

Limudei Code-Esh: Purim

An Advanced KIBO Coding Curriculum
Integrated with Jewish Education



Using the Coding as Literacy (CAL) approach developed by

DevTech Research Group

Eliot-Pearson Dept. of Child Study and Human Development
Tufts University

This project is funded by the generous support of the David Lear Sulman Fund.

This curriculum was developed by Rachel Viselman from DevTech Research Group under supervision of Professor Marina Umaschi Bers using both novel materials and old materials developed over many years of work with the KIBO programming environment, developed in part by Dr. Bers' DevTech Research Group. The Judaic content and text resources were provided by teachers Michal Bessler, Dan Savitt, and Fallon Rubin, and overseen by principals Reena Slovin and Rabbi David Saltzman. Fallon serves as Education Program Manager for students preK - 12 at the Reform synagogue Temple Israel of Boston. Dan teaches Rabbinic literature to 6th and 7th graders at the Solomon Schechter Day School of Greater Boston, affiliated with the Conservative movement. Michal teaches 3rd grade Judaic Studies at the Orthodox Maimonides School in Brookline, MA, where David and Reena are principals at the elementary school level.

Our goal in creating Limudei Code-esh is to provide an easily accessible coding curriculum that would integrate key themes of Jewish holidays and be appropriate for use in all Jewish day or supplementary school settings. It is our hope that the units of study will complement instruction and inspire a love of Jewish holiday celebration as well as computer science in elementary school age children.



LIMUDEI CODE-ESH: PURIM by the [DevTech Research Group](#) is licensed under a [Creative Commons Attribution NonCommercial-ShareAlike 3.0 Unported License](#).

Under this license, you may use and adapt this work but you must attribute the work to the DevTech Research Group. You **may not** use or adapt this work for commercial purposes.

© 2019, DevTech Research Group, Tufts University.



Table of Contents

INTRODUCTION

Coding as Literacy (CAL) Approach

Pacing

Materials

Pedagogical Framework: Positive Technological Development and Dialogic Instruction

Classroom Management

Alignment of Academic Framework

LESSONS

Theme 1: The Story of Purim

Lesson 1: Foundations (60 minutes)

Lesson 2: KIBO and Purim Review (60 minutes)

Lesson 3: Debugging the Story of Purim (60 minutes)

Lesson 4: Sequencing (60 minutes)

Lesson 5: Purim Spiel (60 minutes)

Theme 2: The Megillah

Lesson 6: The Sound Sensor (60 minutes)

Lesson 7: What is the Megillah Part 1 (60 minutes)

Lesson 8: What is the Megillah Part 2(60 minutes)

Lesson 9: Praising Differences(60 minutes)

Theme 3: Mitzvot

Lesson 10: Repeat Loops (60 minutes)

Lesson 11: Mishloach Manot (60 minutes)

Lesson 12: Repeat Loops with Light and Distance Sensors (60 minutes)

Lesson 13: Matanot La'evyonim (60 minutes)

Lesson 14: Conditional Statements (60 minutes)

Lesson 15: Nested Loops (60 minutes)

Theme 4: Celebration

Lesson 16: Groggers (60 minutes)

Lesson 17: Hamantaschen (60 minutes)

Lesson 18: Purim Carnival (60 minutes)

Lesson 19: Costume Party (60 minutes)

Lesson 20: Class Purim Parade (60 minutes)

Appendix A: Purim Names Matching Game

Appendix B: KIBO Purim Puppets

Appendix C: Mishloach Manot Baskets

Introduction

CODING AS LITERACY (CAL) APPROACH

This curriculum introduces powerful ideas from computer science, specifically programming with KIBO, to children in Kindergarten through 3rd grade in a structured, developmentally appropriate way in the context of Jewish education. The Coding as Literacy (CAL) approach, developed by Prof. Marina Umaschi Bers and members of her DevTech Research Group at Tufts University, understands the learning of computer science as a literacy for the 21st century computer science ideas into direct conversation with powerful ideas from literacy. Both can support learners in developing new ways of thinking about themselves and the world.

Thinking involves the ability to make sense of, interpret, represent, model, predict, and invent our experiences in the world. Thus, as educators, we must give children one of the most powerful tools for thinking: language. The term language refers here to a system of communication, natural or artificial, composed of a formal limited system of signs, governed by syntactic and grammatical combinatory rules, that serves to communicate meaning by encoding and decoding information. Today, we have the opportunity to not only teach children how to think by using natural languages, such as English or Hebrew, but also by learning artificial languages—programming languages such as KIBO.

The achievement of literacy in a natural language involves a progression of skills beginning with the ability to understand spoken words, followed by the capacity to code and decode written words, and culminating in the deep understanding, interpretation, and production of text. The ultimate goal of literacy is not only for children to master the syntax and grammar, the orthography and morphology, but also the semantics and pragmatics, the meanings and uses of words, sentences and genres. A literate person knows that reading and writing are tools for meaning making and, ultimately, tools of power because they support new ways of thinking.

The CAL approach proposes that programming, as a literacy of the 21st century, engages new ways of thinking and new ways of communicating and expressing ideas, as well as new ways of problem solving and working with others. CAL understands the process of coding as a semiotic act, a meaning making activity that engages children in both developing computational thinking, as well as promoting personal expression, communication, and interpretation. This understanding shapes this curriculum and our strategies for teaching coding.

The curriculum is organized around powerful ideas from both computer science and Jewish studies, as well as fundamental ideas from literacy. The term **powerful idea** refers to a central concept or skills within a discipline that is simultaneously personally useful, inherently interconnected with other disciplines, and has roots in intuitive knowledge that a child has internalized over a long period of time. Powerful Ideas from the core domains of Computer Science, Purim, and Literacy are represented throughout this curriculum, and are described below.

Computer Science Powerful Ideas

This is designed as a beginner's curriculum for children who do not have previous experience with KIBO. The **powerful ideas from computer science** addressed in this curriculum include: algorithms, design process, representation, debugging, control structures, modularity, and hardware/software (see Table 1).

Table 1: Computer Science Powerful Ideas

Powerful Ideas	Definition	Relevant Lessons
Algorithms	A series of ordered steps taken in a sequence to solve a problem or achieve an end goal; a program	Lessons 2-9, 11, 13, 16-20
Modularity	Breaking down tasks or procedures into simpler, manageable units that can be combined to create a more complex process	Lessons 6-8, 10, 11, 13, 17
Control Structures	These structures determine the order or sequence in which instructions are followed within an algorithm or program	Lessons 12, 14-18, 20
Representation	The idea that symbol systems can represent specific ideas or concepts	Lessons 4-8, 16, 17, 19
Hardware/Software	Hardware is physical machinery, like a computer. Software is intangible instructions that control the hardware. Hardware and software work together as a system to accomplish tasks of sending, processing, and receiving information	Lessons 4, 6, 9, 13, 16, 20
Design Process	An iterative process used to develop programs and tangible artifacts that involve the following steps: Ask, Imagine, Plan, Create, Test & Improve, Create, Share	Lessons 1-3, 5-9, 11
Debugging	A strategy for iterating and repairing issues in a program of designed artifact	Lessons 3, 5, 12-20

Purim Powerful Ideas

The **powerful ideas from Purim** include: perseverance, power of community, hidden miracles, minhagim of Purim, and mitzvot. (see Table 2).

Table 2: Purim Powerful Ideas

Powerful Ideas	Definition	Relevant Lessons
Perseverance	The Story of Purim and Esther's dedication to her Judaism represents the importance of perseverance. She reminds us that it is important to stand by our values even during challenging times.	Lessons 1-6, 9, 16, 20
Power of Community	The Story of Purim reminds us that there is power in communal prayer. To save the Jewish people, Esther told her uncle, Mordechai, to gather the Jewish people, fast, and pray for three days. Doing so, helped the Jewish people persevere.	Lessons 1-8, 10-20
Hidden Miracles	The Megillah recalls the "hidden miracles" that occurred in the Story of Esther. These miracles are the reason the Jewish people were able to persevere past the time of King Achverosh's rule. ([Rabbi Zeira] said to [Rabbah]: Not all the time does a miracle happen! - Babylonian Talmud, Megillah 7b)	Lessons 1-5, 10-20
Minhagim of Purim	During Purim, the Jewish people have three very important traditions, also known as minhagim. They celebrate by dressing up in costumes, shaking groggers, and eating Hamantaschen.	Lessons 6-8, 10-20
Mitzvot	We perform mitzvot by being active participants. During Purim, we have four Mitzvot. We listen to the Megillah, send Mishloach Manot, give Matanot La'evyonim, and celebrate with a festive Purim meal.	Lessons 5, 7, 8, 10-15, 18, 20

Literacy Powerful Ideas

The **powerful ideas from literacy** that will be placed in conversation with these powerful ideas from computer science and Jewish studies are: the writing process, recalling, summarizing and sequencing, using descriptive language, and using reading strategies such as summarizing and evaluating.

KIBO Concepts

The most important skills and concepts from KIBO used in each lesson are as listed below. Note that this is not a complete list because each activity is meant to be creative and typically open-ended. This table is meant to indicate which skills it would be difficult to complete a lesson without. Students are always encouraged to use any blocks or skills they learn in class or on their own on any project.

Table 3: KIBO Concepts

KIBO Concept	Relevant Lessons
Begin/End block	Lessons 1-3, 5, 6, 8-20
Movement Blocks	Lessons 1-3, 5, 6, 8-20
Spin/Shake Block	Lessons 1-3, 5, 6, 8-20
Light Blocks/Output	Lessons 12-18, 20
Sing/Beep Blocks	Lessons 1-3, 5, 6, 10-20
Sound Recorder	Lessons 6, 10-20
Sound Recorder Blocks	Lessons 6, 10-20
Sound Sensor	Lessons 6, 10-20
Wait for Clap Block	Lessons 6, 9-20
Nesting Repeat Loops	Lessons 15, 20
Nesting Conditional Loops	Lessons 15, 20
Repeat/End Repeat Blocks	Lessons 9-20
If/End If Blocks	Lessons 14-17, 19, 20
Distance/Light Sensor	Lessons 12-17, 19, 20
Turntable and Stage	Lessons 1-3, 5, 6, 9-20
KIBO Parts	Lesson 4

Integrated Curriculum Design

The CAL approach allows students to make connections between coding and literacy, as well as between coding and Jewish studies. This curriculum encourages students to express their thoughts, ideas, and learning through KIBO activities related to Purim. The curriculum is designed for a total of 20 hours, but can be adapted to particular learning settings. Each lesson contains a variety of activities, including:

- Design challenges to introduce the powerful ideas from computer science
- Discussions and activities addressing the powerful ideas from Purim
- Reading or vocabulary activities to introduce the powerful ideas from literacy
- Work individually or in pairs on designing and creating projects
- Technology circles to share and reflect on activities

This curriculum provides integration between Jewish education and programming in the context of Purim. Students will learn about why Purim is important and relevant to the Jewish community and use the new information they learn to write creative, fun programs on KIBO.

PACING

This is a 20-hour curriculum unit divided into approximately 1-hour lessons. Some students may benefit from further division of the activities into smaller steps or from more time to explore each new concept before moving onto the next, either in the context of free-exploration or with teacher-designed challenges. Each of the powerful ideas from computer science in this curriculum can easily be expanded into a unit of study which will extend the curriculum and allow students to explore a range of different activities.

Table 4: Pacing Guide

Lesson	Description
<i>Theme 1: The Story of Purim</i>	
Lesson 1: Foundations (60 minutes)	In this lesson, students will learn about the design process and what it means to be an engineer. They will review KIBO blocks and act as engineers to program KIBO to follow a path leading to the Jewish holiday of Purim.
Lesson 2: KIBO and Purim Review (60 minutes)	In this lesson, students will learn about programming KIBO and review previously learned blocks by telling the story of Purim.
Lesson 3: Debugging the Story of Purim (60 minutes)	In this lesson, students will learn about debugging as it pertains to the story of Purim they created with KIBO in Lesson 2.

Lesson 4: Sequencing (60 minutes)	In this lesson, students will learn about the importance of sequencing in programming as it pertains to the Story of Purim. They will then learn to identify the different parts of the KIBO robot.
Lesson 5: Purim Spiel (60 minutes)	In this lesson, students will learn about the use of KIBO concepts in conjunction with themselves. They will program KIBO to act as one of the Purim characters in their Purim Spiel.
<i>Theme 2: The Megillah</i>	
Lesson 6: The Sound Sensor (60 minutes)	In this lesson, students will learn about using sound with KIBO and how that can be helpful in telling the Story of Purim.
Lesson 7: What is the Megillah Part I (60 minutes)	In this lesson, students will create their own pages of the Story of Purim to express their knowledge of the holiday and the Megillah.
Lesson 8: What is the Megillah Part II (60 minutes)	In this lesson, students will program KIBO to collect the pages of the story of Esther, in order, and put together their own copy of the book of Esther.
Lesson 9: Praising Differences (60 minutes)	In this lesson, students will learn that there is no correct way to program KIBO to reach its destination. They will have a race to create the fastest and most accurate program to send KIBO from one side of the room to another.
<i>Theme 3: Mitzvot</i>	
Lesson 10: Repeat Loops (60 mins)	In this lesson, students will learn about repetition and the use of repeat loops in the mitzvot of Purim.
Lesson 11: Mishloach Manot (60 minutes)	In this lesson, students will learn about mishloach manot by creating baskets and decorating them with two types of food to give to a friend.
Lesson 12: Repeat Loops with Light and Distance Sensors (60 minutes)	In this lesson, students will learn about the light and distance sensors and apply them to their Lesson 11 programs for delivering mishloach manot.
Lesson 13: Matanot La'evyonim (60 minutes)	In this lesson, students will learn about the importance of giving back to their community. They will program KIBO to deliver their gifts using a town map.
Lesson 14: Conditional Statements (60 minutes)	In this lesson, students will learn about conditional statements and use them to reprogram their delivery of matanot la'evyonim from lesson 13.
Lesson 15: Nested Loops (60 minutes)	In this lesson, students will learn about nested loops and how they can be used in performing the Purim mitzvot.
<i>Theme 4: Celebration</i>	
Lesson 16: Groggers (60 minutes)	In this lesson, students will learn about the use of the grogger following hearing Haman's name. They will attach a grogger to their KIBO and practice using conditionals for what KIBO will do whenever they say Haman's name.

Lesson 17: Hamantaschen (60 minutes)	In this lesson, students will learn about the ingredients necessary to make Hamantaschen. They will send KIBO on a scavenger hunt to find the ingredients necessary to bake their Purim treat.
Lesson 18: Purim Carnival (60 minutes)	In this lesson, students will be able to express knowledge of all KIBO concepts and tools. They will participate in a carnival Hamantaschen game.
Lesson 19: Costume Party (60 minutes)	In this lesson, students will learn about KIBO as a tool for representation and the ability to get creative with KIBO. They will decorate KIBO to dress up as their favorite character and program KIBO to act as that person from the story of Esther.
Lesson 20: Class Purim Parade (60 minutes)	In this lesson, students will program their KIBOs to move and celebrate the story of Esther. They will be able to express their knowledge of all the KIBO tools and concepts to create a class parade.

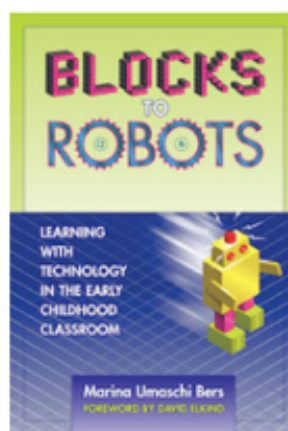
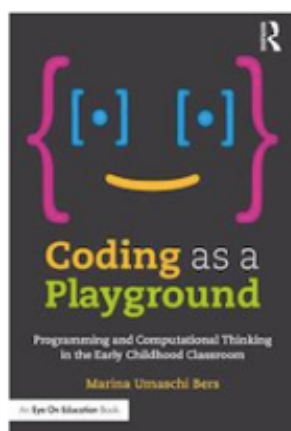
MATERIALS

Since this curriculum is based on KIBO, the main material necessary for the students are the KIBO robot and programming blocks. More information is provided in lessons that use these pages.

Other materials used in the curriculum are inexpensive crafts and recycled materials. The use of crafts and recycled materials, a practice already common in other domains of early childhood education, provides opportunities for children to use materials they are already comfortable with.

PEDAGOGICAL FRAMEWORK: POSITIVE TECHNOLOGICAL DEVELOPMENT and DIALOGIC INSTRUCTION

The theoretical foundation of this curriculum, called **Positive Technological Development (PTD)**, was developed by Prof. Marina Umaschi Bers and can be found in her books: *Blocks to Robotics: Learning with Technology in the Early Childhood Classroom* (Bers, 2008), *Designing Digital Experiences for Positive Youth Development: From Playpen to Playground* (Bers, 2012), and *Coding as a Playground: Programming and Computational Thinking in the Early Childhood Classroom* (Bers, 2018). The PTD framework guides the development, implementation and evaluation of



educational programs that use new technologies to promote learning as an aspect of positive youth development. The PTD framework is a natural extension of the computer literacy and the technological fluency movements that have influenced the world of education but adds psychosocial and ethical components to the cognitive ones. From a theoretical perspective, PTD is an interdisciplinary approach that integrates ideas from the fields of computer-mediated communication, computer-supported collaborative learning, and the Constructionist theory of learning developed by Seymour Papert (1993) and views them in light of research in applied development science and positive youth development.

As a theoretical framework, PTD proposes six positive behaviors (six C's) that should be supported by educational programs that use new educational technologies, such as KIBO robotics. These are: **content creation, creativity, communication, collaboration, community building, and choices of conduct**. The six C's of PTD are highlighted in the activities throughout the curriculum with their respective icons:

CONTENT CREATION by designing a KIBO program and programming its behaviors. The engineering design process of building and the computational thinking involved in programming foster competence in computer literacy and technological fluency.



CREATIVITY by making and programming personally meaningful projects, problem solving in creative playful ways and integrating different media such as recyclable materials, arts and crafts, and a tangible programming language. Final KIBO projects that represent a theme found in the overall early childhood curriculum are a wonderful way to engage children in the creative process of learning.



COLLABORATION by engaging children in a learning environment that promotes working in teams, sharing resources and caring about each other while working with their KIBO programs. Collaboration is defined here as getting or giving help with a project, programming together, lending or borrowing materials, or working together on a common task.



COMMUNICATION through mechanisms that promote a sense of connection between peers or with adults. For example, technology circles, when children stop their work, share their KIBO creation, and explain their learning process. Technology circles present a good opportunity for problem solving as a community. Some teachers invite all the children to sit together in the rug area for this. Each classroom will have its own routines and expectations around group discussions and circle times, so teachers are encouraged to adapt what already works in their class for the technology circles in this curriculum.



COMMUNITY BUILDING through scaffolded opportunities to form a learning community that promotes contribution of ideas. Final projects done by children are shared with the community via an open house, demo day, or exhibition. These open houses provide authentic opportunities for children to share and celebrate the process and tangible products of their learning with family and friends. Each child is given the opportunity not only to run their program, but to play the role of teacher as they explain to their family how they built, programmed, and worked through problems.



CHOICES OF CONDUCT which provide children with the opportunity to experiment with “what if” questions and potential consequences, and to provoke examination of values and exploration of character traits while working with KIBO. As a program developed following the PTD approach, the focus on learning about coding is as important as helping children develop an inner compass to guide their actions in a just and responsible way.



In alignment with the Positive Technological Development (PTD) framework, this curriculum approaches literacy from the perspective of dialogic instruction. **Dialogic instruction** is a theory of learning (and teaching) premised on the belief that students engage with literacy instruction best when there are opportunities for them to engage in authentic, open-ended interpretation of texts. If a student does not have a voice, a position, or an evaluation of the text, then what good are literary skills? Only when she needs these tools for her own purpose, to help her achieve her own interpretation, and to convince others of it, will she have a reason and motivation (beyond getting a good grade) to acquire the tools being taught. This curriculum, in adherence with the theory of dialogic instruction, strives to place the student in the position of interpreter, with opportunities for authentic, open-ended interpretation of texts. This aligns with the curriculum's approach to coding where students are given opportunities for open-ended coding tasks that encourage them to explore their own expressive ideas.

CLASSROOM MANAGEMENT

Teaching programming in an early childhood setting requires careful planning and ongoing adjustments when it comes to classroom management issues. These issues are not new to the early childhood teacher, but they may play out differently during KIBO activities because of the novelty of the materials themselves. Issues and solutions other than those described here may arise from classroom to classroom; teachers should find what works in their particular circumstances. In general, provide and teach a clear structure and set of expectations for using materials and for the routines of each part of the lessons (technology circles, clean up time, etc.). Make sure the students understand the goal(s) of each activity. Posters and visual aids can facilitate children's attempts to answer their own questions and recall new information.

GROUP SIZES

The curriculum refers to whole-group versus pair or individual work. In fact, some classrooms may benefit from other groupings. Whether individual work is feasible depends on the availability of supplies, which may be limited for a number of reasons. However, an effort should be made to allow students to work in as small groups as possible, even individually. At the same time, the curriculum includes numerous opportunities to promote conversations which are enriched by multiple voices, viewpoints, and experiences. Some classes may be able to have these discussions as a whole group. Other classes may want to break up into smaller groups to allow more children the opportunity to speak and to maintain focus. Some classes structure KIBO time to fit into a "center time" in the schedule, in which students rotate through small stations around the room with different activities at each location. This format gives students more access to teachers when they have questions and lets teachers tailor instruction and feedback as well as assess each students' progress more easily than during whole-group work. It is important to find a structure and group size for each of the different activities (instruction, discussions, work on the challenges, and the final project) that meet the needs of the students and teachers in the class.

ALIGNMENT OF ACADEMIC FRAMEWORK

This curriculum is designed as a beginners curriculum for KIBO and coding and is designed to be used from Kindergarten through third grade. The curriculum is aligned with nationally recognized computer science frameworks, including the ISTE Standards for Students (2017), K–12 Computer Science Framework (2016) and the Massachusetts Digital Literacy and Computer Science (DLCS) Curriculum Framework (2016) as well as Common Core English Language Arts (ELA)/Literacy Framework (Council of Chief State School Officers, 2011). In addition, the Jewish materials and approach was designed by a group of experienced Jewish educators representing orthodox, conservative and reform denominational movements in Judaism. The goal is that the curriculum could be used by any Jewish learning setting across the world.

Theme 1: The Story of Purim

Lesson 1: Foundations

OVERVIEW

In this lesson, students will learn about the design process and what it means to be an engineer. They will review KIBO blocks and act as engineers to program KIBO to follow a path leading to the Jewish holiday of Purim.

ACTIVITIES

- Jewish Holiday Review (10 minutes)
- Preparing KIBO's Path (10 minutes)
- KIBO's Path to Purim (30 min)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall previous Jewish holidays and their significance
- Identify Purim as a Jewish holiday

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Design Process

POWERFUL IDEAS FROM PURIM

- ☐ Perseverance
- ☐ Power of Community
- ☐ Hidden Miracles

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Left, Right, Spin, Shake)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Turntable and Stage

Lesson 1: Activities

JEWISH HOLIDAY REVIEW (10 MIN)

Teachers will begin a discussion with their class about previous Jewish holidays. Ask students, *what holidays do we celebrate? Do you remember any we have already celebrated this year?* Then begin to talk about Purim. Ask students, *what is Purim? When is it? What have you done to celebrate Purim?*

PREPARING KIBO'S PATH (10 MIN)

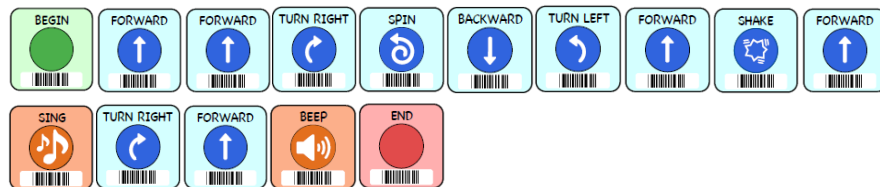
Students will use tape to create a path for KIBO to follow. The path will have at least three stops that each represent a different Jewish holiday leading up to Purim. Make sure to incorporate twists and turns so KIBO uses all the movement blocks in the next activity.

KIBO ACTIVITY: KIBO'S PATH TO PURIM (30 MIN)

Students will use their KIBO as a time machine. They will program KIBO to follow the previously designed path made with tape in the content activity and make stops along the way. Each stop will be a different Jewish holiday leading up to Purim. Students must have three stops along the way and use each of the following KIBO blocks at least once.

Begin, End, Forward, Backward, Spin, Shake, Turn Left, Turn Right, Sing, Beep

Example Blocks:



WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle to discuss the programs they made. Ask students, *what holidays did you place on your route to Purim? What did you program KIBO to do at each holiday? Why did you choose those?*

Lesson 2: KIBO and Purim Review

OVERVIEW

In this lesson, students will learn about programming KIBO and review previously learned blocks by telling the story of Purim.

ACTIVITIES

- The Story of Purim Review (10 minutes)
- Purim Names Memory Game (10 minutes)
- KIBO's Story of Purim (30 min)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Explain the story of Purim
- Understand the significance of Purim
- Identify the main characters in the story of Purim

POWERFUL IDEAS FROM COMPUTER

SCIENCE

- ☐ Algorithms
- ☐ Design Process

POWERFUL IDEAS FROM PURIM

- ☐ Perseverance
- ☐ Power of Community
- ☐ Hidden Miracles

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right, Spin, Shake)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Turntable and Stage

Lesson 2: Activities

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle in a central location in the classroom. They will use this time to share their KIBO program and the blocks they used to create it. Ask students, *why did you choose those blocks? What is KIBO being programmed to do? If you had more time, what would you do differently?*

Lesson 3: Debugging the Story of Purim

OVERVIEW

In this lesson, students will learn about debugging as it pertains to the story of Purim they created with KIBO in Lesson 2.

ACTIVITIES

- Communication with Machines (10 minutes)
- Debugging in Story Telling (10 minutes)
- Debugging KIBO's Story of Purim (30 minutes)
- Wrap Up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Understand and explain the story of Purim
- Understand the significance of celebrating Purim

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Design Process
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Perseverance
- ☐ Power of Community
- ☐ Hidden Miracles

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Turntable and Stage

Lesson 3: Activities

COMMUNICATION WITH MACHINES (10 MIN)

The goal at this stage of development is to understand that even though all the details exist in your head, if you don't provide them for your reader, your story won't make sense. This is the debugging/editing challenge for students at this stage of development.

Split the class into two groups and have each group work together to write instructions on how to put together KIBO and make it move. Then gather the whole class and have the groups exchange their written instructions. Have each group read the other group's instructions and explain the task based on what they understood from the instructions. This activity can be fun and light. The big idea is that it can be hard to communicate what's in our head to someone or something else.

Explain to students that with writing there may be multiple ways to communicate the same thing, and even if we misspell a word or make a grammatical error, our message may still be clear. However, when robots or computers are the audience, we have to make sure to communicate in the way that the machines understand.

DEBUGGING IN STORY-TELLING (10 MIN)

Students tell the story of Purim to their peers and "edit" their story when their audience is confused and needs more clarification. This is debugging!

Explain to students that debugging is a method used to understand how to fix things when engineers program robots, and the robots do not work. By identifying these problems and different solutions to solve them, students are debugging.

KIBO ACTIVITY: DEBUGGING KIBO'S STORY OF PURIM (30 MIN)

Students will use their KIBO program from lesson 2 that tells the story of Purim. They will figure out anything that is wrong with their story and make any edits to it by reorganizing their KIBO blocks. This is debugging with KIBO! By the end of this activity, students should feel comfortable scanning a complete program with KIBO.

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle and reflect about one of the problems they had with KIBO. *What was the problem?* Ask students to explain why KIBO wasn't understanding what they wanted KIBO to do. *How did you change the way you scanned (communicated) so that KIBO would understand?*

Lesson 4: Sequencing

OVERVIEW

In this lesson, students will learn about the importance of sequencing in programming as it pertains to the Story of Purim. They will then learn to identify the different parts of the KIBO robot.

ACTIVITIES

- Sequence in Narrative (10 minutes)
- Sequencing Purim Story Events (15 minutes)
- KIBO Parts (25 minutes)
- Clean Up (10 minutes)

STUDENTS WILL BE ABLE TO...

- Remember the order of events in the story of Purim
- Explain the story of Purim

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Hardware/Software
- ☐ Algorithms
- ☐ Representation

POWERFUL IDEAS FROM PURIM

- ☐ Perseverance
- ☐ Power of Community
- ☐ Hidden Miracles

KIBO CONCEPTS

- ☐ KIBO Parts

Lesson 4: Activities

SEQUENCE IN NARRATIVE (10 MIN)

Lead a student-centered discussion that reviews the events of the story of Purim. You can prompt the students: Who can summarize the main events in this story? (e.g. first Esther married King Achverosh, then Mordechai did not bow down to Haman, Haman decided to remove the Jewish people from Shushan, Esther saved the day). Then ask students: What if Esther never met the King? How would that change the story for the Jewish people? What about if Esther told the King she was Jewish before they were married? The purpose of this activity is to get students to think about sequencing in narrative.

SEQUENCING PURIM STORY EVENTS (15 MIN)

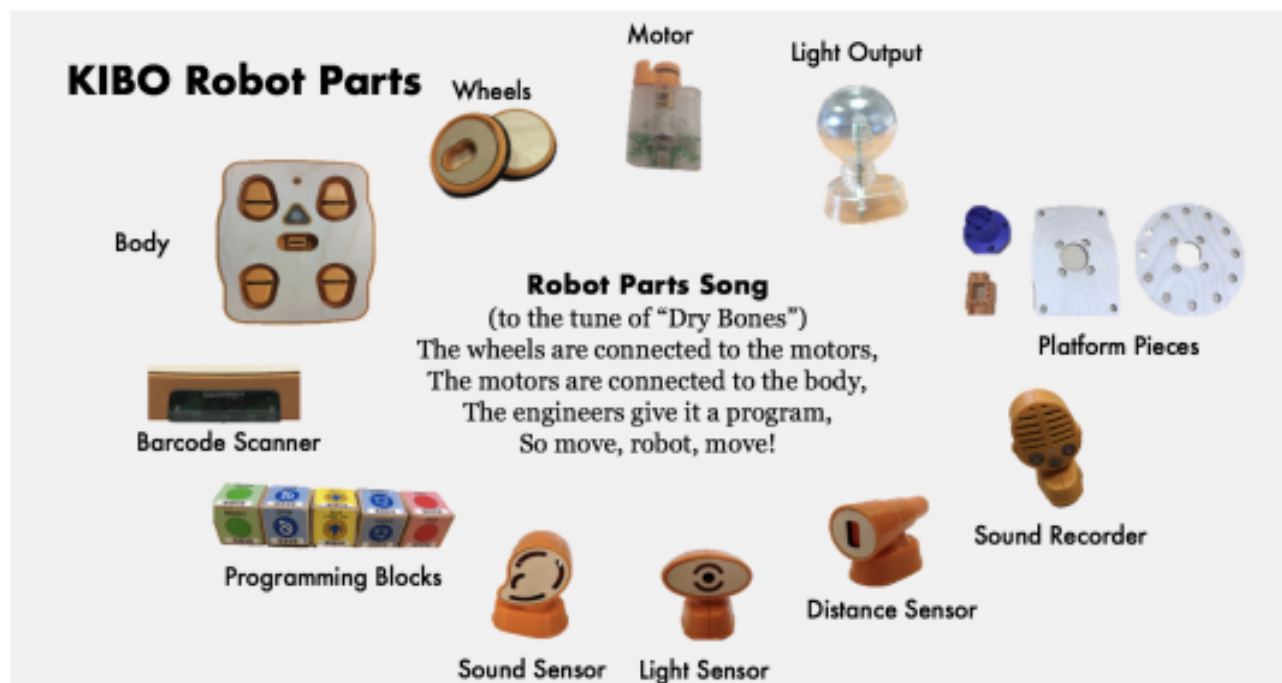
Teachers will give students pieces of paper with events from the story of Purim. Students will work together in a group to determine what the correct order of events is.

KIBO ACTIVITY: KIBO PARTS (25 MIN)

Students have learned about programming and debugging, but how does the KIBO robot work? Students will learn about the different parts of the KIBO robot and why order matters both in programming and in literacy.

Take out KIBOs and blocks. Explain to students that today they will be learning how to put together the different parts of the KIBO robot. Show students a KIBO robot body. Ask students: What parts do you see through the clear backside of KIBO? What do you think those parts do? What do the batteries do? What are some other objects you have seen that have the same function? (e.g. KIBO's wheels are like the tires on a car)

Using the KIBO parts guide below, introduce the KIBO robot's key parts and their functions. Teach the "Robot Parts Song" and have students sing and dance along. Explain to students that the song helps us understand how to put the KIBO robot together. Demonstrate how to attach the wheels, motors, and art platforms.



Lesson 4: Activities

CLEAN UP (10 MIN)

Using your classroom organizational system, have students clean up their work areas and put away all KIBO parts and blocks in their appropriate spots.

Lesson 5: Purim Spiel

OVERVIEW

In this lesson, students will learn about the use of KIBO concepts in conjunction with themselves. They will program KIBO to act as one of the Purim characters in their Purim Spiel.

ACTIVITIES

- Introduction of the Megillah (5-10 minutes)
- Purim Spiel Planning (20 minutes)
- KIBO Purim Spiel (20 minutes)
- Wrap-Up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Identify the mitzvot of Purim
- Identify the two times we listen to the Megillah
- Understand that we perform mitzvot during the day

POWERFUL IDEAS FROM COMPUTER

SCIENCE

- ☐ Algorithms
- ☐ Representation
- ☐ Design Process
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Power of Community
- ☐ Hidden Miracles
- ☐ Perseverance

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right, Spin, Shake)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Turntable and Stage

Lesson 5: Activities

INTRODUCTION OF THE MEGILLAH (10 MIN)

Ask students, *can anyone name a mitzvot of Purim? Does anyone remember how often we listen to the Megillah? We listen to the Megillah once at night and once in the morning for a total of two times on Purim. Ask, does anyone know what the reading of the Megillah is called?*

מִקְרָא מְגִלָּה	mikra megillah	reading of Megillah Esther
------------------	----------------	----------------------------

PURIM SPIEL PLANNING (20 MIN)

Students will collaborate to plan a play where they act as the characters from the Story of Purim.

KIBO ACTIVITY: KIBO PURIM SPIEL (20 MIN)

Students will program KIBO to act as one of the Purim characters in their Purim Spiel and act alongside them.



Example Blocks for Haman:

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle in a central area of the classroom to share their Purim Spiel with KIBO.

Ask students, *how did you decide the program for KIBO? Did KIBO's actions follow the prompts in the story? How did KIBO help to express the events of the story of Esther?*

Theme 2: The Megillah

Lesson 6: The Sound Sensor

OVERVIEW

In this lesson, students will learn about using sound with KIBO and how that can be helpful in telling the Story of Purim.

ACTIVITIES

- Introduction of Sound with KIBO (10 minutes)
- Sound and Purim (10 minutes)
- Purim with KIBO Sounds (30 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Understand what a grogger is
- Identify when we use a grogger
- Explain why we shake the grogger

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Modularity
- ☐ Representation
- ☐ Hardware/Software
- ☐ Design Process

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community
- ☐ Perseverance

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right, Spin, Shake)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Turntable and Stage
- ☐ Wait for Clap Block
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Sound Sensor

Lesson 6: Activities

INTRODUCTION OF SOUND WITH KIBO (10 MIN)

Take out KIBOs and blocks. Show the Wait for Clap block and the Sound Sensor and create an example program together. Run the program, and have students discuss what the robot is doing. Introduce the term event, which is an action that causes something to happen. The action here is the clap, which causes KIBO to continue its program. All of the sensors that KIBO has (sound, light, and distance) use events to trigger KIBO which they will experiment with in later lessons.

What is the Sound Sensor?

KIBO's **Sound Sensor** is shaped like an ear and senses sounds from the environment. It is programmed using the Wait for Clap block. In the example program, KIBO will turn right, wait for a loud sound (like a clap) before it spins and ends.

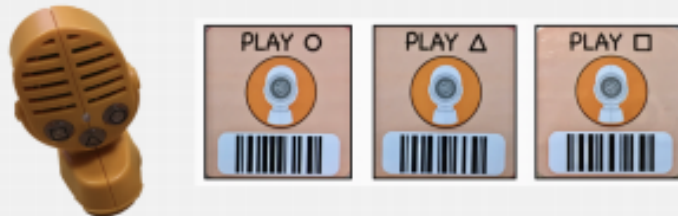


Show students the KIBO Sound Recorder module. Demonstrate with a model program how they can make three different recordings by pressing and holding down on the three shape buttons on the module. Note that the Sound Recorder must be connected to power by inserting the module into the KIBO body before recording.

Lesson 6: Activities

What is the Sound Recorder?

KIBO's sound recorder/playback module has three different buttons – square, triangle, and circle – that allows students to record three different short sound clips. Remember to match the shape of the block to the recorded sound!



SOUND AND PURIM (10 MIN)

Teachers will ask students if they know how sound is important during Purim. They will then review what a grogger is and why it is used during Purim.

Groggers: We make noise with noisemakers when we hear Haman's name while listening to the Megillah to erase Haman's name. Haman, the chief minister of King Achashverosh hated the Jewish people and wanted to destroy them in one day.

KIBO ACTIVITY: PURIM WITH KIBO SOUNDS (30 MIN)

Lets practice using the sound recorder for Purim. Program KIBO to say Haman and then pause until it hears a clap. The clap will represent the grogger.

For example, students will record their voice using the Sound Recorder module and use the appropriate block in their program. Encourage the children to say something that incorporates Haman's name given that this causes a commotion. The child can also practice the sound sensor by placing it after having vocalized the name Haman. KIBO will not continue through the program until it hears noise in response to Haman. Clap hands to represent shaking the grogger.

By the end of this exploration, students should understand the difference between sound input (i.e., KIBO needs to hear the clap using the Sound Sensor before proceeding) and sound output (i.e., students record the specific sounds that they want KIBO to play using the Sound Recorder). Encourage students to try other noises, like stomping or ringing a bell, to trigger the Sound Sensor!

Example Blocks:  + 

(in this example program, the first recording is "Haman" and the second would be "boooo")

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle and present their programs to each other. Ask students, *how was the sound recorder helpful in this lesson? Did anything go wrong in this programming activity? How could you fix it?*

Lesson 7: What is the Megillah Part 1

OVERVIEW

In this lesson, students will create their own pages of the Story of Purim to express their knowledge of the holiday and the Megillah.

ACTIVITIES

- The Three Mitzvot of Purim (15 minutes)
- Create Your Book of Esther (30 minutes)
- Wrap -up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall that the Jewish people fasted, prayed and performed the mitzvot as a nation
- Recall when we celebrate Purim as a nation
- Understand that we perform the mitzvot of Purim during the day as active participants
- Identify the mitzvot of Purim
- Identify the two times we listen to the Megillah

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Modularity
- ☐ Representation
- ☐ Design Process

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

Lesson 7: Activities

THE THREE MITZVOT OF PURIM (15 MIN)

The Jewish people fasted, prayed and performed the following mitzvot as a nation. So too, we celebrate Purim as a nation on the 14th of Adar and 15 of Adar in Jerusalem. When we celebrate Purim, we perform three mitzvot during the day. Ask students, *Do you know what these mitzvot are?* They are listening to the Megillah, sending mishloach manot, and giving gifts to the poor. In this activity will we focus on listening to the Megillah. Ask students, *Does anyone know when we listen to the Megillah?* We listen to the Megillah twice, once at night and once in the morning.

אסתר ט:כ-כב	Esther 9:20-22
וַיִּכְתֹּב מֶרְדֳּכָי אֶת־הַדְּבָרִים הָאֵלֶּה וַיִּשְׁלַח סָפָרִים אֶל־כָּל־הַיְּהוּדִים אֲשֶׁר בְּכָל־מְדִינֹת הַמֶּלֶךְ אַחֲשֻׁרוּשׁ הַקְּרוּבִים וְהָרְחוֹקִים: לְקִיַם עֲלֵיהֶם לִהְיוֹת עֹשִׂים אֶת יוֹם אַרְבָּעָה עָשָׂר לְחֹדֶשׁ אֲדָר וְאֶת יוֹם חֲמִשָּׁה עָשָׂר בּוֹ בְּכָל־שָׁנָה וְשָׁנָה: כִּי־מִיָּמִים אֲשֶׁר־נָחֲוּ בָהֶם הַיְּהוּדִים מֵאֹיְבֵיהֶם וְהַחֲדָשׁ אֲשֶׁר נִהְפָּךְ לָהֶם מִיָּגוֹן לְשִׂמְחָה וּמֵאֵפֶל לְיוֹם טוֹב לַעֲשׂוֹת אוֹתָם יְמֵי מְשֻׁתָּה וְשִׂמְחָה וּמְשָׁלוֹחַ מְנוּחַת אִישׁ לְרֵעֵהוּ וּמִתְּנוּגוֹת לְאֲבִיּוֹנִים:	Mordecai recorded these events. And he sent dispatches to all the Jews throughout the provinces of King Ahasuerus, near and far, charging them to observe the fourteenth and fifteenth days of Adar, every year — the same days on which the Jews enjoyed relief from their foes and the same month which had been transformed for them from one of grief and mourning to one of festive joy. They were to observe them as days of feasting and merrymaking, and as an occasion for sending gifts to one another and presents to the poor.

CREATE YOUR BOOK OF ESTHER (30 MIN)

Students will create pages that represent the pages of the book of Esther. Each page will tell a different part of the story. They will then shuffle the papers to present them out of order in the next activity.

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a central area of the room and then swap their pages (out of order) with another group. These pages will be used in the next lesson to program KIBO.

Lesson 8: What is the Megillah Part 2

OVERVIEW

In this lesson, students will program KIBO to collect the pages of the story of Esther, in order, and put together their own copy of the book of Esther.

ACTIVITIES

- The Three Mitzvot Review (10 minutes)
- KIBO Book of Esther Creation (35 minutes)
- Wrap-up Discussion (15 minutes)

STUDENTS WILL BE ABLE TO...

- Recall that the Jewish people fasted, prayed and performed the mitzvot as a nation
- Recall when we celebrate Purim as a nation
- Understand that we perform the mitzvot of Purim during the day as active participants
- Identify the mitzvot of Purim
- Identify the two times we listen to the Megillah

POWERFUL IDEAS FROM COMPUTER

SCIENCE

- ☐ Algorithms
- ☐ Modularity
- ☐ Representation
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right, Spin, Shake)
- ☐ Spin/Shake Blocks

Lesson 8: Activities

THE THREE MITZVOT REVIEW (10 MIN)

Review the three mitzvot that were discussed in Lesson 7. Remind students that the Jewish people fasted, prayed and performed the following mitzvot as a nation. So too, we celebrate Purim as a nation on the 14th of Adar and 15 of Adar in Jerusalem. When we celebrate Purim, we perform three mitzvot during the day. Ask students, *Do you remember what these mitzvot are?* They are listening to the Megillah, sending mishloach manot, and giving gifts to the poor. In this activity will we focus on listening to the Megillah. Ask students, *Does anyone remember when we listen to the Megillah?* We listen to the Megillah twice, once at night and once in the morning.

אסתר ט:כ-כב	Esther 9:20-22
<p>וַיִּכְתֹּב מֶרְדֳּכָי אֶת־הַדְּבָרִים הָאֵלֶּה וַיִּשְׁלַח סָפָרִים אֶל־כָּל־הַיְּהוּדִים אֲשֶׁר בְּכָל־מְדִינוֹת הַמֶּלֶךְ אַחֲשֵׁרוּשׁ הַקְּרוֹבִים וְהָרְחוֹקִים: לְקִיֵּם עֲלֵיהֶם לַהֲיוֹת עֲשִׂים אֶת יוֹם אַרְבָּעָה עָשָׂר לַחֹדֶשׁ אֲדָר וְאֶת יוֹם חֲמִשָּׁה עָשָׂר בּוֹ בְּכָל־שָׁנָה וְשָׁנָה: כִּי־מִים אֲשֶׁר־נָחוּ בָהֶם הַיְּהוּדִים מֵאוֹיְבֵיהֶם וְהַחֹדֶשׁ אֲשֶׁר נִהְפָּךְ לָהֶם מִיָּגוֹן לְשִׂמְחָה וּמֵאֵבֶל לְיוֹם טוֹב לַעֲשׂוֹת אוֹתָם יְמֵי מְשֻׁתָּה וְשִׂמְחָה וּמְשָׁלוּחַ מְנוּחַת אִישׁ לְרֵעֵהוּ וּמִתְּנֻנּוֹת לְאֲבִיּוֹנִים:</p>	<p>Mordecai recorded these events. And he sent dispatches to all the Jews throughout the provinces of King Ahasuerus, near and far, charging them to observe the fourteenth and fifteenth days of Adar, every year — the same days on which the Jews enjoyed relief from their foes and the same month which had been transformed for them from one of grief and mourning to one of festive joy. They were to observe them as days of feasting and merrymaking, and as an occasion for sending gifts to one another and presents to the poor.</p>

KIBO ACTIVITY: KIBO BOOK OF ESTHER CREATION (35 MIN)

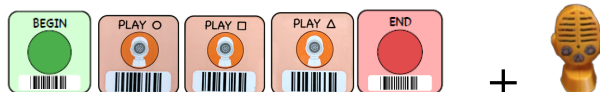
Students will program KIBO to collect the pages of the story from Lesson 7, in order, so as to put together their own copy of the book of Esther (20 minutes).

They will then practice using the sound sensor and recorder to read their Megillah (10 minutes).

Example Blocks for page collection:



Example Blocks for sound sensors:



WRAP-UP DISCUSSION (15 MIN)

Students will gather in a central area of the room. Since the Megillah is listened to twice during Purim, two groups will volunteer to read their Megillah and discuss how they programmed their KIBO.

Lesson 9: Praising Differences

OVERVIEW

In this lesson, students will learn that there is no correct way to program KIBO to reach its destination. They will have a race to create the fastest and most accurate program to send KIBO from one side of the room to another.

ACTIVITIES

- Hag Purim (10 minutes)
- Different Journeys, Same Result (10 minutes)
- KIBO Race (30 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall some of the “hidden miracles that are mentioned in the Megillah

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Hardware/Software
- ☐ Design Process

POWERFUL IDEAS FROM PURIM

- ☐ Hidden Miracles
- ☐ Perseverance

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right, Spin, Shake)
- ☐ Spin/Shake Blocks

Lesson 9: Activities

HAG PURIM (10 MIN)

Esther was chosen to be the queen despite the fact that she refused jewelry and special treatment. We celebrate her for her differences!

Introduce students to the Purim song, Hag Purim using the following link. <https://youtu.be/xrUoxz1MqGo>

The lyrics to the song are as follows.

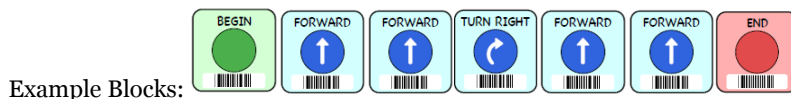
חג פורים, חג פורים, חג גדול לילדים! מסכות, רעשנים, שירים ורקודים!	Hag purim, hag purim, Hag gadol la-y'ladim ma-se-khot, ra'ashanim, shirim v'rikudim!
הבה נרעֵישה: רש, רש, רש! (3) ברעשנים!	Hava nar-isha: rash, rash, rash! (3) Ba-ra'a-shanim!
חג פורים, חג פורים, זה אל זה שולחים מנות. מחמדים, ממתקים, מתק מגדנות.	Hag purim, hag purim, Zeh el zeh shol-him manot. Mahmadim, mamtakim, metek migdanot.
הבה נרעֵישה: רש, רש, רש! (3) ברעשנים!	Hava nar-isha: rash, rash, rash! (3) Ba-ra'a-shanim!

DIFFERENT JOURNEYS, SAME RESULT (10 MIN)

Think of a time where you and a friend did the same thing but you got there differently. For example, maybe you both scored a goal in soccer, but from different sides of the field. Similarly, Esther did things differently from other queens in the past, but that did not mean she was not fit for royalty. The king still chose her.

KIBO ACTIVITY: KIBO RACE (30 MIN)

Students will have a race to create the fastest and most accurate program to send KIBO from one side of the room to another. Make sure they are using different blocks to signify that there is no “right way” to do something.



WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle in a central area of the classroom. They will take turns showing the program they used in the KIBO race. Ask students, *if everyone used a different program to get to the other side of the room, did anyone have a wrong program?* Teach children that there are many different journeys to reach the same destination. Even though Esther did not act or dress like a typical Queen, she was just as much of a Queen as the one before her, Queen Vashti.

Theme 3:

Mitzvot

Lesson 10: Repeat Loops

OVERVIEW

In this lesson, students will learn about repetition and the use of repeat loops in the mitzvot of Purim.

ACTIVITIES

- Repetition in the Megillah (10 minutes)
- Introduce Repeat Loops (15 minutes)
- Program Megillah Repeat Loops (30 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recognize the mitzvot of Purim
- Recall areas of repetition in the Megillah

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Control Structure
- ☐ Modularity

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community
- ☐ Mitzvot

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right, Spin, Shake)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Turntable and Stage
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Sound Sensor
- ☐ Wait for Clap Block
- ☐ Repeat/End Repeat Block

Lesson 10: Activities

REPETITION IN THE MEGILLAH (10 MIN)

Teachers will use this time to explain the three primary mitzvot that we perform during Purim. We listen to the Megillah, Send Mishloach Manot, and give gifts to the poor (Matanot La'evyonim). We will learn more about Mishloach Manot and Matanot La'evyonim later in this curriculum.

In introducing the mitzvah of listening to the Megillah, teachers will explain that we listen to the Megillah twice on the day of Purim. Ask students, *does anyone know when we listen to the Megillah?* We listen to the Megillah once at night (the night that Purim begins) and once the following morning.

Repetition takes place in multiple instances in the Megillah. Ask students, can anyone think of a part of the Megillah that repeats? An example is shaking the grogger and the use of Haman's name.

Make sure to introduce the following vocabulary.

מִקְרָא מִגִּילָה	mikra megillah	reading of Megillah Esther
רַעֲשָׁן (רַעֲשָׁנִים)	Raashan	Groggers
הָמָן	Haman	chief minister of King Achashverosh

INTRODUCE REPEAT LOOPS (15 MIN)

Take out the KIBOs and blocks. Using the large KIBO Says cards first, show students a sample KIBO program that has repeating blocks (see examples below). Ask students: What is the repeating pattern in this program? How many times does it repeat?

Identifying Patterns

In the program below, the repeating pattern is [White Light, Beep] and occurs four times.



In the program below, the repeating pattern is [Spin, Wait for Clap, Sing] and occurs twice. Note that the White Light block is not part of the repeating pattern.




Lesson 10: Activities

As a class, look back at your example KIBO programs with repeating patterns. Ask students: Is there a way I could make this program shorter? Demonstrate to students that the Repeat and End Repeat blocks can be used to make programs that are shorter and more efficient. Make a sample program using the Repeat blocks and the Repeat Forever parameter card. Emphasize that the robot only repeats the instructions in between the Repeat and the End Repeat blocks. Note to students how the robot will not stop unless you press the button (to stop it). Try another model program using the Repeat 2, 3, or 4 parameters.


What is a Repeat Loop?

Repeat and End Repeat are like the bread of a sandwich. The programming blocks put inside of them are like the filling. KIBO will only repeat commands that are placed inside of the **Repeat Loop** sandwich. Segments of the code placed outside of the sandwich will not be repeated.

Parameters are used to tell the robot how many times to repeat, or when to stop repeating. In the program below, KIBO will shake 4 times.



The diagram shows a sandwich-like structure with three layers. The top layer is a purple oval labeled 'REPEAT'. The middle layer is a blue ribbon labeled 'SHAKE'. The bottom layer is a purple oval labeled 'END REPEAT'.



The program sequence consists of six blocks: a green 'BEGIN' block, a grey 'REPEAT' block with a green circular arrow icon, a purple block with the number '4', a blue 'SHAKE' block with a blue circular arrow icon, a grey 'END REPEAT' block with a red circular arrow icon, and a red 'END' block.

KIBO ACTIVITY: PROGRAM MEGILLAH REPEAT LOOPS (30 MIN)

Students will create their own program of a part of the Megillah that uses repetition by using the Repeat blocks.

Example Blocks:



The example program sequence consists of six blocks: a green 'BEGIN' block, a grey 'REPEAT' block with a green circular arrow icon, a purple block with the number '2', an orange 'GING' block with a musical note icon, a blue 'SHAKE' block with a blue circular arrow icon, a grey 'END REPEAT' block with a red circular arrow icon, and a red 'END' block.

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle to share the program they created. Ask students, *what part of the Megillah did you choose to program? What is the area of repetition? How did you use KIBO and the KIBO blocks to repeat it?*

Lesson 11: Mishloach Manot

OVERVIEW

In this lesson, students will learn about mishloach manot by creating baskets and decorating them with two types of food to give to a friend.

ACTIVITIES

- Introduce Mishloach Manot (10 minutes)
- Mishloach Manot Baskets (15 minutes)
- Delivering Mishloach Manot (25 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall that the Jewish people fasted, prayed, and performed mitzvot as a nation
- Recall when we celebrate Purim
- Understand that we perform mitzvot by being active participants
- Identify how many people and how many kinds of food we give for mishloach manor

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Modularity
- ☐ Algorithms
- ☐ Design Process

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Repeat/End Repeat Blocks

Lesson 11: Activities

INTRODUCE MISHLOACH MANOT (10 MIN)

We perform the mitzvot of Purim by being active participants. Ask students, *What are some mitzvot we perform during Purim?* We listen to the Megillah, give mishloach manot, and give gifts to the poor.

אסתר ט:כ-כב	Esther 9:20-22
<p>וַיִּכְתֹּב מֹרְדֳּכַי אֶת־הַדְּבָרִים הָאֵלֶּה וַיִּשְׁלַח סָפָרִים אֶל־כָּל־הַיְּהוּדִים אֲשֶׁר בְּכָל־מְדִינוֹת הַמֶּלֶךְ אֲחַשְׁוֵרֶשׁ הַקְּרוֹבִים וְהַרְחוֹקִים: לֵקִים עֲלֵיהֶם לִהְיוֹת עֹשִׂים אֶת יוֹם אַרְבָּעָה עָשָׂר לַחֹדֶשׁ אֲדָר וְאֶת יוֹם חֲמִשָּׁה עָשָׂר בּוֹ בְּכָל־שָׁנָה וְשָׁנָה: כִּי־מִיָּמִים אֲשֶׁר־נָחֲוּ בָהֶם הַיְּהוּדִים מֵאֹיְבֵיהֶם וְהַחֲדָשׁ אֲשֶׁר נִהְפָּךְ לָהֶם מִיָּגוֹן לְשִׂמְחָה וּמֵאֲבֵל לְיוֹם טוֹב לַעֲשׂוֹת אוֹתָם יְמֵי מְשֻׁתָּה וְשִׂמְחָה וּמְשָׁלוּחַ מְנוֹת אִישׁ לְרֵעֵהוּ וּמִתְּנוּת לְאֲבִיּוֹנִים:</p>	<p>Mordecai recorded these events. And he sent dispatches to all the Jews throughout the provinces of King Ahasuerus, near and far, charging them to observe the fourteenth and fifteenth days of Adar, every year — the same days on which the Jews enjoyed relief from their foes and the same month which had been transformed for them from one of grief and mourning to one of festive joy. They were to observe them as days of feasting and merrymaking, and as an occasion for sending gifts to one another and presents to the poor.</p>

Ask students, *What does mishloach manot mean?* Mishloach manot is the sending of food baskets. During Purim we send this food basket to one person with two different kinds of food in it. These two different kinds of foods must have two different types of blessings for it to be considered fulfilling this mitzvah.

מְשָׁלוּחַ מְנוֹת	mishlo'ah manot	sending food baskets
-------------------	-----------------	----------------------

MISHLOACH MANOT BASKETS (15 MIN)

Students will create their own mishloach manot baskets based on those depicted in **Appendix C**.

They will create baskets and decorate them with two types of food made from construction paper or classroom supplies.

Students will create a class or school map.

KIBO ACTIVITY: DELIVERING MISHLOACH MANOT (25 MIN)

Students will attach the previously created mishloach manot baskets and program KIBO to deliver the basket to their classmates or other students in their grade.

Example Blocks:  + 

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a circle in the central area of the classroom to share the mishloach manot baskets they created.

Ask students, *What foods did you choose for your basket and why?*

Students may also share the program they plan to use to deliver their basket.

Lesson 12: Repeat Loops with Light and Distance Sensors

OVERVIEW

In this lesson, students will learn about the light and distance sensors and apply them to their Lesson 11 programs for delivering mishloach manot.

ACTIVITIES

- Mishloach Manot Review (10 minutes)
- Light and Distance Sensors (10 minutes)
- Deliver Mishloach Manot with Sensors (30 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall that the Jewish people fasted, prayed and performed the mitzvot as a nation
- Recall when we celebrate Purim
- Understand that we perform mitzvot by being active participants

POWERFUL IDEAS FROM COMPUTER

SCIENCE

- ☐ Control Structure
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Repeat/End Repeat Blocks
- ☐ Distance Sensor
- ☐ Light Sensor

Lesson 12: Activities

MISHLOACH MANOT REVIEW (10 MIN)

Students will review the concepts of mishloach manot. Ask students, *does anyone remember what Mishloach Manot is? How many people do we give Mishloach Manot to?* We give mishloach manot to one person with two different kinds of foods in it. The two different kinds of food are signified by having two different types of blessings.


משלוח מנות	mishlo'ah manot	sending food baskets
------------	-----------------	----------------------

LIGHT AND DISTANCE SENSORS (10 MIN)

Take out the KIBOs and blocks. Explain to students that KIBO has some of the same senses that we (the ability to “see” light and dark, to feel touch, to speak) and that today they will learn how KIBO is able to “see” light and dark. Explain that KIBO needs special programming instructions to tell KIBO what to do with the information from its Light sensor. Show the Repeat and End Repeat blocks, which are now familiar, and the new Until Light/Until Dark parameter cards. Create two example programs together, one which uses the Until Light parameter and the other with the Until Dark parameter. Run the programs, and have students discuss what the robot is doing in each scenario.

What is the Light Sensor?

KIBO's **Light Sensor** can detect light in the room around it. If a flashlight is shining on KIBO, the light sensor will tell KIBO that it is bright. If there are no lights shining on KIBO, the light sensor will tell KIBO that it is dark.




The diagram illustrates the Light Sensor block, which is a small orange robot head with a single eye. To its right are two parameter cards: 'UNTIL LIGHT' with a sun icon and 'UNTIL DARK' with a moon and star icon. Further right is a sequence of programming blocks: 'BEGIN' (green circle), 'REPEAT' (green square with a circular arrow), 'UNTIL LIGHT' (purple square with a sun icon), 'LIGHT ON' (yellow square with a lightbulb icon), 'END REPEAT' (red square with a circular arrow), and 'END' (red square).

Then introduce the Distance sensor. Create two example programs together, one which uses the Until Near parameter and the other which uses the Until Far parameter. Run the programs, and have students discuss what the robot is doing.

What is the Distance Sensor?

KIBO uses the **Distance Sensor** to see how near or far KIBO is from other objects. With Distance Parameters, the Distance Sensor can be used with Repeat Loops to control how KIBO moves.



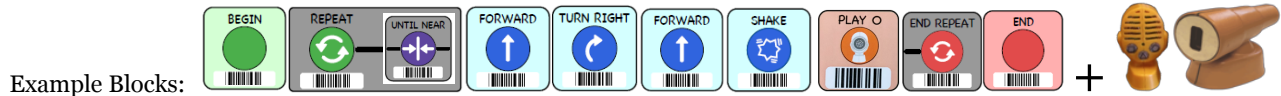
The diagram illustrates the Distance Sensor block, which is a small orange robot head with a single eye. To its right are two parameter cards: 'UNTIL NEAR' with a double arrow pointing towards each other and 'UNTIL FAR' with a double arrow pointing away from each other. Further right is a sequence of programming blocks: 'BEGIN' (green circle), 'REPEAT' (green square with a circular arrow), 'UNTIL FAR' (purple square with a double arrow pointing away), 'BACKWARD' (blue square with a downward arrow), 'END REPEAT' (red square with a circular arrow), and 'END' (red square).

Lesson 12: Activities

KIBO ACTIVITY: DELIVER MISHLOACH MANOT WITH SENSORS (30 MIN)

Teachers ask students, *how could you use the light and distance sensors to deliver mishloach manot?* Have students think about how they would use these sensors to reprogram their program from lesson 11.

Students will then reprogram KIBO to use repeat loops with light and distance sensors to deliver mishloach manot.



WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle and take turns presenting their KIBO program for delivering mishloach manot using sensors. Ask students, *how did you decide how to use your sensors? How does using sensors help with the delivery process?*

Lesson 13: Matanot La'evyonim

OVERVIEW

In this lesson, students will learn about the importance of giving back to their community. They will program KIBO to deliver their gifts using a town map.

ACTIVITIES

- Introduce Matanot La'evyonim (10 minutes)
- Plan Matanot La'evyonim Delivery (10 minutes)
- Deliver Matanot La'evyonim (30 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall that the Jewish people are active participants in mitzvot
- Recall that the Jewish people fasted, prayed and performed the mitzvot as a nation
- Recall when we celebrate Purim
- Identify the mitzvot of Purim

POWERFUL IDEAS FROM COMPUTER

SCIENCE

- ☐ Algorithms
- ☐ Modularity
- ☐ Hardware/Software
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Repeat/End Repeat Blocks
- ☐ Light Blocks/Output
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ Turntable and Stage

Lesson 13: Activities

INTRODUCE MATANOT LA'EVYONIM (10 MIN)

Ask students, *does anyone know what matanot la'evyonim is?*

מתנות לאֲבִיּוֹנִים	matanot la-evyonim	gifts/charity to the poor
---------------------	--------------------	---------------------------

Why do we give matanot la'evyonim?

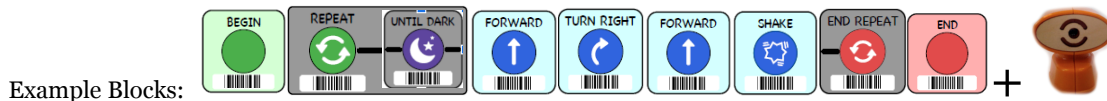
אסתר ט:כ-כב	Esther 9:20-22
<p>וַיִּכְתֹּב מֹרְדֵכַי אֶת־הַדְּבָרִים הָאֵלֶּה וַיִּשְׁלַח סָפָרִים אֶל־כָּל־הַיְּהוּדִים אֲשֶׁר בְּכָל־מְדִינֹת הַמֶּלֶךְ אַחֲשֻׁרְוֶשׁ הַקְּרוֹבִים וְהָרְחוֹקִים: לְקִים עֲלֵיהֶם לִהְיוֹת עֹשִׂים אֶת יוֹם אַרְבָּעָה עָשָׂר לַחֹדֶשׁ אָדָר וְאֶת יוֹם־חֲמִשָּׁה עָשָׂר בּוֹ בְּכָל־שָׁנָה וְשָׁנָה: כִּי־מִים אֲשֶׁר־נָחוּ בָהֶם הַיְּהוּדִים מֵאוֹיְבֵיהֶם וְהַחֹדֶשׁ אֲשֶׁר נִהְפָּךְ לָהֶם מִיָּגוֹן לְשִׂמְחָה וּמֵאֵבֶל לְיוֹם טוֹב לַעֲשׂוֹת אוֹתָם יְמֵי מְשֻׁתָּה וְשִׂמְחָה וּמִשְׁלוֹחַ מָנוֹת אִישׁ לְרֵעֵהוּ וּמִתְּנוּת לְאֲבִיּוֹנִים:</p>	<p>Mordecai recorded these events. And he sent dispatches to all the Jews throughout the provinces of King Ahasuerus, near and far, charging them to observe the fourteenth and fifteenth days of Adar, every year — the same days on which the Jews enjoyed relief from their foes and the same month which had been transformed for them from one of grief and mourning to one of festive joy. They were to observe them as days of feasting and merrymaking, and as an occasion for sending gifts to one another and presents to the poor.</p>

PLAN MATANOT LA'EVYONIM DELIVERY (10 MIN)

Students will do research in their town for areas with the most need. They will find the nearest soup kitchen or food pantry on a town map to determine which roads to take to reach them. They will plan a route to deliver their gifts.

KIBO ACTIVITY: DELIVER MATANOT LA'EVYONIM (30 MIN)

Students will navigate KIBO along their previously planned route using props (make a map, use classroom objects to identify places on the map that determine directions, etc.) to deliver Matanot La'evyonim. In doing so, they should practice the previously learned light and distance sensors.



WRAP-UP DISCUSSION (10 MIN)

Students will gather in a circle in a central area of the classroom to have a discussion. Ask students, *how would you feel giving gifts or receiving gifts if you were poor? How did you use KIBO to deliver matanot la'evyonim?*

Lesson 14: Conditional Statement

OVERVIEW

In this lesson, students will learn about conditional statements and use them to reprogram their delivery of matanot la'evyonim from lesson 13.

ACTIVITIES

- Introduce If Statements (10 minutes)
- Matanot La'evyonim and Mishloach Manot Review (10 minutes)
- Matanot La'evyonim Delivery With Conditionals (30 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall that the Jewish people are active participants in mitzvot
- Recall that the Jewish people fasted, prayed and performed the mitzvot as a nation
- Recall when we celebrate Purim
- Identify the mitzvot of Purim
- Explain the significance of matanot la'evyonim

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Control Structures
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Repeat/End Repeat Blocks
- ☐ Light Blocks/Output
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ If/End If Blocks
- ☐ Turntable and Stage

Lesson 14: Activities

INTRODUCE IF STATEMENTS (10 MIN)



Explain to students that in the programs they have learned so far, KIBO has only one choice of what instructions to do next. Now they will learn an instruction that gives KIBO two choices, and the Light and Distance sensors will help KIBO decide which set of instructions to follow each time the program is run.



Introduce the If and End If blocks, as well as the Near/Far and Light/Dark parameters. Demonstrate what happens when you do and do not put your hand in front of the Distance sensor when the Near/Far parameters are used. Create another program using the Light sensor and Light/Dark parameters and demonstrate what happens when you do and do not shine a light into the sensor.



What is an If Statement?






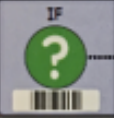

If Statements allow KIBO to make a choice based on what it can sense, just like your students can! Use these four parameters with If Statements. Remember to attach the appropriate sensors!

Note that unlike Repeat Loops where KIBO will keep repeating the commands inside the loop until it senses something, KIBO's sensor will only check one time before moving to the next part of the program.









Discuss situations in the real world where someone may have to make a choice depending on the circumstances of the environment. For example, “If it is rainy out, I will bring an umbrella”. Connect this idea to the concepts of Purim. For example, “If you hear the name Haman, clap your hands!”

MATANOT LA'EYONIM AND MISHLOACH MANOT REVIEW (10 MIN)

Ask students, *does anyone remember what matanot la'evyonim is? How is it different from mishloach manot?*

מתנות לאֲבִיּוֹנִים	matanot la-evyonim	gifts/charity to the poor
משלוח מנות	mishlo'ah manot	sending food baskets

Lesson 14: Activities

KIBO ACTIVITY: MATANOT LA'EYONIM DELIVERY WITH CONDITIONALS (30 MIN)

Students will reprogram KIBO from Lesson 13 to use at least one conditional and the light and/or distance sensor.

Example Blocks:



WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle to share their programs that incorporate conditionals for delivering matanot la'evyonim. Ask students, *how does your program improve or become more complicated when you incorporate conditional statements?*

Lesson 15: Nested Loops

OVERVIEW

In this lesson, students will learn about nested loops and how they can be used in performing the Purim mitzvot.

ACTIVITIES

- Introduce Nested Loops (10 minutes)
- Planning Nested Loops for the Mitzvot of Purim (10 minutes)
- Nested Loops for the Mitzvot of Purim (30 minutes)
- Wrap-up Discussion (10 minutes)
- Optional Extension

STUDENTS WILL BE ABLE TO...

- Identify mitzvot that we perform as active participants
- Explain the three mitzvot we perform during the day of Purim

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Control Structures
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Mitzvot
- ☐ Power of Community
- ☐ Minhagim of Purim

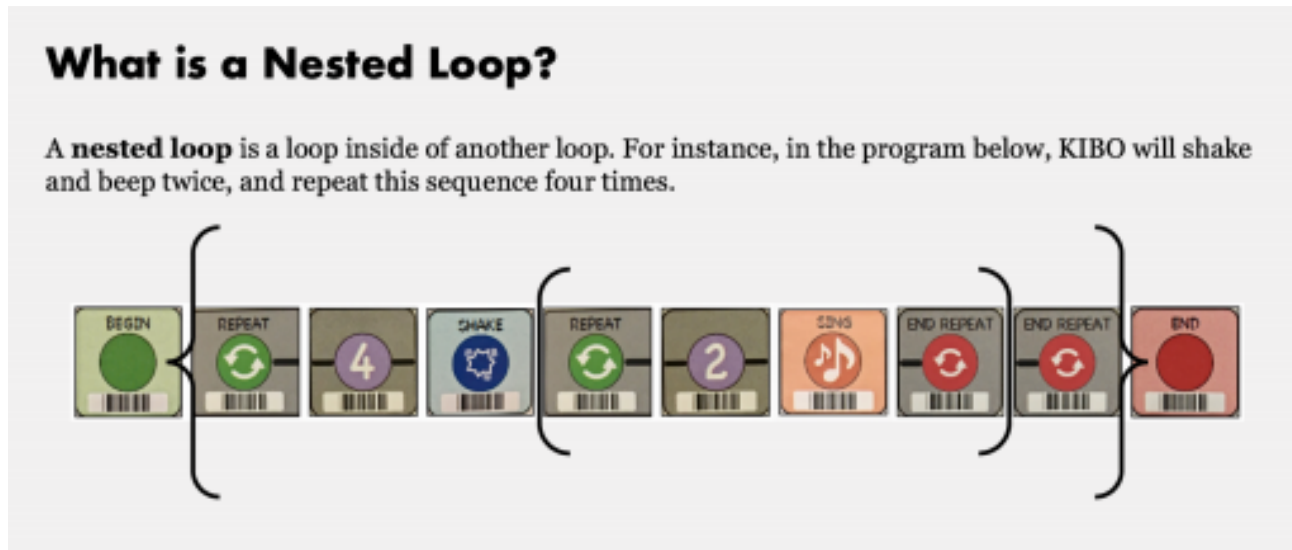
KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Repeat/End Repeat Blocks
- ☐ Light Blocks/Output
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ If/End If Blocks
- ☐ Nesting Conditional Loops
- ☐ Nesting Repeat Loops
- ☐ Turntable and Stage

Lesson 15: Activities

INTRODUCE NESTED LOOPS (10 MIN)

Nested loops are a way to make even more efficient programs, in which parts of instructions are repeated a different number of times. Show an example of a nested loop to students. Ask students: Which blocks are in the inner loop? How many times does it repeat? Which blocks are in the outer loop? How many times does it repeat?



PLANNING NESTED LOOPS FOR THE MITZVOT OF PURIM (10 MIN)

Students will discuss where a nested loop would be helpful in the mitzvot of listening to the Megillah, Mishloach Manot and Matanot La'evyonim.

Teachers will split the class into three groups, one for each mitzvot. They will then plan how they will use a nested loop to perform it.

KIBO ACTIVITY: NESTED LOOPS FOR THE MITZVOT OF PURIM (30 MIN)

Students will work in their group to make a program that either delivers Mishloach Manot or Matanot La'evyonim, or that relates to the listening of the Megillah. We have previously done activities for each of these mitzvot. This time the challenge is to incorporate at least one nested loop.

Since students now know all the KIBO blocks and concepts, encourage them to use as many different KIBO blocks as they can to produce their program.

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a central place in the classroom and take turns showing their KIBO program to their peers. The group that used the most types of blocks wins the race!

Lesson 15: Activities

OPTIONAL EXTENSION

Just like there can be a repeat inside of another repeat, nested statements are created using any kind of statement (if or repeat) inside of another statement (if or repeat). Before showing the example of a nested statement with KIBO, have students imagine how an automatic faucet works. Ask students: *What happens when you put your hand close to the sensor? Does this happen every time you make that movement?* Walk through the scenario with students: Every time (repeat forever) you move your hands close to the sensor (if), the water runs (end if) (end repeat).

Demonstrate another example with a stoplight. Ask students: What do you do if the light turns green? If the light turns yellow? If the light turns red? Explain to students how they could use multiple if statements to demonstrate how a driver would make a decision depending on the color of the stoplight.

What is a Nested Statement?

A **nested statement** is any statement inside of another statement. This could mean a repeat loop inside of an if statement, an if statement inside of a repeat loop, an if statement inside another if statement, etc. You can have as many nested statements in a program as you'd like, but make sure that each statement has its appropriate start and end block! For example, when the program below is running, KIBO will shake every time it senses that it is near something.



Lesson 16: Groggers

OVERVIEW

In this lesson, students will learn about the use of the grogger following hearing Haman's name. They will attach a grogger to their KIBO and practice using conditionals for what KIBO will do whenever they say Haman's name.

ACTIVITIES

- What is a Grogger? (10 minutes)
- Crafting Your Own Grogger (20 minutes)
- KIBOs as Groggers (20 minutes)
- Wrap Up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Identify Haman's role in the story of Esther
- Understand the significance of the grogger
- Explain when we shake the grogger

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Control Structures
- ☐ Representation
- ☐ Hardware/Software
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community
- ☐ Perseverance

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Repeat/End Repeat Blocks
- ☐ Light Blocks/Output
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ If/End If Blocks
- ☐ Turntable and Stage

Lesson 16: Activities

WHAT IS A GROGGER? (10 MIN)

Ask students, *does anyone know what a grogger is? When do we shake our groggers?* We make noise with noisemakers, groggers, when we hear Haman's name while listening to the Megillah. The reason we do this is to erase Haman's name. Ask students, *why would we want to erase Haman's name?* Haman hated the Jewish people and wanted to destroy them in one day. Teach students the Hebrew word for grogger.

רַעֲשָׁן (רַעֲשָׁנִים)	Raashan	Groggers
------------------------	---------	----------

CRAFTING YOUR OWN GROGGER (20 MIN)

Students will create their own groggers using paper towels or toilet paper rolls, cloth, and rubber bands.



KIBO ACTIVITY: KIBOS AS GROGGER (20 MIN)

Students will attach their groggers to their KIBO. During Purim, if you say Haman's name, then you shake the grogger. Have students create their own conditional for when to "shake the grogger." For example, program the wait for clap block so that when you clap, KIBO shakes to "shake the grogger." Another example would be to program KIBO to shake when it gets too close to something using the distance sensor.

Example Blocks:



Lesson 16: Activities

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle in a central area of the classroom to share their grogger conditionals. After students have shared their programs, ask them, *how did you choose this program? How would you do it differently next time? How is using the KIBO to shake the grogger different than if you did it yourself?*

Lesson 17: Hamantaschen

OVERVIEW

In this lesson, students will learn about the ingredients necessary to make Hamantaschen. They will send KIBO on a scavenger hunt to find the ingredients necessary to bake their Purim treat.

ACTIVITIES

- Introduction of Hamantaschen (10 minutes)
- Create Your Own Hamantaschen (15 minutes)
- Ingredient Scavenger Hunt (25 minutes)
- Wrap-up Discussion and Song Session (10 minutes)

STUDENTS WILL BE ABLE TO...

- Identify Hamantaschen
- Understand the significance of Hamantaschen

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Modularity
- ☐ Control Structures
- ☐ Representation
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Repeat/End Repeat Blocks
- ☐ Light Blocks/Output
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ If/End If Blocks
- ☐ Turntable and Stage

Lesson 17: Activities

INTRODUCTION OF HAMANTASCHEN (10 MIN)

There are various opinions on why we eat Hamantaschen. One opinion is that we eat Haman Taschen's on Purim as a symbolic food to represent Haman's pocket symbolizing the money Haman offered to king Ahashverosh for permission to destroy the Jews.

Ask students, *What is a Hamantaschen? What kinds of Hamantaschen do you make with your family?*

Teach students the Hebrew term for Hamantaschen. It is as follows.

אַזן הָמָן (אַזני הָמָן)	Ozen Haman	Hamen Taschen
--------------------------	------------	---------------

CREATE YOUR OWN HAMANTASCHEN (15 MIN)

Have students create Hamantaschen with Paper Plates and fill it with class materials of their choosing. An example is shown below.



KIBO ACTIVITY: INGREDIENT SCAVENGER HUNT (25 MIN)

Have students put Hamantaschen ingredients in different places around the room (if teachers do not have physical ingredients, they can write or print pictures of them to scatter around the room). Program KIBO to reach the ingredients and then place the ingredient on KIBO. Then program KIBO to spin, shake, etc. to show that it is mixing the ingredients.

Example Blocks:



Lesson 17: Activities

WRAP-UP DISCUSSION AND SONG SESSION (10 MIN)

Students will gather in a technology circle in a central area of the classroom to listen to the song “Mishenichnas Adar” on Youtube at https://youtu.be/6oH_HbolKDI. The lyrics are as follows.

משנכנס אדר מרבין בשמחה	Mi-she-nikhnas adar marbin b'simha
------------------------	------------------------------------

Ask students, *what materials did you need to bake Hamantaschen? What other foods might use the same ingredients?*

Lesson 18: Purim Carnival

OVERVIEW

In this lesson, students will be able to express knowledge of all KIBO concepts and tools. They will participate in a carnival Hamantaschen game.

ACTIVITIES

- Ani Purim (10 minutes)
- Craft Hamantaschen Game (15 minutes)
- KIBO and the Hamantaschen Game (25 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Understand that many people today celebrate Purim with a Purim Carnival

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Control Structures
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community
- ☐ Mitzvot

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Repeat/End Repeat Blocks
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ Turntable and Stage

Lesson 18: Activities

ANI PURIM (10 MIN)

Explain to students that today, Purim is celebrated by many with a Purim Carnival. We are going to program KIBO to play a Carnival game.

Play the song “Ani Purim” to students using the YouTube link, <https://youtu.be/hnobMoXtahg?t=8>.

The lyrics are as follows.

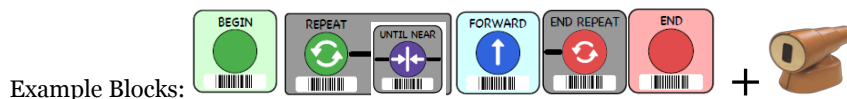
אַני פּוּרִים, אַני פּוּרִים שָׁמַח וּמְבִדֵּחַ הָלֹא רַק פֶּעַם בִּשְׁנָה אָבוּא לְהִתְאַרֵּחַ	Ani purim, ani purim same'ah umvade'ah Halo rak pa'am bashana avo l'hitare'ah
רַבִּי פּוּרִים, רַבִּי פּוּרִים אֶמֹר נָא לִי מַדּוּעַ מַדּוּעַ לֹא יָחֹל פּוּרִים פְּעָמַיִם בִּשְׁבּוּעַ	Rabi purim, rabi purim emor na li madu'a Madu's lo yahol purim pa'amayim bashavu'a
הֵידָד פּוּרִים, הֵידָד פּוּרִים הָכּוּ תוֹף וּמַצְלָתַיִם הוּ מִי יִתֵּן וּבָא פּוּרִים לְחֹדֶשׁ לְחֹדֶשׁ	Heydad purim, heydad purim haku tof um-tziltayim Ho mi yiten uva purim l'hodesh l'hod-shayim

CRAFT HAMANTASCHEN GAME(15 MIN)

With the help of your class, create a Hamantaschen game. Take a big piece of cardboard or four pieces and cut four holes out along the bottom (big enough for KIBOs to roll through). Label the holes based on Hamantaschen fillings (ex. Date, Orange, Apple, Raisin, etc.) and stand them up around your room. Students will be programming KIBO to move through the filling of their choice in the next activity.

KIBO ACTIVITY: KIBO AND THE HAMANTASCHEN GAME (30 MIN)

Students think about what they would want to put in their Hamantaschen and program KIBO to go through the cut out of the filling they want. Hamantaschen created in lesson 17 will be placed on the other side of the board for the KIBO to reach when they get through the cut out of their choosing.



WRAP-UP DISCUSSION (10 MIN)

Students will gather in a circle in a central area of the classroom. Remind students that today, we celebrate Purim with a celebration. Ask students, *what does your community do to celebrate Purim? How could you play the Hamantaschen game we created without KIBO?* This game is similar to the American game, corn-hole. If we played it without KIBO, we could make holes in a piece of cardboard, label them Hamantaschen flavors, and throw a soft ball or a hacky-sack into the holes of our choosing.

Lesson 19: Costume Party

OVERVIEW

In this lesson, students will learn about KIBO as a tool for representation and the ability to get creative with KIBO. They will decorate KIBO to dress up as their favorite character and program KIBO to act as that person from the story of Esther.

ACTIVITIES

- Why Costumes? (10 minutes)
- KIBO Dress-Up (20 minutes)
- KIBO Purim Character (20 minutes)
- Wrap-up Discussion (10 minutes)

STUDENTS WILL BE ABLE TO...

- Recall the main characters in the story of Esther
- Understand why we dress up for Purim

POWERFUL IDEAS FROM COMPUTER

SCIENCE

- ☐ Algorithms
- ☐ Representation
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Light Blocks/Output
- ☐ Repeat/End Repeat Blocks
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ If/End If Blocks
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ Turntable and Stage

Lesson 19: Activities

WHY COSTUMES? (10 MIN)

Ask students, *what do you do to celebrate Purim?* Today, many people celebrate by dressing up. *Does anyone know why we dress up when we celebrate Purim?* We dress up to remember that Esther hid her true identity from the King. Teach students the Hebrew word for costumes.

תַּחֲפוֹסֶת (תַּחֲפוּשׁוֹת)	Tachposet	Costumes
-----------------------------	-----------	----------

KIBO DRESS-UP (10 MIN)

Students will determine which Purim character their group wants to dress KIBO as and plan how they will decorate KIBO to look like him/her.

KIBO ACTIVITY: KIBO PURIM CHARACTER (30 MIN)

Students will decorate KIBO to be dressed up as a Purim character (10 minutes) and use the blocks to make KIBO act as the character of their choosing (20 minutes).

For example, students decorate KIBO as King Achverosh and program KIBO to act like the leader of Shushan.

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a technology circle in a central area of the classroom with their KIBO characters and programming blocks. Have students take turns sharing which character they chose and allowing their KIBO to perform their program. Ask students, *how did you choose what your character was going to do? What could you do differently? What is your favorite part about your character?*

Lesson 20: Class Purim Parade

OVERVIEW

In this lesson, students will program their KIBOs to move and celebrate the story of Esther. They will be able to express their knowledge of all the KIBO tools and concepts to create a class parade.

ACTIVITIES

- Celebrating Purim (10 minutes)
- Purim Parade Float (15 minutes)
- KIBO Purim Parade (25 minutes)
- Wrap-up Discussion (10 minutes)
- Optional Extension

STUDENTS WILL BE ABLE TO...

- Recall the names of the main characters in the Purim story

POWERFUL IDEAS FROM COMPUTER SCIENCE

- ☐ Algorithms
- ☐ Control Structures
- ☐ Hardware/Software
- ☐ Debugging

POWERFUL IDEAS FROM PURIM

- ☐ Minhagim of Purim
- ☐ Power of Community
- ☐ Mitzvot
- ☐ Perseverance

KIBO CONCEPTS

- ☐ Begin/End Blocks
- ☐ Movement Blocks (Forward, Backward, Turn Left, Turn Right)
- ☐ Spin/Shake Blocks
- ☐ Light Blocks/Output
- ☐ Repeat/End Repeat Blocks
- ☐ Sing/Beep Blocks
- ☐ Sound Sensor
- ☐ Sound Recorder
- ☐ Sound Recorder Blocks
- ☐ Wait for Clap Block
- ☐ If/End If Blocks
- ☐ Distance Sensor
- ☐ Light Sensor
- ☐ Nesting Repeat Loops
- ☐ Nesting Conditional Loops
- ☐ Turntable and Stage

Lesson 20: Activities

CELEBRATING PURIM (10 MIN)

Ask students to remember who the main characters of the Purim story are. Have them take turns stating a character's name.

אֶסְתֵּר	Esther	Mordechai's cousin
מֶרְדֵּכַי	Mordechai	Jewish leader
אֲחַשְׁוֶרֶשׁ	Ahashverosh	king of Persia (who ruled over 127 provinces)
וַשְׁתִּי	Vashti	Achashverosh's wife/queen
הָמָן	Haman	chief minister of King Achashverosh

Ask, *does anyone know what we do to celebrate Purim?* We celebrate Purim by having what is called a Mishteh. This is a festive Purim meal.

מִשְׁתֵּה/סְעוּדַת פּוּרִים	mishteh/se'udat Purim	a festive Purim meal
-----------------------------	-----------------------	----------------------

PURIM PARADE FLOAT (15 MIN)

Students will color and decorate the finger puppets printed from online or create their own (See **Appendix B** for document with puppets). They will then attach the puppets to their KIBO to create a “float” for the Purim Parade in the next activity.

KIBO ACTIVITY: KIBO PURIM PARADE (25 MIN)

Students will program their KIBO to move and celebrate the story of Esther. They have the freedom to use any of the KIBO blocks, outputs, inputs, etc. to make their KIBO celebrate.

WRAP-UP DISCUSSION (10 MIN)

Students will gather in a central space within the classroom with their decorated KIBOs and send their KIBOs off to create a class parade.

Play the following YouTube Purim medley to celebrate Purim: <https://www.youtube.com/watch?v=xrUoxz1MqGo>

OPTIONAL EXTENSION

Invite families to be a part of a Purim Mishte, where you eat food and celebrate the story of Esther together. At this mishte, students can teach their parents how they used KIBO and what they learned about Purim.

Appendix A

PURIM NAMES MATCHING GAME

- I. Cut out each name and each description associated with it.
- II. Separate the class into small groups
- III. Lay the names and descriptions on the floor or a table in front of each group of students
- IV. Mix the cards so it is not clear which name matches which description
- V. Each team must place the name next to the proper description
- VI. The team that connects all the words with the correct description first, wins!
- VII. For an **extension**, use the Hebrew spelling of the names

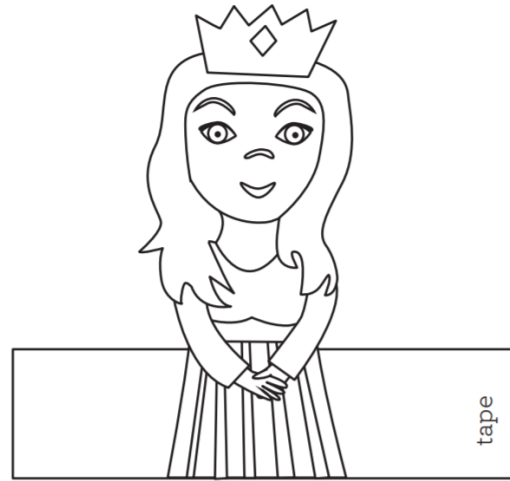
Shushan	Capital city of Persia	שׁוּשָׁן
Esther	Mordechai's cousin	אֶסְתֵּר
Mordechai	Jewish leader	מֹרְדֵּכַי
Ahashverosh	king of Persia (who ruled over 127 provinces)	אֲחַשְׁוֵרֶשׁ
Vashti	Achashverosh's wife/ queen	וַשְׁתִּי
Haman	chief minister of King Achashverosh	הָמָן

Appendix B

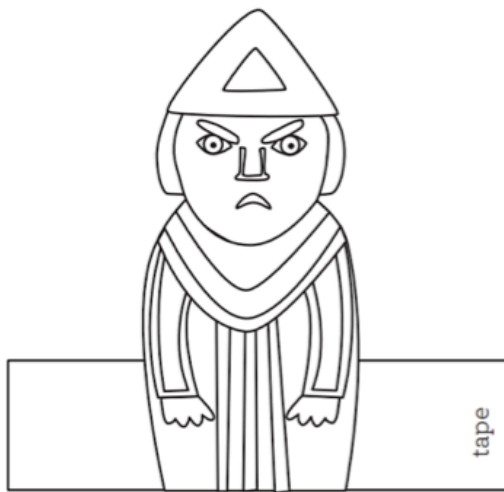
KIBO PURIM PUPPETS



Queen Vashti



Queen Esther



Haman



King Ahasuerus



Mordechai

Appendix C

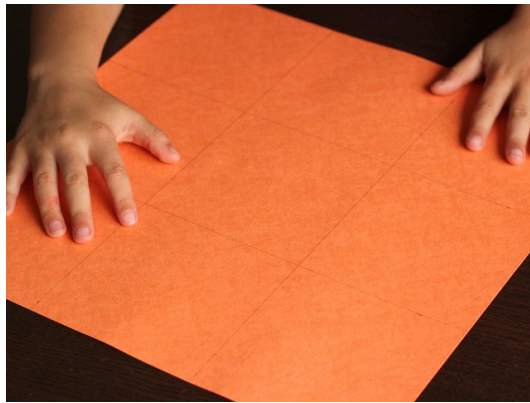
MISHLOACH MANOT BASKETS

To build your own Mishloach Manot Baskets out of construction paper, you will need the following craft materials for each basket.

- 1 sheet of construction paper cut to 12×12 inches in size, which will create the main body of your basket.
- 1-2 sheets of construction paper in a contrasting color, which you will use to cut strips.
- stapler
- a pencil
- a ruler
- scissors

First, you'll need to measure out the bottom of your paper basket. Use a ruler to measure a 4×4 inch square in the center of your main 12×12 inch square sheet of paper.

Use the ruler and a pencil to create straight lines that will create a grid. You will have four lines and nine boxes.

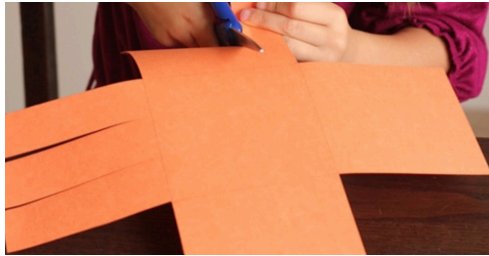


On each corner of the paper, there will be a box. Cut out the corner boxes to create a plus sign.

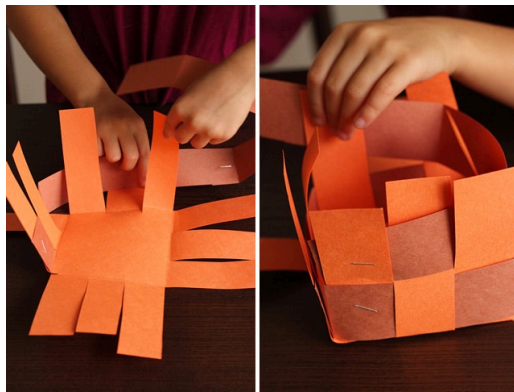


Form walls around the basket by folding the plus sign along the remaining lines,

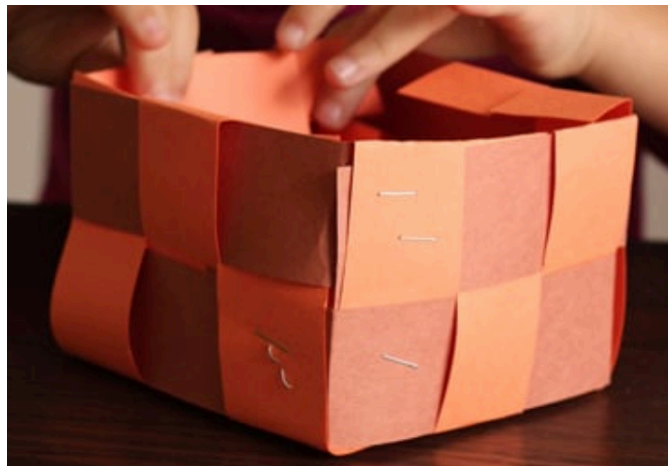
Cut three strips on each side of the plus sign by cutting two lines, stopping at the edge of the square.



Next, you'll need to cut strips from the second color construction paper to weave into the basket.



Staple the papers together to create a box similar to below.



For more information, please review the steps and guidelines at <https://toriavey.com/home-garden/woven-paper-mishloach-manot-baskets-for-purim/>.