teams*** are encouraged to personalize their ***Mission Field*** with creative, non-functional elements that bring their theme and story to life and help your ***Team*** earn Theme Story points. Have fun and let your creativity shine! Blueprint Snap Sphero Robotics Missions Kit Contents*:* (8) 2x Pitch Truss (12) 3x Pitch Truss (12) 4x Pitch Truss (8) 5x Pitch Truss (6) 10x Pitch Truss (4) Linear Motion Bracket (2) 100 mm Tire (2) 90 mm Pulley (2) 45 mm Pulley (2) Spool (40) Connector (20) Cardboard Clamp (4) Turntable (2) Hinge

	(4) Lock Plate (4) Bearing Plate (4) 1x4 Plate (1) Ring Tool (2) 2x Pitch Capped Shaft (2) 3x Pitch Capped Shaft (2) 4x Pitch Capped Shaft (8) 0.5x Pitch Shaft Collar (2) 1m Rope (2) Rope Anchor
RVR-RHR3	RVR and Snap parts must be able to pass ***Inspection*** at ***Events***.

Mission Field Rules

RVR-MFR1	The ***Mission Field*** is 1.50 m x 2.25 m divided into 25 cm x 25 cm grid squares. Grids are labeled A-I on the X axis, and 1-6 on the Y axis. ***In-Person Events*** must use the Sphero RVR Code Mat as the ***Mission Field*** for the ***RVR Missions***. ***Event Hosts*** will supply the ***Mission Fields*** at ***In-Person Events***. ***Live Remote Events and Online Submissions*** can use any RVR Code Mat or a homemade ***Mission Field*** with the correct dimensions.
RVR-MFR2	Except when specified in the ***Mission Manual*** for a specific ***Mission Objective***, Blueprint Snap parts and other elements of decoration may be secured to the ***Mission Field*** using non-permanent adhesive (painter's tape or masking tape are recommended)

Mission Participation Guidelines

In-Person & Live Remote Events	***In-Person events*** provide an opportunity for ***Teams*** to work on their ***Mission Objectives*** at home, school, or in their extracurricular club and then showcase their completed ***Mission Objectives*** in an ***In-Person Event*** format. ***Teams*** will be given three (3) minutes to set up for their ***Mission Objective. Teams*** will be given five (5) minutes to attempt their best run of their prepared ***Mission***

	Objective for an ***Evaluator*****.** This ***Evaluator*** will award an ***Individual Mission Score*** based on the ***Team's*** best attempt during the round and the ***Team's*** ability to thoroughly articulate an understanding of code and strategy with the ***Evaluator*** A ***Team's Total Score*** at a **Qualifying Event** can earn them ***Awards*** and qualification to a ***Championship Event.***
Online Submission	***Online Submission*** is where ***Teams*** work on their ***Mission Objectives*** at home, school, or in their extracurricular club and submit them to be evaluated virtually. Each ***Event*** submission will be scored by the ***Sphero Robotics Missions Evaluators*** based on the scoring rubric. See Rules RVR-MR3 and RVR-MR5 to review which ***Mission Objectives*** to submit. For each ***Mission Objective, Teams*** must prepare the following deliverables for ***Online Submission*****:** ● Submit the following evidence of completion in the Google Slide Submission template (sphero.cc/SRM-rvr-template). ○ VIDEO: Submit a publicly viewable video of the ***Mission Objective***. The video must: i. be submitted in a .mp4, .mov, or .avi format ii. be captured from top down perspective iii. show RVR for the entire ***Mission Objective*** iv. show the timer (if it's a timed ***Mission Objective***) ○ CODE: Submit a screenshot or image of the program for RVR ○ DOCUMENTATION: Describe your ***Team's*** process and strategy. **Online Submission Scores:** Individual scores from Online Submission events are not shared with teams or displayed publicly. After all submissions have been reviewed, TEAM Alliance will announce the finalists from each region. These teams will receive an invitation to compete at the Championship Event.

Awards	
In-Person & *Live* Remote Events	The following awards will be given at In-Person and Live Remote SRM Events: **Mission Mastery Awards:** Recognizes the three teams that achieved the highest

	scores on each individual Mission. These awards are not ranked, and all recipients are recognized equally. ● Mission 1 Mastery Award - 3 Teams ● Mission 2 Mastery Award - 3 Teams ● Mission 3 Mastery Award (Championship Events only) - 3 Teams If a tie would result in more than three teams receiving a Mission Mastery Award, ties are broken using scores from that Mission in the following order: 1. Highest Implementation Points 2. Highest Theme Story Points 3. If a tie still remains, all tied teams will receive the Mission Mastery Award, even if there are more than three recipients. **Overall Event Mission Awards:** Recognizes the top three teams that have achieved the highest ***Total Scores*** at that event. ● Overall Event Champion - Team with the highest ***Total Score*** ● Overall Event 2nd Place Award - Team with the second highest ***Total Score*** ● Overall Event 3rd Place Award - Team with the third highest ***Total Score*** If there is a tie for the Overall Event Mission Awards, then ties will be broken in the following order: 1. Highest Mission 3 Score (Championship Events only) 2. Highest Mission 2 Score 3. Highest Mission 1 Score 4. If there is still a tie, then the teams will have the same rank
Online Submissions	***Championship Events*** The following awards will be given for Online Submission Championship Events: **Overall Event Mission Awards:** Recognizes the top three teams that have achieved the highest ***Championship Mission Scores*** at that event. ● Overall Event Champion - Team with the highest ***Championship Mission Score*** ● Overall Event 2nd Place Award - Team with the second highest ***Championship Mission Score*** ● Overall Event 3rd Place Award - Team with the third highest ***Championship Mission Score***

Championship Event Advancement Criteria

In-Person & *Live* Remote Events	Teams may receive an invitation to a ***Championship Event*** in one of the following ways: 1. Earn a qualifying award at a ***Qualifying Event***.

	2. Receive an invitation from the Global Leaderboard if ***Championship Event*** spots remain available. 3. Receive an invitation from the ***Championship Event*** waitlist if ***Championship Event*** spots still remain available. Depending on ***Championship Event*** capacity and the number of ***Qualifying Events*** within a state or region, one or more of the following awards may qualify teams for a ***Championship Event***: ● Overall Event Champion Award* ● Overall 2nd Place Award ● Overall 3rd Place Award *The Overall Event Champion Award is guaranteed to qualify at ***In-Person Events*** when the ***Qualifying Event*** meets the minimum registered team requirement. Additional awards may qualify to a Championship Event at the discretion of TEAM Alliance. ***Live Remote Events*** that have teams from multiple Championship event regions may only upload results to the Global Leaderboard. Teams are ranked in the Global Leaderboard using their highest ***Total Score*** from a single **Qualifying** or ***Championship Event***. Ties are broken using the following criteria, in order: 1. Highest Mission 4 score from the most recent event 2. Highest Mission 3 score from the most recent event 3. Highest Mission 2 score from the most recent event 4. Highest Mission 1 score from the most recent event 5. If there is still a tie, then the teams will have the same rank **Global Leaderboard Deadline:** Results must be uploaded to the Global Leaderboard by May 17, 2027, to be included in TEAM Alliance and Sphero's 2026–2027 Global Leaderboard recognition. Events held after this date may still upload results, but those scores will not be considered for global recognition. ***Championship Events*** must be posted by May 15th, 2027.
Online Submissions	***Qualifying Online Submission Events*** The top 20 or 25% Teams (whichever is largest) from each region will be Online Submission Finalists and advance to their region's ***Online Submission Championship Event***. Ties are broken by: 1. Highest Mission 2 score 2. Highest Mission 1 score 3. If there is still a tie, then the teams will have the same rank

	Qualifying Online Submissions must be submitted in myTEAMevents.org by March 5, 2027. Online Submission Finalists will be notified on or before March 15, 2027 and must submit their additional Championship Online Submission by April 16th. Regions will be defined by TEAM Alliance for the 2026-2027 season and will be posted in an upcoming manual update.

26-27 RVR Mission Specific Terms

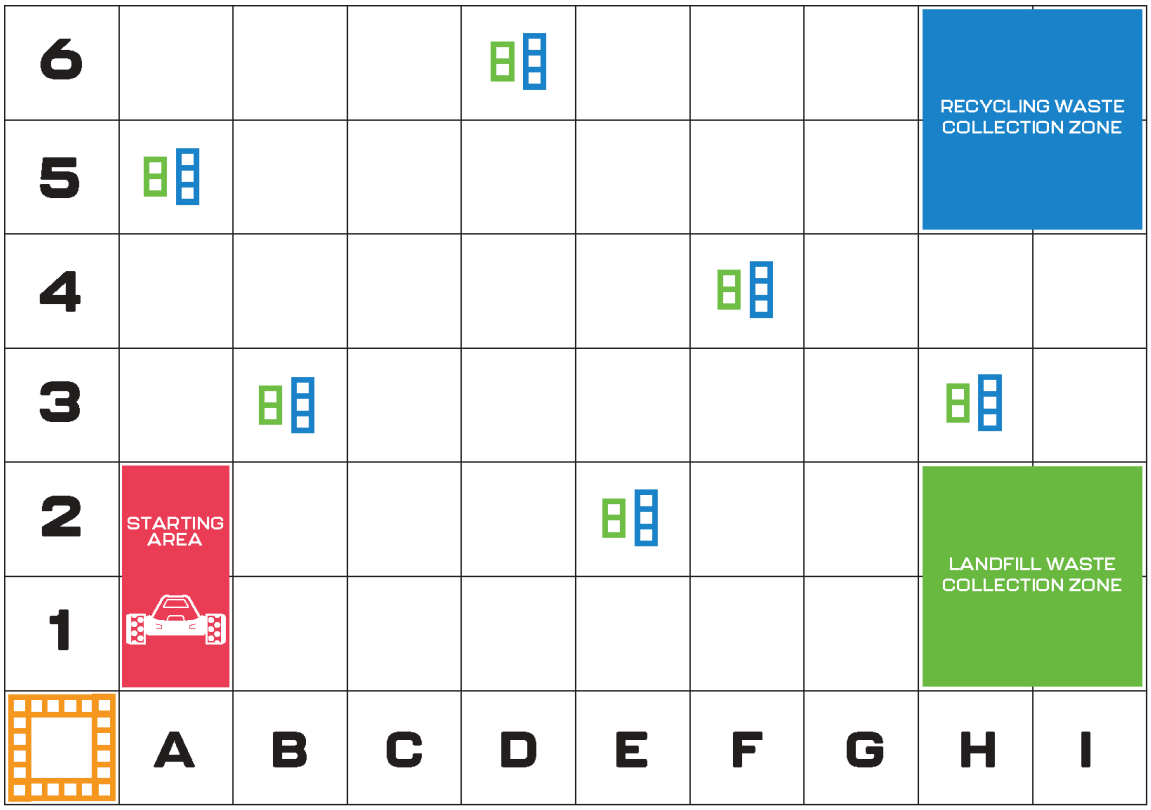
Waste Disposal Plow	A ***Field Element*** required for ***Mission Objective #1***
Placement Guide	A Snap build to help with placement of ***Field Objects*** in ***Mission Objective #1***
Recyclable Material	A ***Field Object*** required for ***Mission Objective #1***
Recycling Waste Collection Zone	An area of the ***Mission Field*** *in* ***Mission Objective #1***
Landfill Material	A ***Field Object*** required for ***Mission Objective #1***
Landfill Waste Collection Zone	An area of the ***Mission Field*** *in* ***Mission Objective #1***
Underpass and Overpass Structure	A ***Field Element*** required for ***Mission Objective #2***
Bus Stop	An area of the ***Mission Field*** *in* ***Mission Objective #2***
Bus Barn	An area of the ***Mission Field*** *in* ***Mission Objective #2***
Crops	A ***Field Object*** required for ***Mission Objective #3***
Harvesting Attachment	A ***Field Element*** attached to RVR required for ***Mission Objective #3***
Windmills	A ***Field Element*** required for ***Mission Objective #3***
Subway Tunnel	A ***Field Element*** required for ***Mission Objective #4***
Subway Sensor	A ***Field Object*** required for ***Mission Objective #4***

Modification Zone	An area of the ***Mission Field*** *in* ***Mission Objective #4***
Tower Sensor Activation Mechanism	A ***Field Element*** attached to RVR required for ***Mission Objective #4***
Tower Sensor	A ***Field Object*** required for ***Mission Objective #4***
Docking Ramp	A ***Field Element*** required for ***Mission Objective #5***
Docking Platform	A ***Field Element*** required for ***Mission Objective #5***
Docking Station	An area of the ***Mission Field*** *in* ***Mission Objective #5*** that includes the ***Docking Platform*** and ***Docking Ramp***.
Winch	A ***Field Element*** attached to RVR required for ***Mission Objective #5***
Power Block	A ***Field Object*** required for ***Mission Objective #5***

Mission Objective 1: Sorting Waste

OVERVIEW: A sudden flash storm has swept through the Metro District, toppling cargo containers and mixing landfill waste with valuable recyclables. The city's automated systems are overwhelmed! You must deploy a RVR equipped with a custom-engineered "Sort-and-Clear" plow. You have a 30-second window to manually drive RVR and clear the main thoroughfare before the morning commute begins. Be careful: the waste processing plants are high-security zones—once you breach the perimeter to drop off a load, the gates lock behind and you cannot bring anything else to that zone.

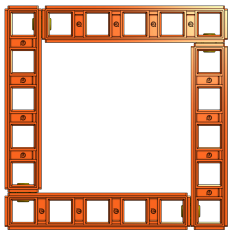
Mission Objective 1 Setup:



The Placement Guide's location is not part of the scored field setup.

1. Build a ***Waste Disposal Plow*** entirely of Blueprint Snap pieces and attach it to RVR.
2. Designate these areas:
   - ***Starting Area*** - A1, A2
   - ***Recycling Waste Collection Zone*** - H5, H6, I5, I6
   - ***Landfill Waste Collection Zone*** - H1, H2, I1, I2
3. Place one 2x Pitch Truss (***Recyclable Material***) and one 3x Pitch Truss (***Landfill Material***) in each of the following grid squares: A1, B3, D6, E2, F4, and H3. The two trusses must be placed close enough together to fit inside the ***Placement Guide*** (6x6 pitch square). Placement Guide clarification: The

Placement Guide is used to verify the spacing of each pair of trusses. It does not need to start on the Mission Mat or remain in the position shown in the setup diagram. Keep it available nearby so the Evaluator can verify that each pair of trusses fits inside it.



Mission Objective 1 Rules and Scoring:

Rule ID	Objective	Possible Points
RVR-M1-1	***Mission Field*** is set up correctly according to the diagram. 2x and 3x Pitch Trusses are placed close enough together to fit in the ***Placement Guide*** (6x6 pitch square). The Placement Guide's location is not part of the scored field setup.	10
RVR-M1-2	The ***Team*** engineers a ***Waste Disposal Plow*** to collect waste and push it into the correct zone.	10
RVR-M1-3	RVR and the ***Waste Disposal Plow*** begin the ***Mission Objective*** fully contained in the ***Starting Area***.	10
RVR-M1-4	This is a timed ***Mission Objective. Teams*** place a timer, stopwatch, or phone timer on the ***Mission Field***. ***Teams*** start the timer, then begin driving RVR. RVR must stop when the 30-second time limit has elapsed. ***Teams*** may not be able to remove all material.	10
RVR-M1-5	***Teams*** can either enable Manual Drive Mode in the Sphero Edu app after connecting to their robot or by using the "drive on" block in a program to make RVR successfully sort and transfer ***Recyclable Material*** (2x Pitch Trusses) to the ***Recycling Waste Collection Zone.*** (10 points each) Any scoring after 30 seconds does not count.	60
RVR-M1-6	RVR successfully sorts and transfers ***Landfill Material*** (3x Pitch Trusses) to the ***Landfill Waste Collection Zone.*** (10 points each) Any scoring after 30 seconds does not count.	60

RVR-M1-7 RVR can only visit a ***Waste Collection Zone*** one time. Material transferred to a zone on a second visit is not counted in the score.

RVR-M1-8 ***Teams*** receive a ***Foul*** if waste material is transferred to the wrong collection zone, RVR re-enters a closed collection zone, or if RVR leaves the ***Mission Field***.

- waste in the wrong zone (-10 points each ***Foul)***
- re-enter a closed collection zone (-10 points each ***Foul***)
- leave the ***Mission Field*** (-5 points each ***Foul***)

RVR-M1-9 **"Theme Story Points":** ***Teams*** implement unique, non-functional features beyond the Mission requirements that enhance the theme. 20

Field Design Features (custom structures, Blueprint Snap Engineering parts, improved zone designations, or other custom design elements)

- None = 0 pts
- 1-3 = 5 pts
- 4-5 = 7 pts
- 6+ = 10 pts

Robot Design Features (digital audio, and physical changes to the base robot)

- None = 0 pts
- 1-3 = 5 pts
- 4+ = 10 pts

RVR-M1-10 "**Implementation Points": *Teams*** demonstrate understanding of the coding concepts and strategic decisions used to complete the Mission Objectives. ***Teams*** must show their code to the Evaluator to receive Coding Feature points. 20

Mission Strategy Features (planning, testing, iteration, trade-offs, time-management, robot positioning, or other strategies to optimize performance)

- None = 0 pts
- 1-3 = 5 pts
- 4-5 = 7 pts
- 6+ = 10 pts

Coding Features (strategic code organization, comments, programming logic (IF/ELSE, loops, variables), custom functions, use of sensors, audio, and displays)

- None = 0 pts
- 1-3 = 5 pts
- 4-5 = 7 pts
- 6+ = 10 pts

Max Points: 200

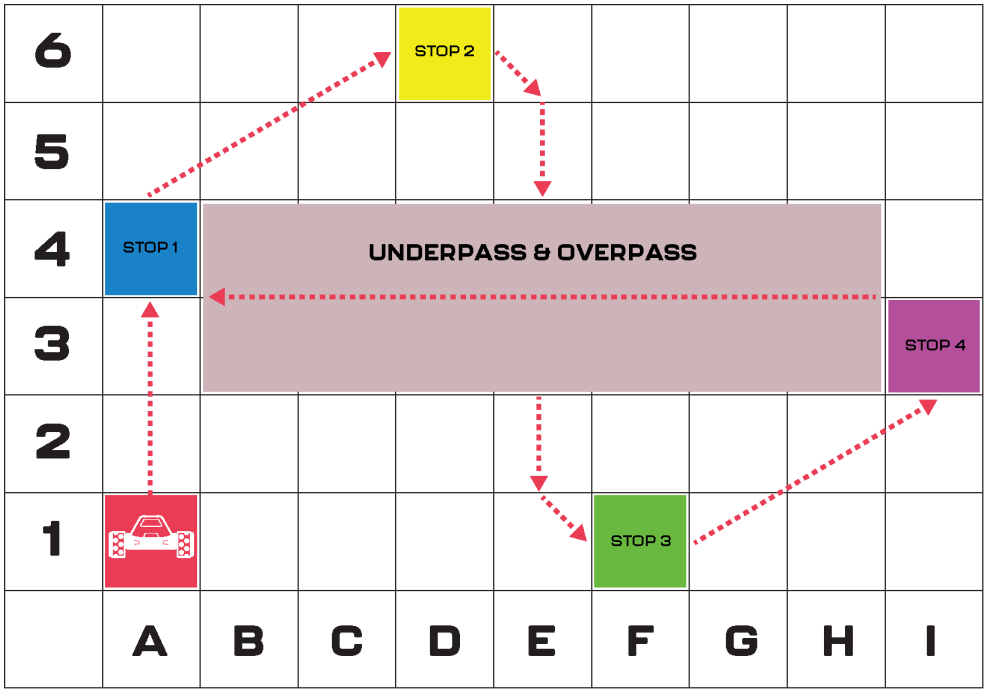
Mission Objective 2: Bus Routes

Beginner

OVERVIEW: In every great city, **"**the wheels on the bus go 'round and 'round." Public transportation is essential to get people where they need to be. In this ***Mission Objective***, ***Teams*** code RVR to autonomously follow a bus route. First, teams engineer an ***Underpass and Overpass Structure*** that is part of a bus route. RVR must be able to drive under and over the structure. Next, teams code RVR to navigate from the ***Bus Barn*** to each ***Bus Stop*** along the route, stopping to allow passengers to board. RVR should make two loops along the route before finishing back at the ***Bus Barn***.

Mission Objective 2 Set Up:

1. Engineer an ***Underpass and Overpass Structure***. The structure must be made entirely of Blueprint Snap pieces, cardboard, card stock, and/or other readily available craft materials. The structure should include two ramps separated by a span. RVR must be able to drive under the ***Underpass*** and over the ***Overpass***. The structure must be placed entirely within grid squares B3 and B4 to H3 and H4 but doesn't have to take up this entire area.
2. Designate the ***Bus Barn*** and ***Bus Stops*** with ***Color Tiles***:
    a. ***Bus Barn:*** A1
    b. ***Bus Stop 1:*** A4
    c. ***Bus Stop 2:*** D6
    d. ***Bus Stop 3:*** F1
    e. ***Bus Stop 4:*** I3



Mission Objective 2 Rules and Scoring:

Rule ID	Objective	Possible Points
RVR-M2-1	***Mission Field*** is set up correctly to the diagram. The ***Underpass and Overpass Structure*** is contained entirely in the designated area.	10
RVR-M2-2	The ***Team*** engineers an ***Underpass and Overpass Structure*** consisting of two ramps separated by an unsupported span. Span length is the distance between the supports touching the ***Mission Field.*** The span should: • be at least one grid square or 12x pitches long (20 points) • be at least 6x pitches tall (10 points) • allow RVR to drive under and over it (10 points) **Bonus Points:** Teams receive 5 extra points for each additional grid square in length that the span covers, not including the ramps leading up to the span. (max bonus 20 points)	40
RVR-M2-3	RVR *begins the* ***Mission Objective*** fully contained in the ***Bus Barn***.	10
RVR-M2-4	RVR autonomously navigates and stops at each ***Bus Stop*** in order, the following ways: • ***Bus Barn*** to Stop 1 = 10 points • Stop 1 to Stop 2 = 10 points • Stop 2 to Stop 3 under the ***Underpass*** = 10 points • Stop 3 to Stop 4 = 10 points	40
RVR-M2-5	RVR makes a second loop by navigating and stopping at each ***Bus Stop*** in order, the following ways: • Stop 4 to Stop 1 over the ***Overpass*** = 10 points • Stop 1 to Stop 2 = 10 points • Stop 2 to Stop 3 under the ***Underpass*** = 10 points • Stop 3 to Stop 4 = 10 points	40
RVR-M2-6	RVR should use sound and lights: • when stopped to indicate it is safe for passengers to get on and off the bus	10

- when driving to indicate the bus is moving and that passengers should remain seated

RVR-M2-7	RVR finishes back at the ***Bus Barn***.	10
RVR-M2-8	**"Theme Story Points":** ***Teams*** implement unique, non-functional features beyond the Mission requirements that enhance the theme. **Field Design Features** (custom structures, Blueprint Snap Engineering parts, improved zone designations, or other custom design elements) • None = 0 pts • 1-3 = 5 pts • 4-5 = 7 pts • 6+ = 10 pts **Robot Design Features** (digital audio, and physical changes to the base robot) • None = 0 pts • 1-3 = 5 pts • 4+ = 10 pts	20
RVR-M2-9	"**Implementation Points":** ***Teams*** demonstrate understanding of the coding concepts and strategic decisions used to complete the Mission Objectives. ***Teams*** must show their code to the Evaluator to receive Coding Feature points. **Mission Strategy Features** (planning, testing, iteration, trade-offs, time-management, robot positioning, or other strategies to optimize performance) • None = 0 pts • 1-3 = 5 pts • 4-5 = 7 pts • 6+ = 10 pts **Coding Features** (strategic code organization, comments, programming logic (IF/ELSE, loops, variables), custom functions, use of sensors, audio, and displays) • None = 0 pts • 1-3 = 5 pts • 4-5 = 7 pts • 6+ = 10 pts	20

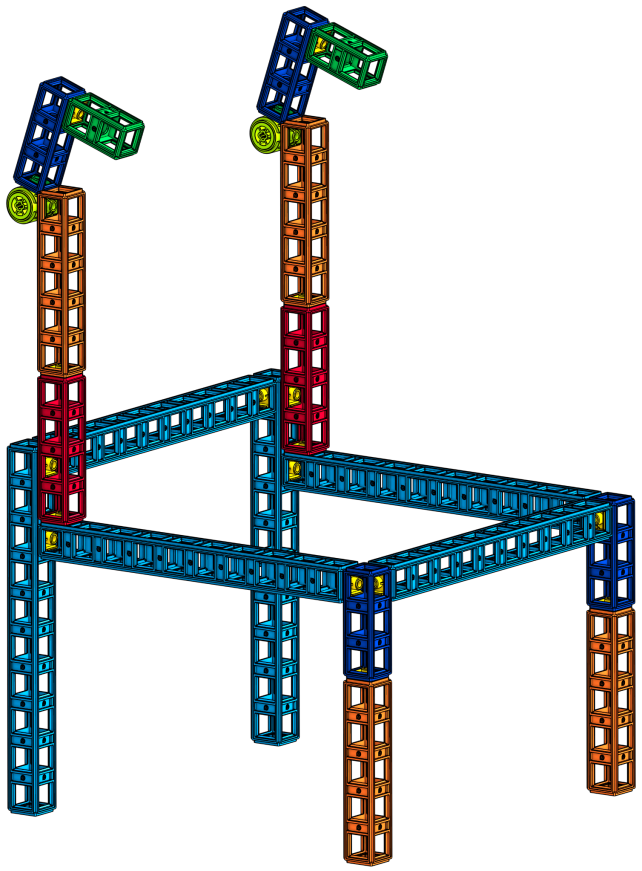
Max Points:	**200**
Max Bonus Points:	**20**

Mission Objective 3: Air Quality Monitoring

OVERVIEW: Smart cities are a breath of fresh air! That's because they have air quality sensors that help manage air pollution. In this ***Mission Objective***, teams will engineer mechanisms to deploy and activate sensors. First, teams code RVR to autonomously navigate through a ***Subway Tunnel*** dropping an air quality ***Subway Sensor*** as it passes through. Once in the ***Modification Zone***, teams add a ***Tower Sensor Activation Mechanism*** to RVR. Using ***Manual Drive Mode***, teams drive RVR to the ***Tower Sensors*** and activate them by flipping them down. This timed challenge ends when RVR drives down the ***Road*** and finishes in the ***Starting Area***.

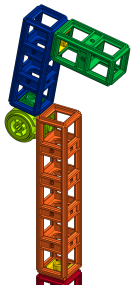
Mission Objective 3 Set Up:

1. Build the ***Subway Tunnel***. The structure must be made entirely of Blueprint Snap pieces but can be decorated with cardboard, card stock, and/or other craft materials. Decorations should be placed on the exterior and can not interfere with RVR as it drives through the tunnel or manipulates the ***Tower Sensors***.

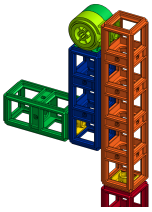


The Tower Sensors have two modes:

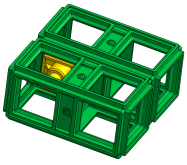
Up

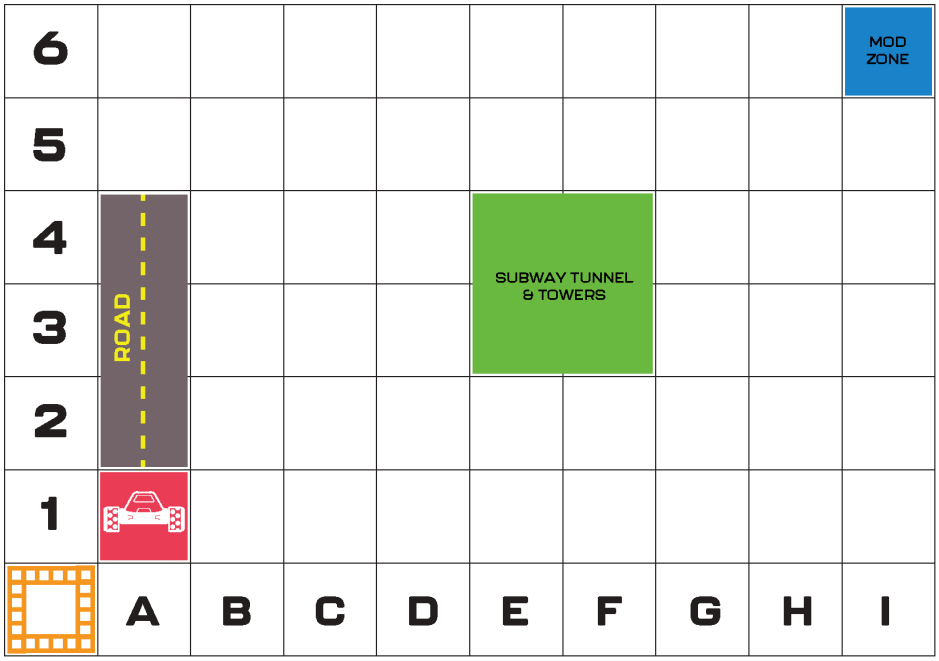


Down



2. Designate these areas:
    a. ***Starting Area*** - A1
    b. ***Road -*** *A2, A3, A4*
    c. ***Subway Tunnel and Towers*** - E3, E4, F3, F4
    d. ***Modification Zone*** - I6
3. Create a ***Subway Sensor*** by connecting two 2x Pitch Trusses together. The sensor will ride on RVR until it is dropped in the tunnel.





Mission Objective 3 Rules and Scoring:

Rule ID	Objective	Possible Points
RVR-M3-1	***Mission Field*** is set up correctly to the diagram. The ***Subway Tunnel*** and ***Towers*** are built according to instructions with no modification other than decorations. ***Tower Sensors*** should start in the up mode.	10
RVR-M3-2	The ***Team*** engineers a mechanism on RVR that drops the onboard ***Subway Sensor*** off RVR and into the ***Subway Tunnel*** as it drives through. The mechanism must be made from the Blueprint Snap Sphero Robotics Missions Kit, cardboard, card stock, and/or other readily available craft materials.	20
RVR-M3-3	The ***Team*** engineers a mechanism for RVR that activates the ***Tower Sensors*** by toggling them down. The mechanism must be made from the Blueprint Snap Sphero Robotics Missions Kit, cardboard, card stock, and/or other readily available craft materials. This mechanism does not start on the RVR but is added after reaching the ***Modification Zone***.	10
RVR-M3-4	RVR *begins the* ***Mission Objective*** fully contained in the ***Starting Area***.	5

RVR-M3-5	RVR autonomously navigates from the ***Starting Area,*** down the ***Road*** (exiting the ***Road*** at A5)***,*** through the ***Subway Tunnel*** and to the ***Modification Zone***.	20
RVR-M3-6	The ***Subway Sensor*** is dropped off inside the ***Subway Tunnel*** during the autonomous portion of the ***Mission Objective***.	20
RVR-M3-7	The **Tower Sensor Activation Mechanism** is attached by a ***Team Member*** in the ***Modification Zone***. Then, manual drive is turned on with the **drive on block.** 	5
RVR-M3-8	***Tower Sensors*** are activated using ***Manual Drive Mode*** with the ***Tower Sensor Activation Mechanism***. Sensors that flip down by any other means besides using the ***Tower Sensor Activation Mechanism*** will not be counted. (10 points each sensor)	20
RVR-M3-9	***Teams*** finish the ***Mission Objective*** in the ***Ending Area***.	10
RVR-M3-10	This is a timed ***Mission Objective. Teams*** place a timer, stopwatch, or phone timer on the ***Mission Field***. ***Teams*** start the timer, then begin execution of the program. There is a 2 minute maximum time. ● <0:45 seconds - 40 points ● 0:45 to 1:00 minute - 30 points ● 1:00 to 2:00 minutes - 20 points ● >2:00 minutes - 0 points	40
RVR-M3-11	***Fouls*** are assessed each time RVR contacts a boundary or the Subway Tunnel: ● Leave the ***Mission Field*** (-5 points each ***Foul***) ● Contact the ***Subway Tunnel*** (-5 points each ***Foul***)	
RVR-M3-12	**“Theme Story Points”:** ***Teams*** implement unique, non-functional features beyond the Mission requirements that enhance the theme. **Field Design Features** (custom structures, Blueprint Snap Engineering parts, improved zone designations, or other custom design elements) ● None = 0 pts ● 1-3 = 5 pts ● 4-5 = 7 pts ● 6+ = 10 pts **Robot Design Features** (digital audio, and physical changes	20

	to the base robot) ● None = 0 pts ● 1-3 = 5 pts ● 4+ = 10 pts	
RVR-M3-13	"**Implementation Points": *Teams*** demonstrate understanding of the coding concepts and strategic decisions used to complete the Mission Objectives. ***Teams*** must show their code to the Evaluator to receive Coding Feature points. **Mission Strategy Features** (planning, testing, iteration, trade-offs, time-management, robot positioning, or other strategies to optimize performance) ● None = 0 pts ● 1-3 = 5 pts ● 4-5 = 7 pts ● 6+ = 10 pts **Coding Features** (strategic code organization, comments, programming logic (IF/ELSE, loops, variables), custom functions, use of sensors, audio, and displays) ● None = 0 pts ● 1-3 = 5 pts ● 4-5 = 7 pts ● 6+ = 10 pts	20
	Max Points:	**200**

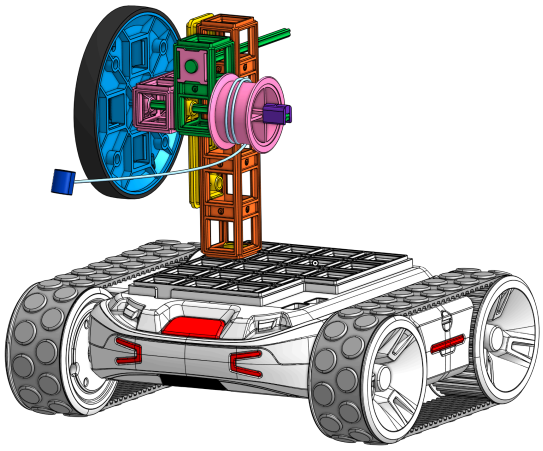
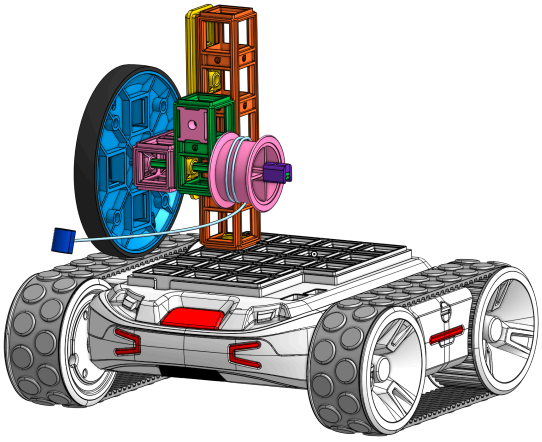
Mission Objective #4 - Championship Mission: Power Grid Maintenance

Advanced

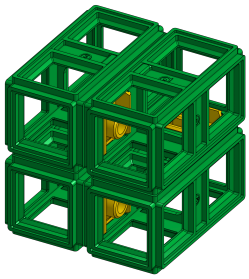
OVERVIEW: The city's power grid is down and needs to be reactivated! Teams must code RVR to navigate with color tiles to three checkpoints, pausing at each to perform a system check. After visiting all checkpoints, RVR must drive to the custom-engineered ***Docking Station***, where manual control is initiated. In the grand finale, ***Teams*** must drive RVR onto an elevated platform and use the attached ***Winch*** to pull the ***Power Block*** onto the robot, successfully restoring power to the grid.

Championship Mission #4 Set Up:

1. Build the RVR ***Winch*** and attach it to the top of RVR. The ***Winch*** has two modes:

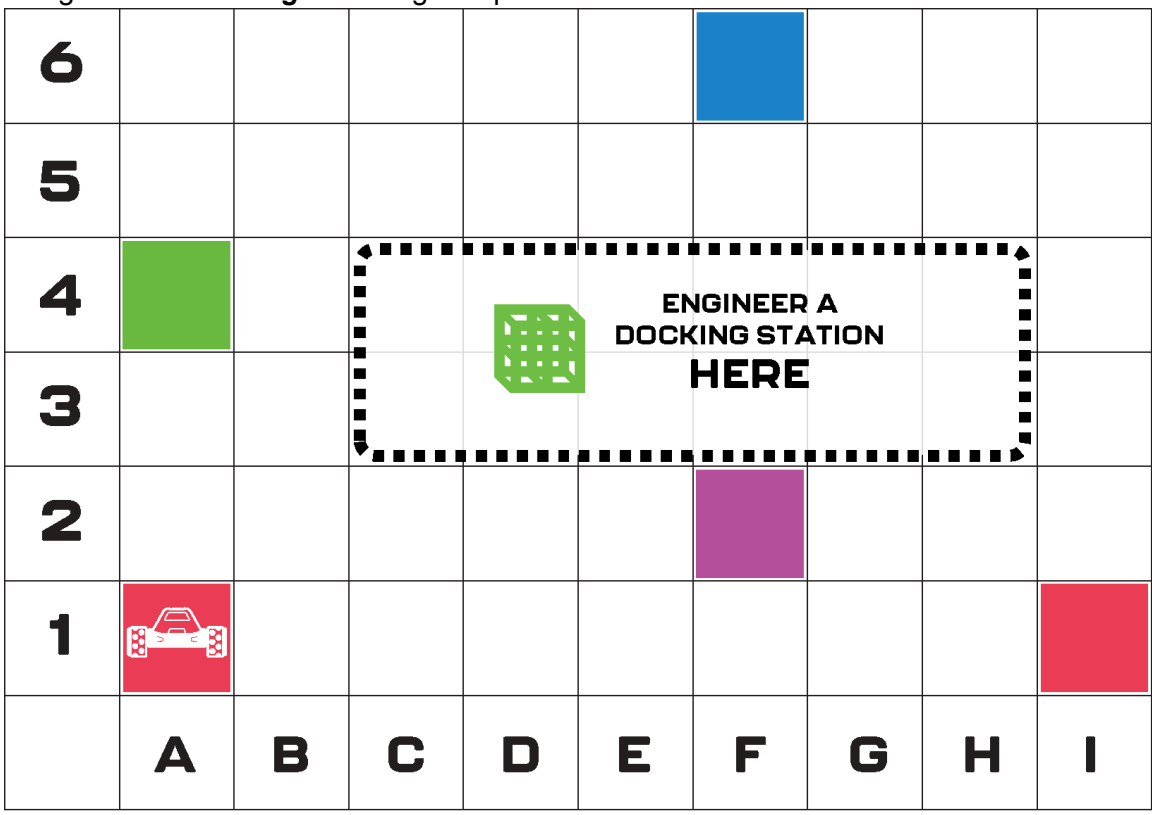
Up: A 4x Pitch Capped Shaft holds the wheel above the treads.	Down: The shaft is removed and the wheel makes contact with the treads.
	

2. Build the ***Power Block***. Place it in between grid squares C3 and C4.



3. Engineer a ***Docking Station*** according to the criteria in RVR-M5-1. Place it in grid squares C3-4, D3-4, E3-4, F3-4, G3-4. The ***Docking Station*** may be attached to the ***Mission Field*** with tape or other materials.

4. Position RVR color tiles in the following grid squares:
    a. green - A4
    b. blue - F6
    c. red I1
    d. purple - F2
5. Designate the ***Starting Area*** in grid square A1.



Mission Objective 4 Rules and Scoring:

Rule ID	Objective	Possible Points
RVR-MC-1	Engineer a ***Docking Station***. The ***Docking Station***: • is built entirely from Blueprint parts in the Blueprint Snap Sphero Robotics Missions Kit, cardboard, card stock, and/or other craft materials. (5 points) • is fully contained inside of the ***Docking Station*** zone. (5 points) • includes a ***Docking Platform***, an elevated platform that RVR can climb onto and allow its treads to rotate freely without moving the robot. The ***Docking Platform*** is at least 2x Blueprint pitches above the ***Mission Field***. (2x pitches = 20 points, 3x pitches = 25 points, 4x pitches = 30 points. Bonus	50

Points: each additional pitch above 4x pitches = +5 points. Maximum of 10x pitches total height)
- includes a **Docking Ramp** that allows RVR to climb onto the ***Docking Platform***. (10 points)

RVR-MC-2	***Mission Field*** is set up correctly to the diagram.	5
RVR-MC-3	RVR *begins the* ***Mission Objective*** fully contained in the ***Starting Area***. The ***Winch*** is attached to RVR in the "up" mode and the rope is fully wound around the spool.	5
RVR-MC-4	RVR moves autonomously from the ***Starting Area*** to the green tile. When it sees the green tile, it pauses and strobes its LEDs the color green three times.	10
RVR-MC-5	RVR moves autonomously from the green tile to the blue tile. When it sees the blue tile, it pauses and strobes its LEDs the color blue three times.	10
RVR-MC-6	RVR moves autonomously from the blue tile to the red tile. When it sees the red tile, it pauses and strobes its LEDs the color red three times.	10
RVR-MC-7	RVR moves autonomously from the red tile to the purple tile. When it sees the purple tile, it pauses and strobes its LEDs the color purple three times. Then, ***Manual Drive Mode*** is turned on with the **drive on block.** 	10
RVR-MC-8	The ***Team*** manually drives RVR up the ***Docking Ramp*** onto the ***Docking Station Platform***.	30
RVR-MC-9	The ***Team*** lowers the ***Winch*** into "down" mode, unwinds the rope, and connects the end of the rope to the ***Power Block***. The ***Team*** may physically touch RVR, the ***Winch***, and the ***Power Block***, in this part of the ***Mission***.	10
RVR-MC-10	RVR engages its motors to pull the ***Power Block*** up onto the RVR chassis.	20

RVR-MC-11	**"Theme Story Points":** ***Teams*** implement unique, non-functional features beyond the Mission requirements that enhance the theme. **Field Design Features** (custom structures, Blueprint Snap Engineering parts, improved zone designations, or other custom design elements) ● None = 0 pts ● 1-3 = 5 pts ● 4-5 = 7 pts ● 6+ = 10 pts **Robot Design Features** (digital audio, and physical changes to the base robot) ● None = 0 pts ● 1-3 = 5 pts ● 4+ = 10 pts	20
BOLT-MC-12	"**Implementation Points":** ***Teams*** demonstrate understanding of the coding concepts and strategic decisions used to complete the Mission Objectives. ***Teams*** must show their code to the Evaluator to receive Coding Feature points. **Mission Strategy Features** (planning, testing, iteration, trade-offs, time-management, robot positioning, or other strategies to optimize performance) ● None = 0 pts ● 1-3 = 5 pts ● 4-5 = 7 pts ● 6+ = 10 pts **Coding Features** (strategic code organization, comments, programming logic (IF/ELSE, loops, variables), custom functions, use of sensors, audio, and displays) ● None = 0 pts ● 1-3 = 5 pts ● 4-5 = 7 pts ● 6+ = 10 pts	20
	Max Points:	**200**
	Max Bonus Points:	

Glossary:

Program	***Sphero Robotics Missions*** comprises three unique ***Programs***: • ***indi Missions*** • ***BOLT Missions*** • ***RVR Missions***
Student	Anyone born after May 1, 2007
Team	A group of ***Students***
TEAM Ready	A ***Team*** that has passed inspection at an event.
U9 Student	Any ***Student*** born on or after Sept 1, 2017 meaning they will be 8 or younger on Aug 31, 2026
U12 Student	Any ***Student*** born on or after Sept 1, 2014 meaning they will be 11 or younger on Aug 31, 2026
U15 Student	Any ***Student*** born on or after Sept 1, 2011 meaning they will be 14 or younger on Aug 31, 2026
indi Missions	***Teams*** competing in this ***Program*** must consist of only ***U9 Students*** and at least one ***Team Coordinator***
BOLT Missions	***Teams*** competing in this ***Program*** must consist of only ***U12 Students*** and at least one ***Team Coordinator***
RVR Missions	***Teams*** competing in this ***Program*** may consist o*f only* ***U15 Students***, and at least one ***Team Coordinator***
Team Coordinator	An adult in a supervisory role for the ***Students*** that will handle the registration, submission, and management of ***Team*** meetings. ***Teams*** may have more than one ***Team Coordinator***.
Mission Objectives	Each ***Program*** is broken up into ***Mission Objectives*** that ***Teams*** will be evaluated on based on guidelines in this document

Mission Field	A defined space for each ***Program***. Reference individual ***Mission Manual*** for specific ***Mission Field*** guidelines
Individual Mission Score	A ***Team's*** score for an individual ***Mission Objective*** recorded by an ***Evaluator***
Total Score	The total combined score of all ***Individual Mission Scores*** for a ***Team***
Starting Area	The area of the ***Mission Field*** where robots begin a ***Mission Objective***
Ending Area	When required, the area of the ***Mission Field*** where robots finish their program
Manual Drive Mode	A driver controlled portion of a ***Mission Objective*** instead of programmed commands
Foul	Points deducted in some ***Mission Objectives*** if a team commits a ***Foul*** as outlined in the ***Mission Manual***. Unless stated otherwise, there is no limit on the number of ***Fouls*** a Team can receive in a ***Mission Objective***. The ***Team's Mission Total Score*** cannot go below 0 points due to **Fouls**.
Obstacles	Defined as any object placed in the ***Mission Field*** as part of the setup for a ***Mission Objective*** that should be avoided as outlined in the ***Mission Manual***. If a robot drives into an ***Obstacle***, they will receive a ***Foul***.
Field Element	An element added to the ***Mission Field*** as specified in the ***Season*** rules
Field Object	A scored object added to the ***Mission Field*** as specified in the ***Season*** rules
Season	The approved timeline for participation in the ***Sphero Robotics Missions***. A standard ***Season*** runs from June 2026 through May 2027.
Event Host	Approved adult coordinator and primary contact to organize, plan, and implement successful Sphero Robotics Mission ***Events*** with the help of TEAM Alliance
Evaluator	A volunteer responsible for evaluating a ***Team's*** mission attempts during an ***Event***
Online Submission	***Teams*** submit pre-recorded ***Mission Objectives*** to an ***Event Host*** for evaluation. This is an option for ***Online Submission Season*** registrations.
In-Person Event	Events that are included as an option with in-person ***Season*** registrations. These events allow a ***Team*** to run ***Mission Objectives*** at a location with other ***Teams*** and an in-person ***Evaluator***.
Prequalifying Event	An early ***Season In-Person Event*** that doesn't qualify for a ***Championship Event*** (or any other ***Event***). An in-person ***Team*** registration does not include entry into a **Prequalifying Event.**

Qualifying Event	A ***Season In-Person Event*** that qualifies a ***Team*** for ***Championship Events***. An in-person ***Team*** registration includes entry into one **Qualifying Event.**
Live Remote Event	***Events*** that are included as an option with in-person ***Season*** registrations. These events allow a ***Team*** to run ***Mission Objectives*** remotely with other ***Teams*** and a remote ***Evaluator***.
Championship Event	A state, regional, or national event that serves as the culminating competition for ***Teams*** that qualify through designated ***Qualifying Events***. In the U.S., ***Championship Events*** are typically state-level, but may include multiple ***Championship Events*** within a single state or combining multiple states into a regional ***Championship Event.*** Internationally, regional or national ***Championship Events*** are used where geographic considerations apply.