CHALK IT UP!

With Alaska 4-H

July 2020

SIDEWALK CHALK CODING KIT

USE SIDEWALK CHALK TO MAKE BASIC CODE FOR YOUR FAMILY AND FRIENDS TO FOLLOW

alaska4h.org/chalk-it-up-with-alaska-4-h.html

Adapted from our friends at Utah State University Extension 4-H

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INTRODUCTION

More than 1,000 years ago, soldiers in the Roman army got exercise by hopping through numbered squares drawn on the ground. Little kids liked the game so much that they copied it. They drew their own smaller squares, and that’s where hopscotch came from. This kit will allow youth to make a very modern-day hopscotch game; more of a sidewalk chalk obstacle course written in code. Youth will use computational thinking to break down their chalk obstacle course into individual precise steps. They will then write the algorithms (set of instructions designed to perform a specific task) in chalk for someone to follow. This kit includes a Chalk Code card that can be used for reference, but youth can also make up their own codes and put them together to make an algorithm. Writing algorithms in code with chalk is similar to writing them for computers. Coding is the method of giving directions to a computer to perform a specific task. You may have also heard it referred to as “software programming” or “computer programming.” Writing code with chalk is similar because it is writing directions or actions for a person to perform.

OBJECTIVES

Youth will gain an understanding that using computational thinking to write effective algorithms in code with chalk is essential to giving instructions to someone on how to perform a task. For example, the individual performing the activity will go from START to END while completing all tasks written in between. This is similar to how coding is used to give computers directions to perform a task, such as moving a character across the screen.

SUPPLY LIST

- Instructions (this packet)
- Sidewalk Chalk
- “Chalk Codes” card
DO

STEP 1:

- Review the activity
  - Lay the supplies out and read the instructions
  - Start planning in your head or on a piece of paper what codes or directions you would like to write with the chalk (see STEP 2 for more coding information). This requires computational thinking, or breaking down the entire process into individual, precise steps.

STEP 2:

- Understanding Chalk Code
  - When coding not only do you write the code (or action), you also write how many times you do the action. For example: if you want to put 5 frog jumps in your code, you would write FROG x5 and then put the O and X’s 5 times on the sidewalk (see chalk code chart for frog jump code).
  - If you would like to have your friends or family spin 2 times, you would write SPIN x2 and draw the spiral.
  - Putting all the codes into a set is creating an algorithm for someone to follow. Put each precise step into the algorithm to make a full obstacle course to follow.

STEP 3:

- Write your Chalk Code
  - Start writing your algorithm on the sidewalk.
  - You can alternate between colors and codes to make more or less challenging courses.
  - Use your own codes too; you are not limited to the ones on your Chalk Code card.

STEP 4:

- TEST
  - Test out your code. Is it how you want it?
  - Make any adjustments or improvements to your code. You can always erase code with water if you want to change it.
FINAL PRODUCT:

Now you have a fun algorithm of codes that make up a chalk obstacle course. Your family and friends can enjoy the course until it gets washed away. Don’t worry though, you can always make a new one. Turn to the last page for how you can LEVEL UP.

REFLECT

- Did your family and friends understand your algorithm?
- Why is it important to write the number of times you want someone to do something?
- How is chalk coding like computer coding?

APPLY

- Giving directions clearly is important. Using computational thinking allows you to break down the directions to very simple steps. Think about coding the next time you give someone directions to do something. Were your instructions clear? Did they understand what you were asking them to do?
- Try using computational thinking with someone. Have them give you instructions on how to make a peanut butter and jelly sandwich. Follow their instructions literally, just like a computer would. IF they say put the peanut butter on the bread you would take the jar of peanut butter and place it on top of the loaf of bread. You want specific instructions. For example: remove one slice of bread from the bag and lay it on the plate. Open the jar of peanut butter, etc.

MASTERY

- Try coding on the computer. There are many programs online that can help you learn basic computer code. Try http://www.familycodenight.org/start.html
- For more advanced algorithms you can add in:
  - Loops: sequences that repeat over and over (for example they can frog jump, spin, and then repeat for a determined number of times before they move to the next task.
  - Conditionals: ad in “if, then” statements. For example: there could be a code at the beginning that says IF the chalk changes color, THEN you need to turn to the right.
LEVEL UP

• Once you have your packet and get coding, please share your code with us for other Alaska 4-H'ers to try!
  o Using the form on our website: alaska4h.org/chalk-it-up-with-alaska-4-h.html upload a photo of your code (chalk or handwritten out form) and you will LEVEL UP!

• Whenever you LEVEL UP, your name and address will be sent to a staff member responsible for sending out the next level’s challenge item, and the coding can continue! The challenge item will be something new that you will have to incorporate into your algorithm.

• Remember to check back in and see what other coders are coming up with, and try them out!

OTHER COOL ACTIVITIES

• While you are on the webpage, check out our “other cool activities” where there are lots of fun ideas to explore using sidewalk chalk to code