



2021 VIRTUAL

REC FOUNDATION SUMMIT

VEX 123

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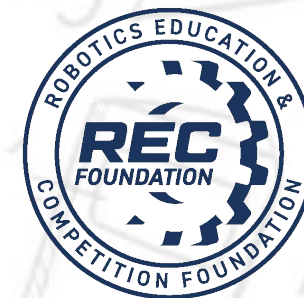
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— Introducing —

VEX[®] 123

Robotics Education & Competition Foundation



ROBOTICS EDUCATION & COMPETITION FOUNDATION
Inspiring students, one robot at a time.

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Reaching School STEM Learning Goal with the VEX Continuum

Grades Pre-K+



VEX 123

Grades 3+



VEX GO

Grades 6+



VEX IQ

Grades 9+



VEX V5

Grades 9+



VEX V5
WORKCELL



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Why Robotics in Elementary?

Empower Your Elementary Students by Building a Robot within Minutes

The **VEX GO Challenges** provide elementary teachers with the tools to:

- Build confidence, perseverance, and enthusiasm for learning
- Increase student engagement
- Offer hands-on, project based learning
- Incorporate STEM learning with science, language arts, and mathematics instruction
- Develop spatial reasoning skills
- Establish computational thinking skills
- Promote teamwork and communication skills



VEX 123

Grades Pre-K-2nd

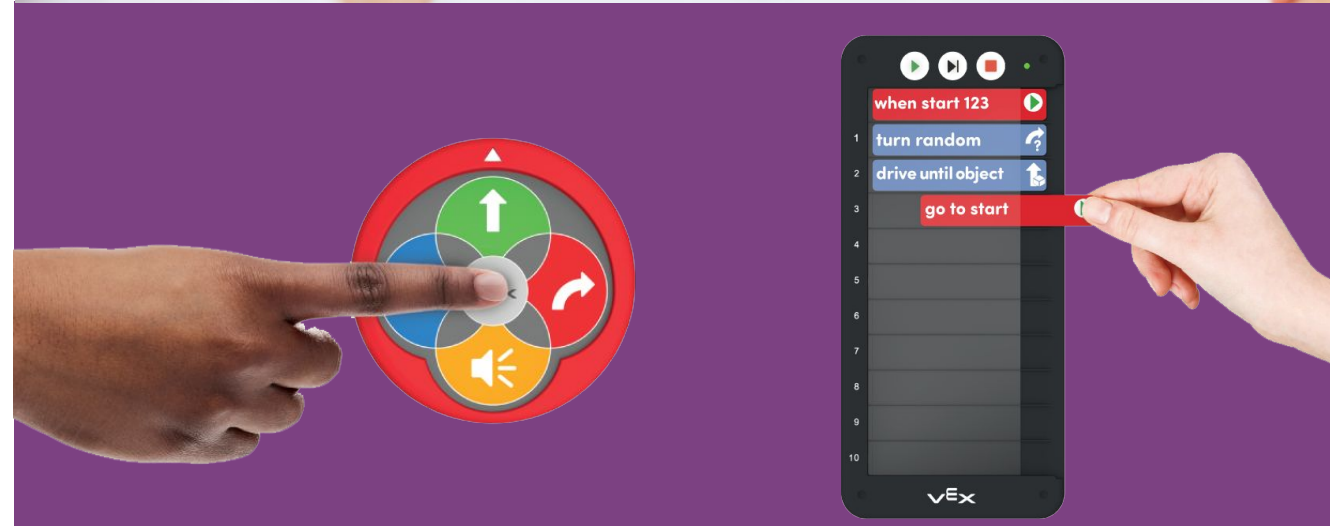
Interactive

Programmable robot

Computer Science and Computational Thinking

No Devices Needed

Powered by Scratch Blocks: VEXcode Blocks available for tablets, chromebooks, mac and windows



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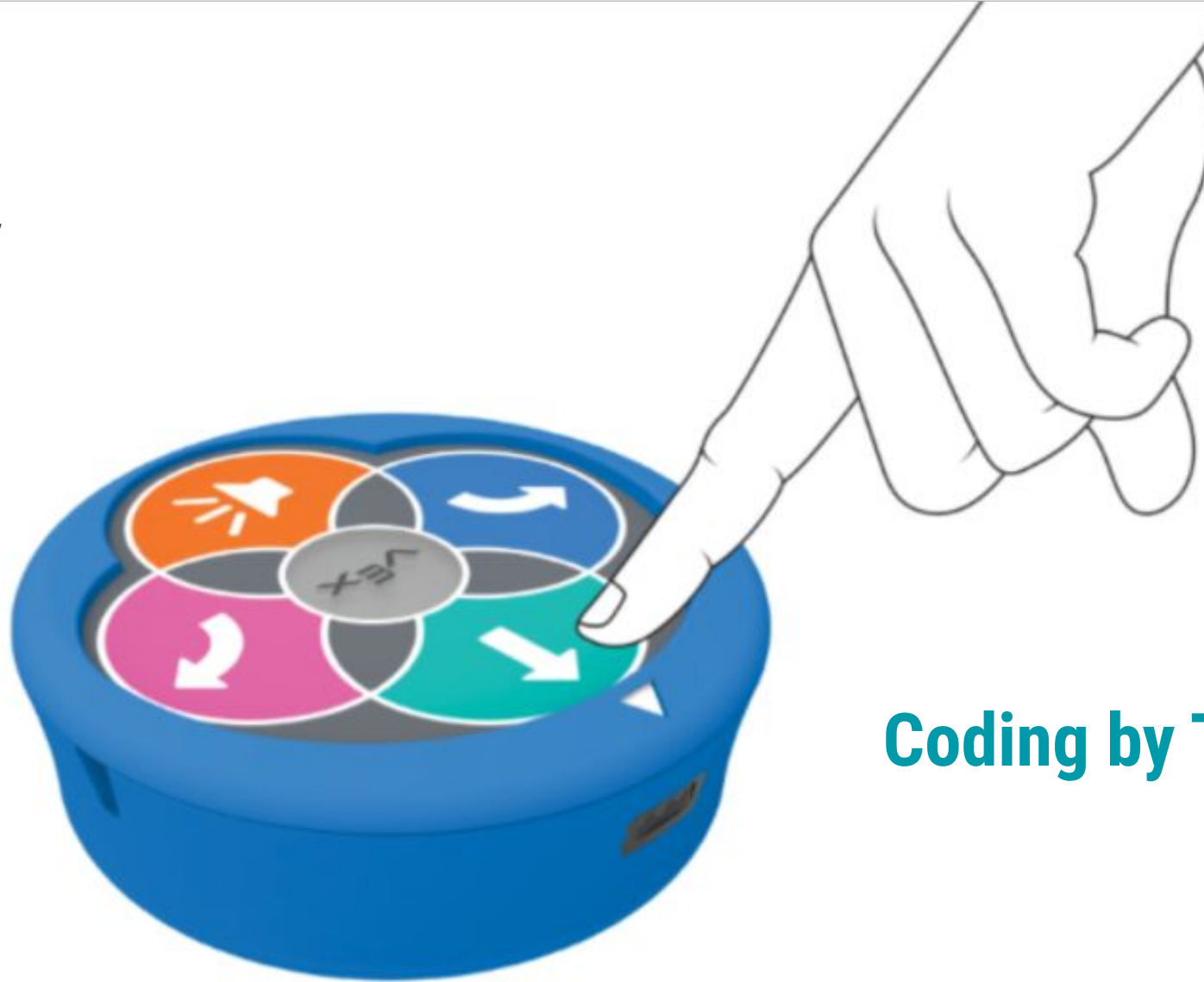


VEX 123 Robot Mobile Coder and Game Field



VEX 123

STEM Starts Early



Coding by Touch



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**Coding with
Coder Cards**

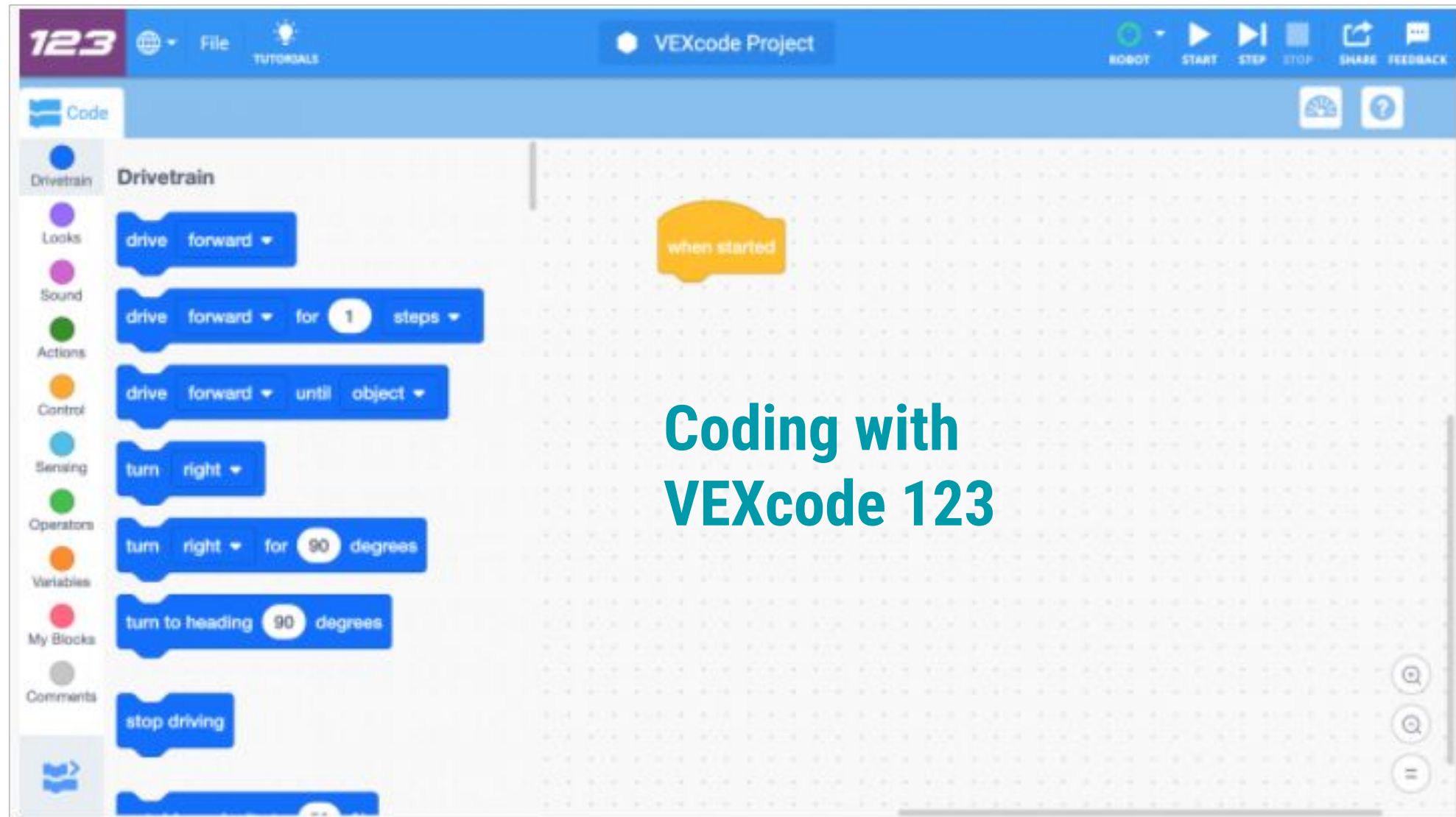


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VEX 123 Kit Options

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VEX 123 Robot

Mobile Coder w/cards

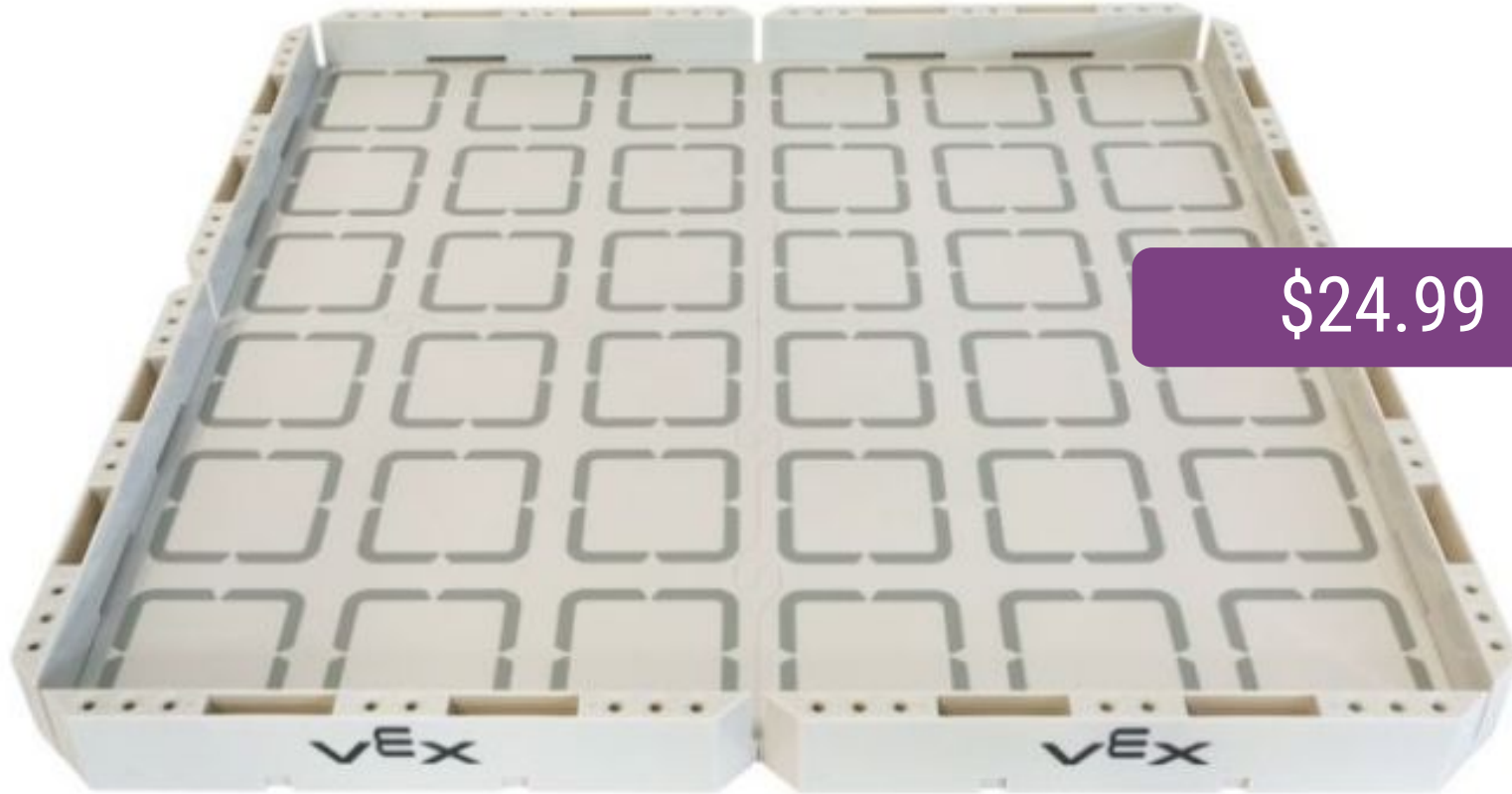
Art Ring

\$99.99



VEX 123 Game Field

STEM Starts Early



\$24.99



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STEM Starts Early

A collection of purple and grey storage containers, including boxes and a tray, holding various items like colored rings, a smartphone, and a small electronic device. A white card with a grid pattern is also visible.

\$2,247.00

VEX 123 Classroom Bundles

STEM Starts Early



Bundle Size	Small Classroom	Classroom	Large Classroom
Number of Students	12	24	36
Robots (equal color distribution)	6	12	18
Coders with Batteries	6	12	18
Coder Cards (50-pack)	7	14	21
Fields (4 tiles, 8 walls)	3	6	9
Carrying Cases for everything	1	2	3
Charging Stations, AC Adapters	1	2	3
Coder Card Storage Boxes	1	2	3
Robot Arts Rings	6	12	18
Coding Posters	1	2	3



Coding Starts Early

1 Push to Wake

2 Touch to Code

3 Shake to Erase

EVENT RED

- when start 123
- go to start
- stop

ACTION GREEN

- act sad
- act crazy
- act happy

TIME GRAY

- wait 1 second
- wait 2 seconds
- wait 4 seconds

MOTION BLUE

- drive 1
- drive 2
- drive 4
- turn left
- turn right
- turn random
- turn around
- drive until object
- drive until crash
- drive until line

SOUND PINK

- play honk
- play doorbell
- play crash
- play random

LOOKS PURPLE

- glow purple
- glow green
- glow blue
- glow off

CONTROL ORANGE

- if object
- if no object
- if red
- if green
- if blue
- if bright
- if dark
- if right button
- if left button
- if move button
- if sound button
- if crash
- else
- end if

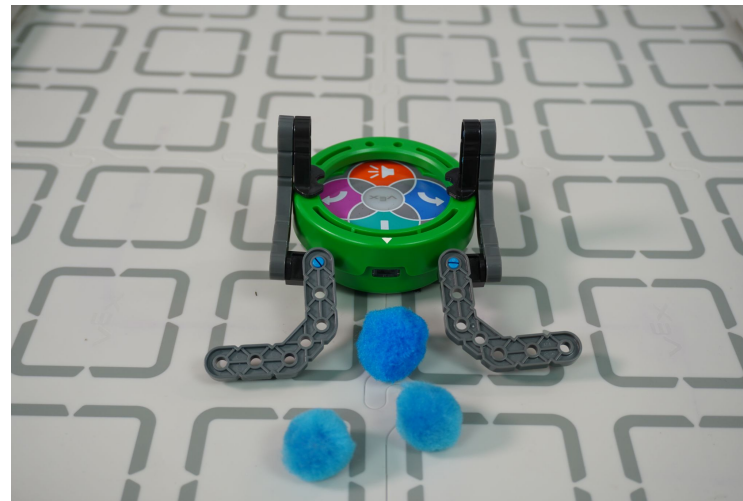
VEX 123 Kit Features

STEM Starts Early

VEX 123 Coder Cards Poster

VEX 123 Kit Features

Art Ring



Teacher Resources



Knowledge Base

Troubleshooting tips and product-specific information is available for you in our library of resources.



VEX Blog

Helpful tips and relatable quips, our blog is here to share some fun teaching insight.



VEX YouTube

Subscribe to the VEX YouTube Channel for our latest videos!



STEM Labs

Plug-in lessons that are up to standard... plus they are 100% free!



Educator Certifications

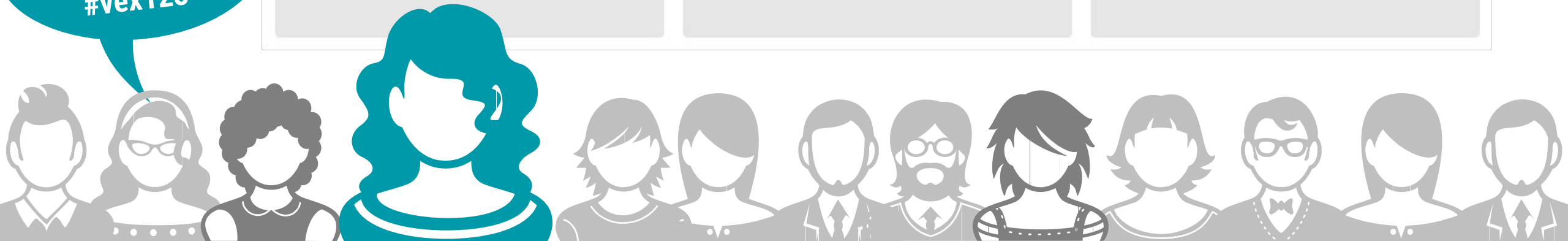
Professional development with VEX Certs is the way to level up your career.



VEXcode

VEXcode is a coding environment with an intuitive layout that allows students at any level to easily start coding.

This is
A-Mazing!
#vex123



VEX 123

Get Started



VEX 123 is an interactive, programmable robot that takes Computer Science and Computational Thinking off of the screen and brings them to life for Pre-K through 3rd grade students. The 123 Robot is programmable without a computer, so young students can learn programming away from screens. The VEX Coder and Coder cards give students a tangible way to build projects, share ideas, and learn coding concepts in fun and engaging ways.

Use this page as a guide to getting started with your own VEX 123 materials. Each section offers helpful links that will help you get organized, plan lessons, and be prepared to teach with VEX 123 in your setting.



Meet Your Robot

2 Labs

Meet your 123 Robot through a story-based lab that introduces vocabulary, functions, and features of the 123 Robot.

[Open Unit Overview >](#)

[< Return to Units](#)



Lab 1

Hello, 123!

Total Time: 40 minutes

Learn about the features of the 123 Robot through interactive story and activities.



Lab 2

Robot Rules

Total Time: 40 minutes

Explore best practices for interacting with the 123 Robot and create a set of Robot Rules for your classroom.

Role Play Robot

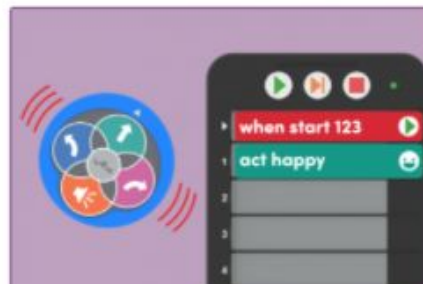
2 Labs



Test out how the 123 Robot acts out certain emotions and create the code for a new emotion!

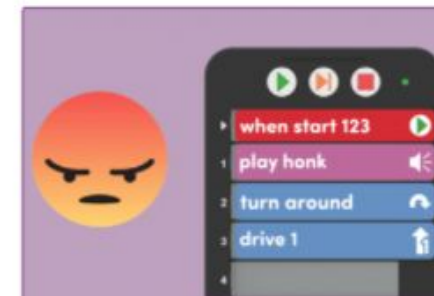
[Open Unit Overview >](#)

[< Return to Units](#)



Lab 1

Act Happy



Lab 2

Match the Feeling

Activities Series

Corner Color

Play

Make your 123 Robot glow in the corner of a tile.



Put your 123 Robot on a corner.
Count the squares to the next corner.

drive 1

OR

drive 2

OR

drive 4

Drive your 123 Robot to the next corner.

glow purple

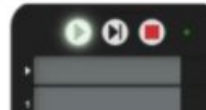
OR

glow green

OR

glow blue

Make your 123 Robot change color.



Press the Start button. Did it work?

Challenge

Today I did...

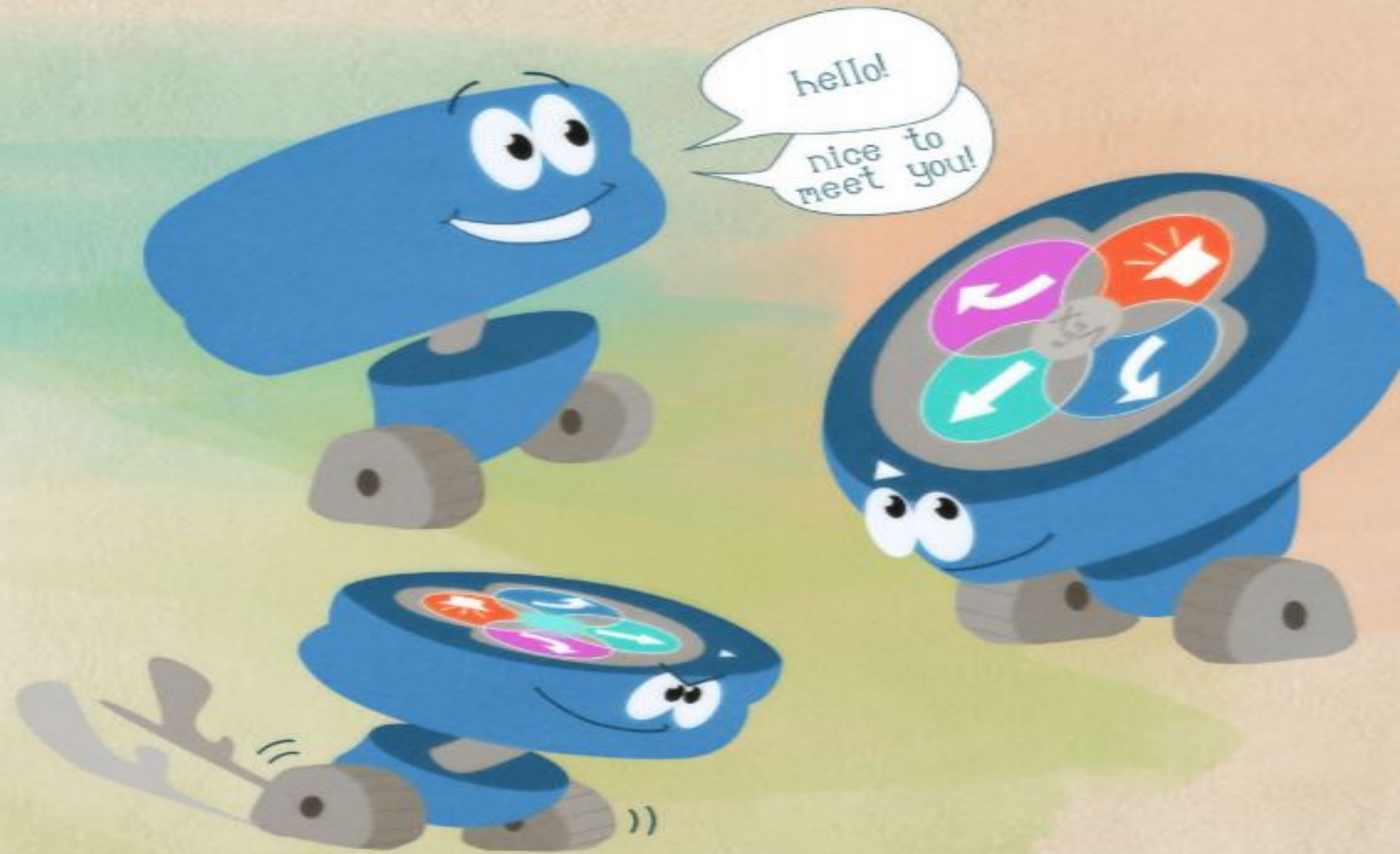
Write out what your 123 Robot did in this activity in words.

More Corners!

Add Turn and Drive cards to drive your 123 Robot to the next corner. What color will it glow now?

Standard: CSTA 1A-AP-10: Develop programs with sequences and simple loops, to express ideas or address a problem.

Meet Your Robot!



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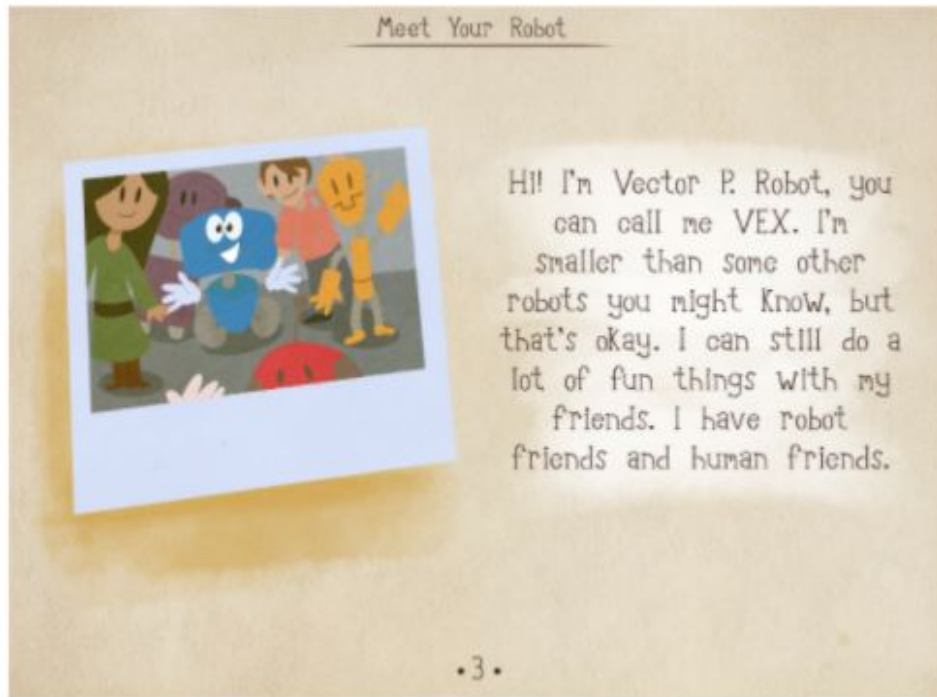
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Meet Your Robot!

Teacher's Guide

Page 3

- **Feature** - Introduction
- **Share:** What are some robots that you have heard of?



- Introduces Characters
- Working as a team
- Simple Building Activity
- Questioning Prompts
- Extension Activities





<https://education.vex.com/stemlabs/123>





Little Red Robot

2 Labs

Code the 123 Robot to become Little Red Robot and drive to Grandmother's house!

[Open Unit Overview >](#)

[Print Unit Overview >](#)

[Print Unit Overview + All Labs >](#)

[Print Student Certificate >](#)

[< Return to Units](#)



Let's Explore...



Lab 1

Drive to Grandmother's

Total Time: 40 minutes

Create a project where the Little Red Robot drives to Grandmother's house!

[Open >](#)

[Print >](#)



Lab 2

Watch out for the Wolf!

Total Time: 40 minutes

Create a project using the Eye Sensor to drive to Grandmother's house and scare away the Wolf!

[Open >](#)

[Print >](#)



Engage...



Lab 2

Watch out for the Wolf!

Total Time: 40 minutes

Create a project using the Eye Sensor to drive to Grandmother's house and scare away the Wolf!

[Open >](#)

[Print >](#)

Outline

Lab 4 - Robot Job Fair

Goals and Standards

Summary

Engage

Play

Share

Engage

Begin the lab by engaging with the students.



Hook

Who remembers the three types of jobs that robots complete?

Connect this STEM Lab to STEM Lab 1, where students learned that robots do jobs that are dirty, dull, or dangerous. Show examples of different job scenarios.

Note: If students are new to VEX GO, use the [Get Ready...Get VEX...GO! PDF book](#) and [Teacher's Guide](#) to introduce them to learning and building with VEX GO. Add an additional 10-15 minutes to your lesson time to accommodate this additional activity.



Leading Question

Now, we are going to choose a dirty, dull, or dangerous job scenario for our Code Base robot and plan our projects.



Build

Code Base robot.



Play...



Lab 2

Watch out for the Wolf!

Total Time: 40 minutes

Create a project using the Eye Sensor to drive to Grandmother's house and scare away the Wolf!

Open >

Print >

Outline

Lab 4 - Robot Job Fair

Goals and Standards

Summary

Engage

Play

Share

Play

Allow students to explore the concepts introduced.

•Part 1

Students will choose a scenario and create a project plan using the Blueprint Worksheet. Students can include plans to build an addition to the Code Base robot using VEX GO pieces.

Mid-Play Break

Students will share their project plans in a class discussion.

Part 2

Students will create and start their projects. Students should identify what task their robots were asked to complete.



Share...



Lab 2

Watch out for the Wolf!

Total Time: 40 minutes

Create a project using the Eye Sensor to drive to Grandmother's house and scare away the Wolf!

[Open >](#)

[Print >](#)

Outline

Lab 4 - Robot Job Fair

Goals and Standards

Summary

Engage

Play

Share

Share

Allow students to discuss and display their learning.



Discussion Prompts

- If a Code Base needed to complete this task multiple times, what could you add to the project?
- What if you didn't know the exact distance that the Code Base needed to move forward? What could you add?
- What if the Code Base was facing the wrong direction to begin the project? What could you add?



And so many extras...

- Making This Unit Fit Your Unique Classroom Needs
 - Implementing in less time
 - Reteaching Strategies
- Letter Home (Editable)
- Vocabulary Strategies
- Extending the Unit



Tips for Encouraging Vocabulary Usage

- **Act out Vocabulary** - Have students act out the vocabulary in this Unit, as part of a movement or “Brain Break.” Play a game to have students become the 123 Robot themselves. Students can walk around the room to “Drive until” they reach an object, “Detect” a particular item or color in the classroom, or point to their own “Eye Sensor.”
- **Word of the Day** - Choose a word to be the “Word of the Day” and set a goal for how many times the class can use it correctly in context during the day. Keep track of the usage on the board, and offer a reward for reaching or exceeding the goal to get students excited about it!

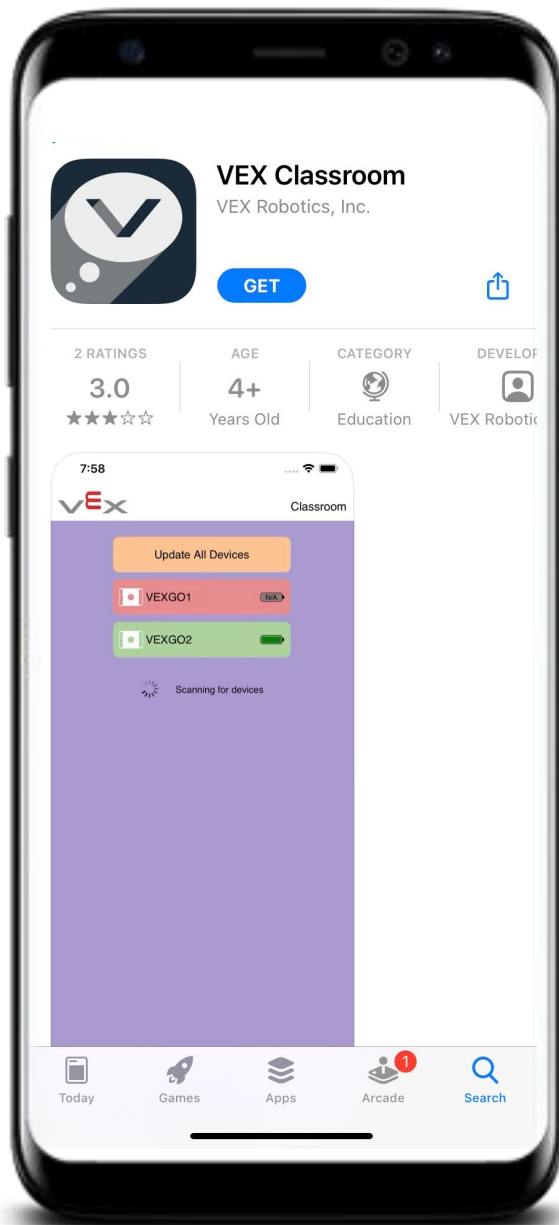




And so many extras...

Choice Board Examples & Strategies

Choice Board		
<p>Storyboard It</p> <p>Make a storyboard of the story of Little Red Riding Hood, with the 123 Robot as the main character.</p>	<p>Detective</p> <p>Draw or write a list of things that you can detect, or look out for, so that you can safely walk around your school or neighborhood. What helps you to do this?</p>	<p>Drive until Directions</p> <p>Think about the path you take from your classroom to the lunch room, or to the gym. Write or draw the path using Drive until directions, like Drive until Mr. Jackson's room, then turn left.</p>
<p>Flip it</p> <p>Retell the Little Red Riding Hood story from the Wolf's point of view. How is the story similar or different?</p>	<p>Add an Eye Sensor</p> <p>What is something in your house that would be more useful with an Eye Sensor? Draw the design and write how the added Eye Sensor will help you or your family.</p>	<p>Robot Clothes</p> <p>What is something else your 123 Robot could "wear"? Make a new shirt, hat, or piece of clothing, that can be attached to the 123 Robot using the Art Ring.</p>



VEX 123 Using the Classroom App

STEM Starts Early

Note: The Classroom App is **ONLY** for TEACHER use!

The VEX Classroom App is available on the following platforms:

- Apple App Store - iPads, **iPhones**, iPod Touches
- Google Play Store - **Android phones** and tablets
- Amazon Appstore - Amazon Fire tablets



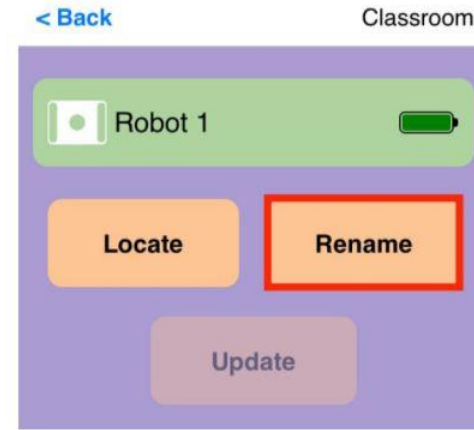
VEX 123 Using the Classroom App



Step 1:
Open the Classroom App



Step 2:
Update Firmware
(If Needed)



Step 3:
Rename Brain



Step 4:
Check Battery

Note: The Classroom App is **ONLY** for TEACHER use!



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VEX 123 Educator Certification

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VEX Professional Learning Community

As a certified user, you now have access to the VEX Professional Learning Community. Continue to learn through sharing, collaborating, and connecting with the network of VEX certified users.

Coming Soon



VEX 123 Educator Certificate

Your updated profile will have your certification information. Remember to print your personal certificate from your profile by using the PDF link below.

Shelli Brasher's Certificate



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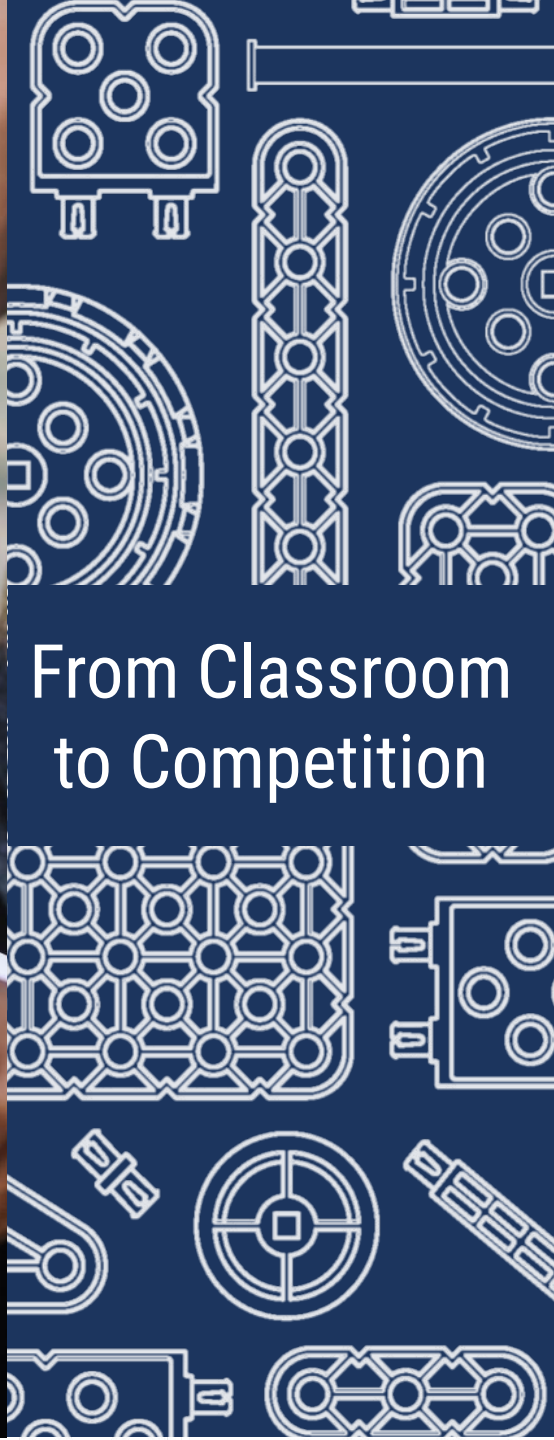
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From Classroom to Competition





Register Teams for FREE!

- Students set personal goals
- Earn Digital Badges
- Earn Achievement Awards
- Learn about future challenges
- Get invited to Showcase your Learning
- Receive monthly updates
- robotevents.com

Coming Soon!

- roboticseducation.org
 - Teams
 - VEX 123 Challenge
- “How to Register Teams” Step Sheet
- Intro to VEX 123 Workshops
- Digital Badges/Certificates
- Showcase Opportunities



For more information and assistance starting VEX 123 Teams at your schools,
contact shelli_brasher@roboticseducation.org

THANK YOU

