

Appendix B

Student-Friendly Appendix

Using this Appendix

Hi Kids!

Welcome to the VEX IQ Robotics Competition! We are so happy that you want to be on a *Team*! Each year, there is a new game with a new set of rules, and playing fairly by those rules is very important. We know that learning new things can be hard, and that the “big game manual” can be kind of a lot. So, we’re here to help!

You and your teammates can start here and work together to learn about the important parts of the field, how to earn points, study basic rules, and see different ways to play the game.

But these are only some of the rules of this year’s game, and you will need to know them all! So after you understand everything here, and before you go to your first event, head over to the [official game manual](#) to make sure you understand all of the rules.

Good luck this season, and we hope that you have fun, make lots of friends, and work together to build your best Robot ever!

Your Robotics friends,
The VEX Robotics Competition Game Design Committee

Hi Grown Ups!

This unofficial version of the VEX IQ Robotics Competition manual is a print-friendly resource for you and your *Teams* to help introduce students to this year’s game, Rapid Relay.

This is NOT a replacement for reading the manual in its entirety; we encourage you to use this Appendix to support team members who may be overwhelmed by the full game manual, and use it to aid in building a basic understanding of the game. *Students* can use this appendix to learn game-specific terminology (oftentimes capitalized like a proper noun), understand the basics of scoring, and create strategies.

Once *Students* are comfortable with this appendix and the rules outlined here, you should transition them to reading and using the full game manual, where they will gain a full-depth comprehension of the VEX IQ Robotics Competition.

As part of the transition, we urge you to have *Students* cross-reference these rules with the full game manual and collate what they know with what they’re learning. If your *Team* has a specific question about a rule in this document, take a look at the full game manual for clarification before posting to the official [VEX IQ Q&A system](#). Related rule numbers from the full game manual are included after each bullet in this appendix (listed as <SG#>, <G#>, etc.) to help you compare.

We hope that you’ll find this guide helpful and that more *Students* feel welcomed, supported, and empowered to join your *Teams*. Have an awesome season!

How Do You Play Rapid Relay?

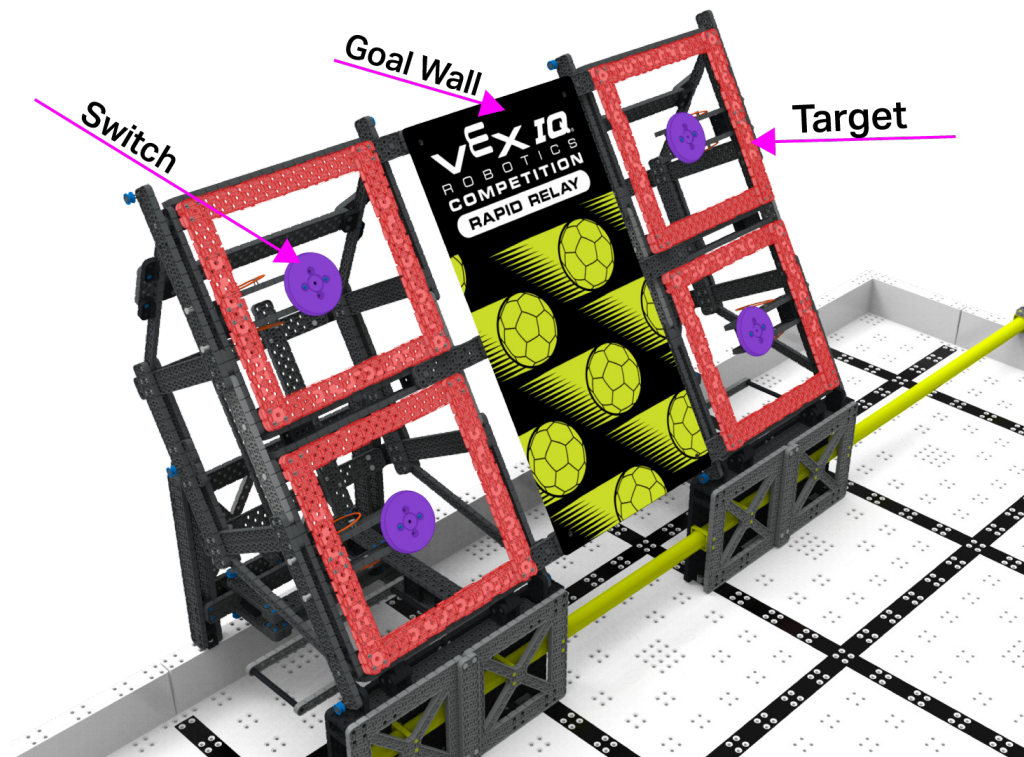
Main Goals:

- Pass the *Balls* between *Robots*.
- Score *Balls* through *Targets*.
- Clear *Switches*.
- Human *Loaders* bring the *Balls* back and re-add them to the game through the *Loading Station*.

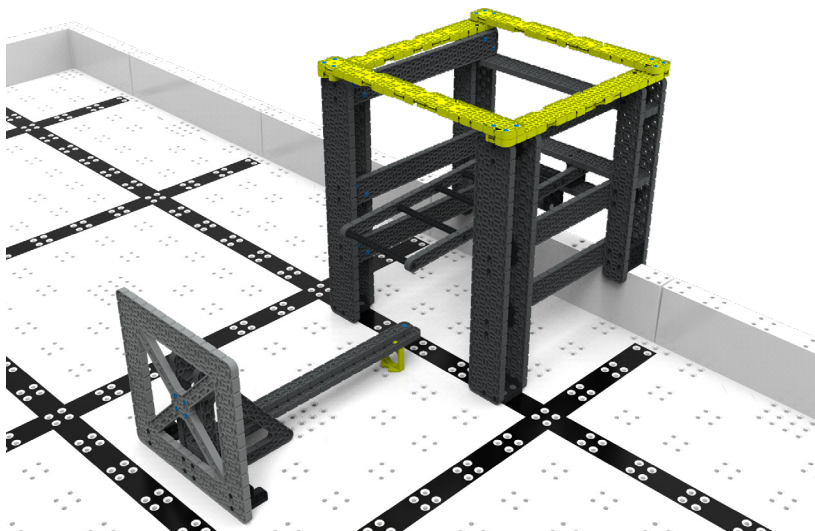
Field Overview

Important Parts of the Field

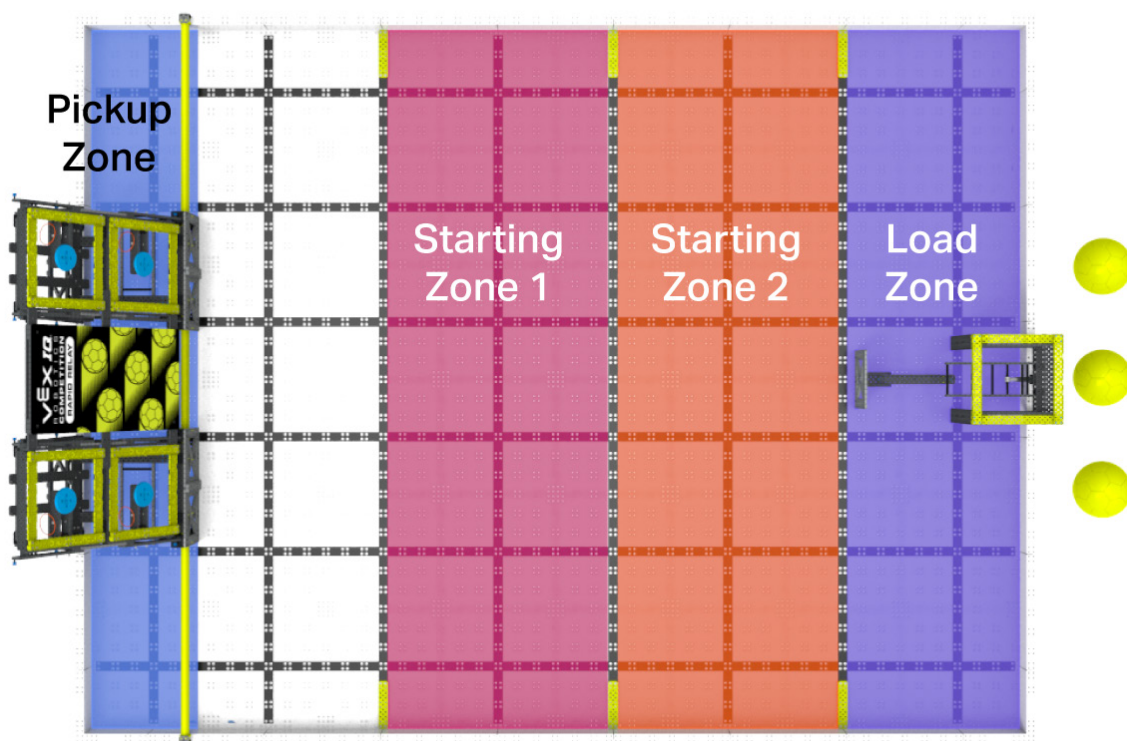
- **Balls:** There are three *Balls* used in the game.
 - Two *Balls* start with the *Robots*.
 - One *Ball* starts outside the *Field* and can be used by a *Loader*.
 - Only two *Balls* can be on the *Field* at a time.
- **Goal Wall:** This wall has *Targets* and *Switches*.
 - Four *Targets* to score *Balls*.
 - Four *Switches* to be cleared by hitting them with *Balls*.



- **Loading Station:** This is where *Balls* start and get *Loaded* into the *Field*.



- **Pickup Zone:** This is where *Balls* go after scoring. *Loaders* pick up *Balls* from this zone.
- **Starting Zones:** This is where *Robots* start the game. 1 *Robot* per zone.



Versions of the Game

Teamwork Challenge

The *Teamwork Challenge* is when two *Robots* work together to earn as many points as possible in a 1 minute (60 second) *Match*.

Robot Skills Challenges

The Robot Skills Challenge is a special part of the competition where one *Robot* tries to score as many points as possible by itself. There are two types of Robot Skills Challenge: Driving Skills and Autonomous Coding Skills.

- **Driving Skills Challenge:** In this challenge, you control the *Robot* using the controller to score points.
- **Autonomous Coding Skills Challenge:** In this challenge, the *Robot* moves and scores points by itself using a program you wrote. You cannot control it with the controller.

How to Earn Points

All points are totaled at the end of the match. <SC1>

Points are different between Teamwork Matches and *Robot Skills Matches*.

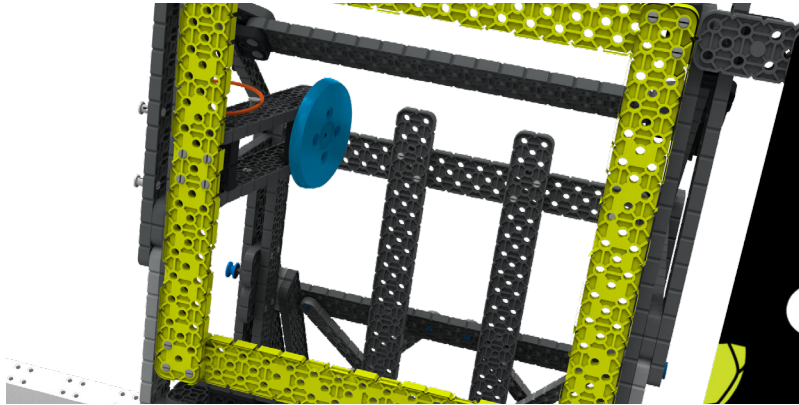
1. **Passing Balls:** Move the *Ball* from one *Robot* to another. <SC5>
2. **Scoring Goals:** Get the *Ball* through the *Targets*. <SC3>
3. **Clearing Switches:** Hit the *Switches* with *Balls*. <SC4>

Scoring Summary: <SC1-7> <RSC2>

	Teamwork Challenge	Robot Skills Challenge (Autonomous Coding and Driving Skills)
Each Pass - 1 Switch Cleared	4 Points	No Passing in Robot Skills Challenge
Each Pass - 2 Switches Cleared	8 Points	
Each Pass - 3 Switches Cleared	10 Points	
Each Pass - 4 Switches Cleared	12 Points	
Each Goal – 1 Switch Cleared	1 Point	4 Points
Each Goal – 2 Switches Cleared	1 Point	8 Points
Each Goal – 3 Switches Cleared	1 Point	10 Points
Each Goal – 4 Switches Cleared	1 Point	12 Points
Each Cleared Switch	1 Point	1 Point

Important Scoring Rules

- **Goals:** A *Goal* is Scored when a *Ball* goes through a *Target* and lands in the *Pickup Zone*.
- **Cleared Switch:** A *Switch* is *Cleared* when it is hit by a *Ball* and moves.



- **Passes:** A *Pass* is counted when both *Robots* touch the *Ball* before it leaves the *Field*.
 - In the *Teamwork Challenge*, a *Ball* can be *Passed* for points only one time per *Goal*. <SC6>

Rules

General Rules

- **Stay Safe:** Always be careful and don't damage the *Field*. <S1> <G7>
- **Be Respectful:** Treat everyone nicely. <G1>
- **Common Sense:** Use your brain and make good choices. <G3>
- **Robot Size:**
 - A *Robot* may never be bigger than 23 inches by 73 inches. <G5> <SG2>
 - A *Robot* may never be taller than 15 inches. <G5><SG2>
- **Keep it Together:** *Robots* should not fall apart or lose pieces during the *Match*. <G6>
- **Driver Rules:** Only *Drivers* can control the *Robot* during the *Match*. <G8>
- **No Hands:** Don't touch the *Field* or *Robots* during the *Match*. <G9>
- **Switch Drivers:** During *Teamwork Matches* and *Driving Skills Matches*, there are two *Drivers* per *Robot*. *Drivers* must switch who is driving the *Robot* when there is between 0:35 and 0:25 seconds remaining in the *Match*. <G11>

Specific Game Rules

- **Setup:** <SG1> <R4>
 - Robots must start the *Match* touching the wall and fully inside of one of the *Starting Zones*.
 - Only one *Robot* per *Starting Zone*.
 - Each *Robot* can start with one *Ball* pre-loaded into their *Robot*.
 - During *Robot Skills Matches* <RSC3>
 - *Robot* must start in *Starting Zone 2*
 - A second *Ball* can be placed anywhere in *Starting Zone 1*
- **Loading Balls:** <SG4>
 - *Balls* are put into the *Field* by the *Loader*
 - Only two *Balls* can be on the *Field* at a time.
 - All *Balls* must be *Loaded* at the *Loading Station* (unless it's a *Rapid Load*).
 - No *Robots* may be in the *Load Zone* at the same time that a *Ball* is released by the *Loader*.
 - The *Loader* may not reach into the *Load Zone* when loading a *Ball*.
- **Pickup Zone:** *Loaders* can pick up *Balls* from the *Pickup Zone*. <SG6>
- **Rapid Load:** *Balls* can be loaded quickly depending on how much time is left in a *Match*. See the table below for times. <SG5>
 - *Rapid Load Balls* must go onto the *Floor* of the *Starting Zone* before being touched by a *Robot*, and can't be rolled or bounced.
 - *Rapid Load Balls* do not get points for *Passes*.
 - The human *Loader* may not touch the *Floor* while placing the *Rapid Load* (example: cannot step into or place a hand on the *Floor* to reach the center of the *Field*).
- **Rapid Load Times:** <SG5> <RSC4>

	Teamwork Challenge Match	Autonomous Coding Skills Match	Driving Skills Match
Rapid Load Start Time	Last 15 seconds of the <i>Match</i>	Entire <i>Match</i> (1 minute)	After <i>Driver</i> Switch
Rapid Load Zones	Both <i>Starting Zones</i>	<i>Starting Zone 2</i> only	<i>Starting Zone 2</i> only