

UNPLUGGED

Happy Maps

Lesson time: 20 Minutes Basic lesson time includes activity only. Introductory and Wrap-Up suggestions can be used to delve deeper when time allows.

LESSON OVERVIEW

At the root of all computer science is something called an algorithm. The word “algorithm” may sound like something complicated, but really it’s just a list of instructions that someone can follow to achieve a result. To provide a solid base for the rest of your students’ computer science education, we’re going to focus on building a secure relationship with algorithms.

TEACHING SUMMARY

Getting Started - 10 minutes

- 1) [Vocabulary](#)
- 2) [Step-by-Step](#)

Activity: Happy Maps - 20 minutes

- 3) [Happy Maps: Single-Step Adventure](#)

Wrap-up - 5 minutes

- 4) [Flash Chat](#) - What did we learn?
- 5) [Vocab Shmocab](#)

Assessment - 10 minutes

- 6) [Move the Flurbs Assessment](#)

LESSON OBJECTIVES

Students will:

- List steps to move character around a map
- Arrange directions to reach predetermined goal
- Predict where character will land, given a list of steps

TEACHING GUIDE

MATERIALS, RESOURCES AND PREP

For the Student

- Maps and arrows from [Happy Maps: Single-Step Adventure](#)
- Game Pieces: Flurbs, Arrows, and Things
- Assessment Worksheet: [Move the Flurbs Assessment](#)
- Scissors

- Glue


For the Teacher

- [Lesson Video](#)
- Teacher Lesson Guide
- Print one [Happy Maps: Single-Step Adventure](#) for each group
- Print one [Move the Flurbs Assessment](#) for each student

GETTING STARTED (10 MIN)

1) Vocabulary

This lesson has one new and important word:



New Word!

Algorithm

Say it with me: Al-go-ri-thm

A list of steps that you can follow to finish a task.

Algorithm - Say it with me: Al-go-ri-thm
A list of steps that you can follow to finish a task.

2) Step-by-Step

- Ask your students for directions to the chalkboard.
 - If they start shouting simultaneously, explain that you can only hear one instruction at a time. Call on students individually if that helps.
- When you reach the board, ask for instructions to draw a smiley face.
 - Again, request one step at a time.
- Explain that many tasks can be described using a specific list of instructions. That list is called an algorithm.
- Challenge your students to work together in small groups to come up with algorithms for their single-step and double-step mazes.

LESSON TIP

Students can work in pairs to create the adventures, then work in pairs to solve the adventures of others. If this feels too chaotic you can work together as a class and create the adventure on a document camera, then work together to solve it.

ACTIVITIES: (20 MIN)

3) [Happy Maps: Single-Step Adventure](#)

- This worksheet helps teach students how to think ahead in order to plan a short route from the Flurb's start location to the final location, just one square away.

- Print out an activity packet for every group (ideally 2 to 4 students) and cut the Maps apart. Leave the arrow symbols for the students to cut apart.
- Explain the rules to the class, making sure to emphasise the new word "algorithm."

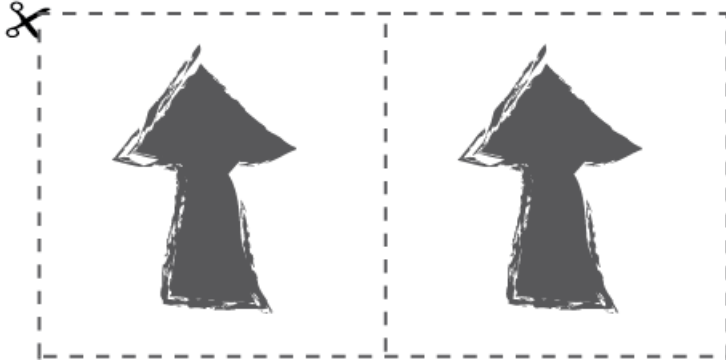
Flurbs are happy, fuzzy little things.

Flurbs love to eat fruit. Fruit is hard to find in Flurb Town. Use the maps to help the Flurb find some fruit.

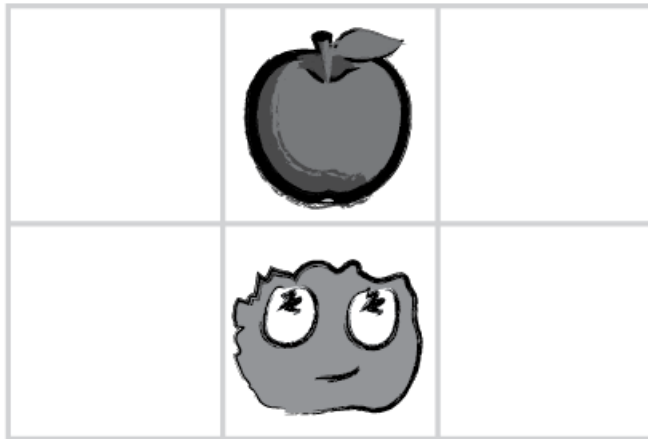
Work with your group to decide which direction the Flurb needs to step to get to the fruit.

Directions for Class:

- 1) Cut out an arrow for each member of your team.



- 2) Start with Map 1 to help the Flurb look for fruit.



Which way should the Flurb step to get to the fruit?



- 3) Have each member of your group put an arrow next to the map to vote for which way the Flurb should step.
- 4) If not all arrows are pointing the same way, talk to each other and decide as a group which way the arrow should point.
- 5) When your whole group agrees on a direction, your team can share your answer with the teacher.

6) If your answer is correct, move on to the next map.

WRAP-UP (5 MIN)

4) Flash Chat: What did we learn?

- Did you feel like you were actually telling the Flurb what to do?
- What would it be like to control a robot that way?
- What would you create if it were that easy to tell a computer what to do?

LESSON TIP

Flash Chat questions are intended to spark big-picture thinking about how the lesson relates to the greater world and the students' greater future. Use your knowledge of your classroom to decide if you want to discuss these as a class, in groups, or with an elbow partner.

5) Vocab Shmocab

- Which one of these definitions did we learn a word for today?

"Breaking something into exactly two pieces"

"A list of steps that you can follow to finish a task"

"The plastic coating on the end of a shoelace"

...and what is the word that we learned?

ASSESSMENT (10 MIN)

6) Move the Flurbs

- Hand out the worksheet titled "Move the Flurbs" and allow students to complete the activity independently after the instructions have been well explained.

EXTENDED LEARNING

Use these activities to enhance student learning. They can be used as outside of class activities or other enrichment.

Create Your Own

- Allow the students to guide you toward solving a problem (that you provide) one step at a time. Point out that every time they make a step, the rest of the adventure gets easier. If the students are still excited by the exercise, give them a more complicated configuration to solve.

Flurb Flash

- Cycle quickly through single-step puzzles on your projector. Have the students hold up an arrow card or simply point in the direction that they think the Flurb should move.



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