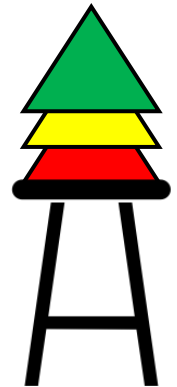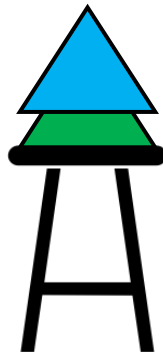# Chip Chip Revolution: Initial Setup

CHIP KIDS

Large printout/projection of the visual code – make sure you can see this behind the cones!
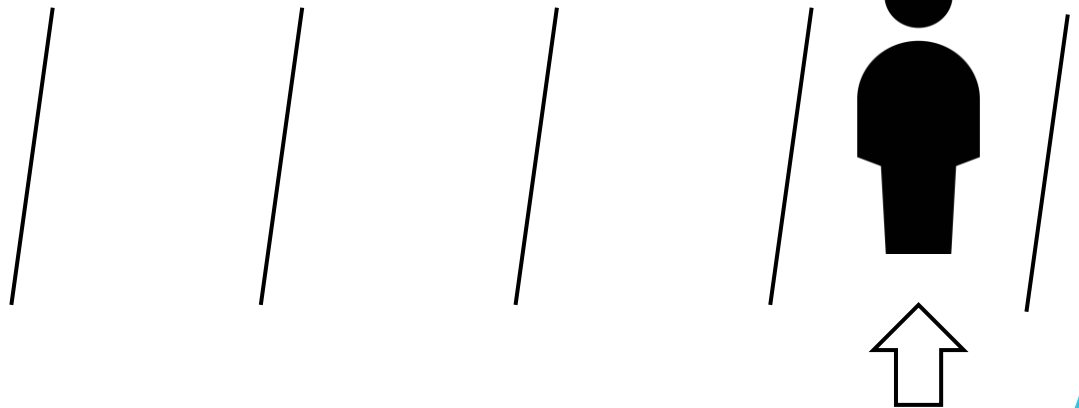
Stacks of colored cones <u>in this order</u>
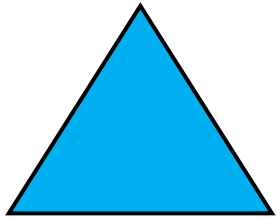
(OPTIONAL) Short stools for each cone stack

(OPTIONAL) Tape marking out four rectangles in front of the cone stacks

You start standing here, facing the cones
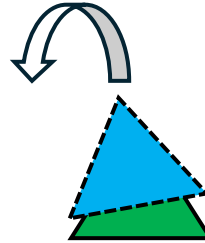
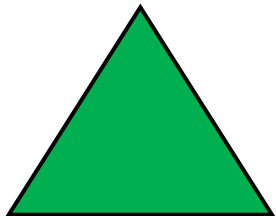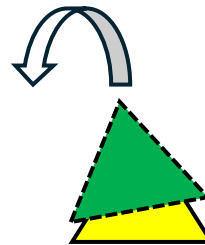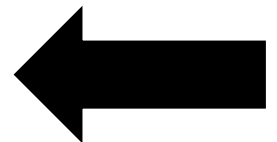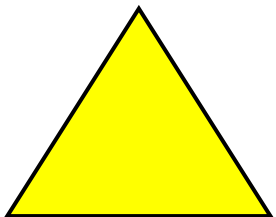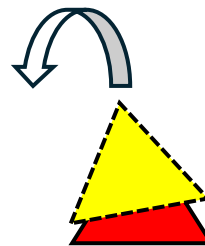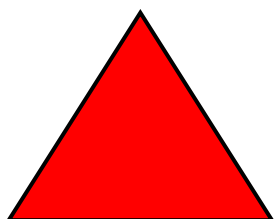|			
BLUE cone on top	: The Fresh	Remove top cone (BLUE to GREEN)	Move RIGHT
GREEN cone on top	: Gangnam Style	Remove top cone (GREEN to YELLOW)	Move LEFT
YELLOW cone on top	: Floss	Remove top cone (YELLOW to RED)	Move LEFT
RED cone on top	: Dab	Stop!	

Chip Chip Revolution: Instructions

CHIP KIDS

1. Today, we are going to learn about **Turing Machines**, a type of computer program with two main elements:
   - A long line called a **tape**, broken down into **cells** that each store one piece of information (e.g. a number, letter, or color)
   - A **head** which occupies one cell at a time, which **reads** the information in the cell and takes one or more actions according to a set of predefined rules, including modifying the information in the cell, moving one cell to the left or right, or stopping the program.

2. As it turns out, we can simulate Turing Machines through the power of dance! Today, you will be acting as the head of the Turing Machine, and according to a set of four instructions, will perform dance moves and move around behind a row of colored cones (the tape). Look at the Initial Setup page of your packet to get a sense for how everything will be arranged in your classroom.

3. Look at the Visual Code page of your packet. Note that there are four different rows, each corresponding to a different color of cone. When that color of cone is in front of you, you will perform multiple actions in response; usually, you will do a dance move, remove the top cone, and move one cell to the left or right.

4. Turn to the Step-by-Step Breakdown page of your packet, which illustrates what each step of the program will look like. The first step and part of the second step have already been filled out for you; use the Visual Code to help complete the rest of the steps. For each step, you should fill in the following information:
   - A stick figure where you will be
   - The color of the top cone in front of you, and the colors of the other top cones
   - The dance move you will do
   - An arrow to indicate which cone is being removed
   - Another arrow to indicate whether you will move to the left or right

5. Once everyone has completed their step-by-step breakdowns, your teacher will choose volunteers to perform the program! See if the steps you and your peers perform match your step-by-step breakdown. Your teacher may also share an answer key with you all to discuss and check your work.
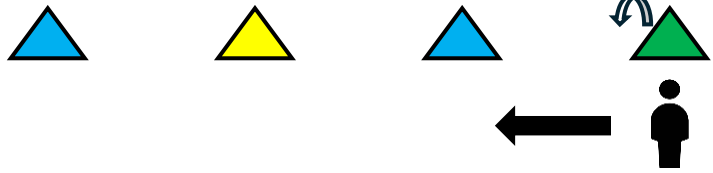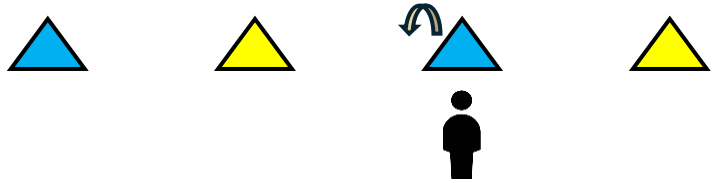
Chip Chip Revolution: Step-by-Step Breakdown

CHIP KIDS

STEP 1

Green = _Gangnam Style_
color   dance move

STEP 2

Blue = _____
color   dance move

STEP 3

_____ = _____
color   dance move

STEP 4

_____ = _____
color   dance move

STEP 5

_____ = _____
color   dance move

STEP 6

_____ = _____
color   dance move

STEP 7
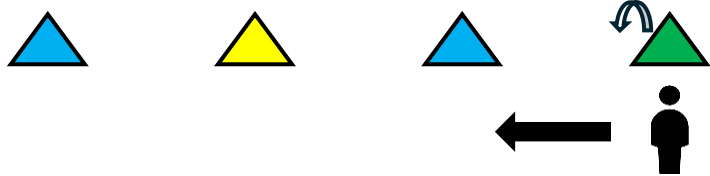
_____ = _____
color   dance move

NAME: _____

Chip Chip Revolution: Answer Key

CHIP KIDS

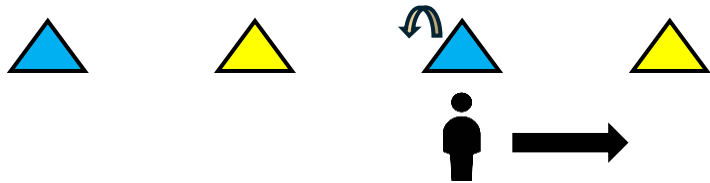### STEP 1

<u>Green</u> = <u>Gangnam Style</u>
color   dance move

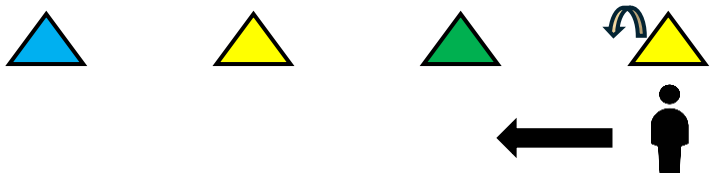### STEP 2

<u>Blue</u> = <u>The Fresh</u>
color   dance move

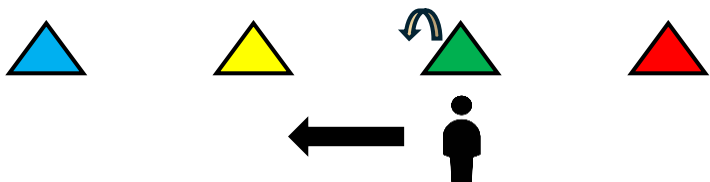### STEP 3

<u>Yellow</u> = <u>Floss</u>
color   dance move

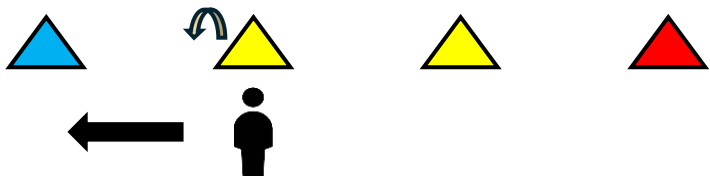### STEP 4

<u>Green</u> = <u>Gangnam Style</u>
color   dance move

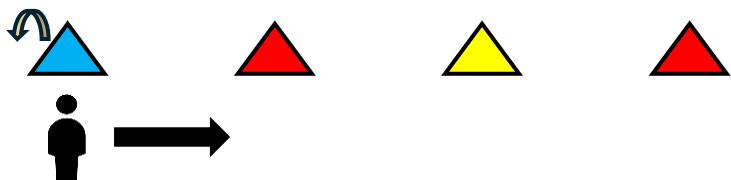### STEP 5

<u>Yellow</u> = <u>Floss</u>
color   dance move

STEP 6

<u>Blue</u> = <u>The Fresh</u>
color   dance move

STEP 7

<u>Red</u> = <u>Dab</u>
color   dance move