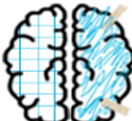


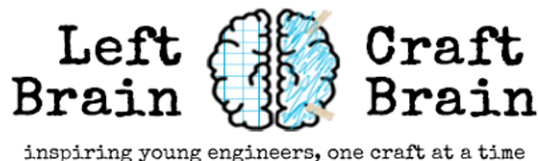
candy cane CODING



Left  Craft
Brain Brain

inspiring young engineers, one craft at a time

Thanks so much for joining me on my mission to get kids learning and loving STEAM (science, technology, engineering, art, and math)!! If you ever have questions about any of my products or the activities you see on my site, feel free to email me at anne@leftbraincraftbrain.com. -Anne



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INTRO

WHAT IS STEAM?

STEAM is the abbreviation for Science, Technology, Engineering, Art, & Math.

It's an integrated approach to learning that encourages students to think more broadly about real-world problems.

Why do we need the A in STEAM?

Because art makes STEM better! Here are some of the concrete benefits of incorporating the arts into science:

- It helps remove idea inhibition (there's no wrong answer in art!).
- It focuses on the process which helps drive innovation.
- It teaches the power of observation, of people and your surroundings.
- It helps hone spatial awareness and mathematical concepts like geometry.

HOW TO JOIN THE LEFT BRAIN CRAFT BRAIN COMMUNITY

Left Brain Craft Brain is a global community! Come get activity ideas, chat about STEAM, and share your pictures with us on both Facebook and Instagram. We love to see all of the ways you incorporate STEAM into your kids' worlds!

[Left Brain Craft Brain Facebook Page](#)

[@leftbraincraftbrain on Instagram](#)

STEAM helps kids:

Ask questions
Connect the dots
Problem solve
Think creatively
Be innovative

SAFETY FIRST!

Left Brain Craft Brain projects are intended to be performed under adult supervision. Color by coding is a low risk activity, but we like to keep this safety note here anyway :)

Appropriate and reasonable caution is recommended when activities call for any items that could be of risk, including, but not limited to: sharp tools, hot glue, chemicals, batteries, scissors, and small items that could present a choking hazard. If you are unsure of the safety or age appropriateness of an activity, please consult your child's doctor.

WHAT'S INSIDE

Inside this Candy Cane Coding activity printable is:

- ASCII binary candy cane name page
- ASCII code sheet
- Teacher guide
- What's the STEAM Behind It? information section

TEACHER GUIDE

MATERIALS

- [Red pony beads](#)
- [White pony beads](#)
- [Pipe cleaners \(red or white\)](#)
- [Paper](#)
- [Printer](#)
- [Printable name page and ASCII code guide](#)
- [Pencil](#)
- [Rulers \(optional, but can help kids find the codes easier\)](#)

PREPARATION

1. Print out worksheets. The instructions and ASCII code sheet can be printed double-sided together, but make sure that the name sheet is on a separate sheet for ease of use.
2. Gather materials, 1 set per child or group into station quantities. Assume at least 2 pipe cleaners, 30 white, and 30 red beads per child. You will have some that need fewer and some that need more based upon their name length.

GOALS: Students will decipher a code using ASCII and then complete a coloring page.

EXPLAIN: Describe the project they will be completing. Show them where to find the codes that match the letters on their names on the ASCII code list. Then show them how to use one color bead for zeroes and one for ones and feed them onto the pipe cleaner.

DISCUSS: Talk to the students about the language of computers. Describe how all computer languages are built on the premise of 0 = OFF and 1 = ON. Switching lights on and off is a great demo to do while explaining. See [What's the STEAM Behind It?](#) section for more information.

EXTENSIONS (click to access):

- Grab some fun math-infused Christmas coloring pages in the [STEAM Kids Christmas Coloring Book](#).
- Play the [If-Then Coding Game](#), another screen-free way to learn about code.
- Bring screen-free coding into December with this [Christmas Tree Color by Coding](#) activity.
- Want more hands-on STEAM projects this holiday? Try [STEAM Kids Christmas!](#)

OTHER RESOURCES:

- [Video: Binary Numbers – Math Bites with Danica McKellar](#)
- Books: [Coding Books for Kids](#)

WHAT'S THE STEAM BEHIND IT?

WHAT IS ASCII?

There's a lot of talk today about coding being the language of the future. But what exactly is it and why is it important? Coding makes it possible for us to tell computers how to do stuff, like run our phone, play a video game, and make a website. Any app you use on your phone or computer is possible because of code.

Computers speak the languages of zeroes and ones, essentially on and off signals to computer parts called transistors. These zeroes and ones have been translated into codes called the ASCII Binary code where every letter, number and character has an 8 digit combination of zeroes and ones. ASCII is the most common format for text files for computers and the internet. It stands for American Standard Code for Information Interchange and uses numbers to represent letters and special characters. The binary version uses only zeros and ones in a 8 bit (or digit) pattern.

But it would take too long to do anything if we had to code in just zeroes and ones, so computers use other languages now, that are all based upon binary.



CANDY CANE CODING

WHAT IS ASCII BINARY CODE?

ASCII is the most common format for text files for computers and the internet. It stands for American Standard Code for Information Interchange and uses numbers to represent letters and special characters. The binary version uses only zeros and ones in a 8 bit (or digit) pattern.

INSTRUCTIONS

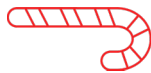
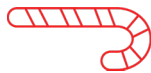
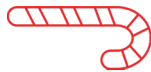
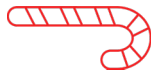
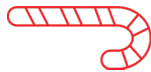
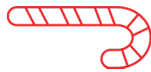
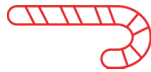
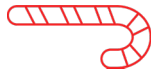
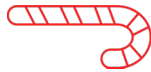
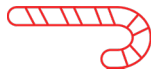
1. Write your name and then write down the ASCII Binary codes for each letter using the code list on the next page.
2. Pick one color bead for zeros and one color for ones.
3. Grab a pipe cleaner and bend the end so beads don't fall off. Then start adding beads in the binary code pattern you have written down for your name.
4. Twist the end to lock the beads on. Then bend one end to make it look like a candy cane.
5. Is your name really long? You can twist two pipe cleaners together to make a giant candy cane.



CANDY CANE ASCII CODE

CHARACTER	BINARY	CHARACTER	BINARY
A	01000001	a	01100001
B	01000010	b	01100010
C	01000011	c	01100011
D	01000100	d	01100100
E	01000101	e	01100101
F	01000110	f	01100110
G	01000111	g	01100111
H	01001000	h	01101000
I	01001001	i	01101001
J	01001010	j	01101010
K	01001011	k	01101011
L	01001100	l	01101100
M	01001101	m	01101101
N	01001110	n	01101110
O	01001111	o	01101111
P	01010000	p	01110000
Q	01010001	q	01110001
R	01010010	r	01110010
S	01010011	s	01110011
T	01010100	t	01110100
U	01010101	u	01110101
V	01010110	v	01110110
W	01010111	w	01110111
X	01011000	x	01111000
Y	01011001	y	01111001
Z	01011010	z	01111010

NAME



**BINARY
CODE**

WANT MORE HOLIDAY FUN?

Check out our ebook!

STEAM Kids Christmas Coloring Book

30+ pages filled with STEAM packed coloring activities like color by coding, 3D paper projects, color by number, learn to draw with geometry and more!

TAKE A PEEK AT

WHAT'S INSIDE

3D paper projects | color by number | color by coding
learn how to draw holiday characters
snowflake coloring | connect the dots | color by grid

3-D STAR

To make a 3-D Star:

- Print and color two stars.
- Cut out along solid outline.
- Fold along both solid and dashed lines against a ruler. Dashed lines should fold toward each other.
- Glue the two stars together and tape them to make it into an ornament! Tape before coloring.
- For an added STEAM challenge, add LEDs, batteries and copper tape inside to make it glow!

STEAM KIDS CHRISTMAS COLORING BOOK

CONNECT THE DOTS

COLOR BY CODING

Name: _____

What is ASCII?

ASCII stands for American Standard Code for Information Interchange and uses numbers to represent letters and special characters on computers and over the Internet. It stands for American Standard Code for Information Interchange and uses numbers to represent letters and special characters on computers and over the Internet. The decimal version is.

Instructions

Use these color by number coloring pages by finding the matching letters on the 10 columns. Then color the box with the number next to the picture.

E	D								
01000001	01000100								
R	A	N	G	E					
01001010	01000001	01001110	01000111	01000111					
E	L	L	O	W					
01000101	01001100	01001110	01001110	01001111	01001111				
4	G	R	E	E	N				
01000111	01001010	01000101	01000101	01000101	01001110				
5	B	L	U	E					
01000110	01001110	01010101	01000111	01000111					
6	B	R	O	W	N				
01000110	01000100	01001111	01001111	01001111	01001110				

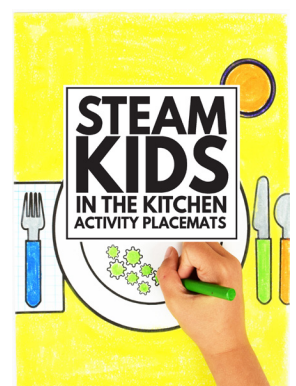
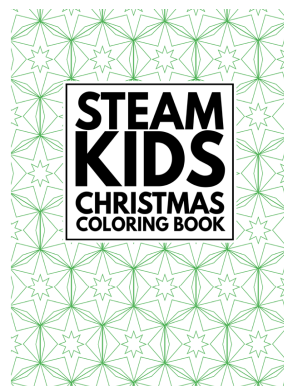
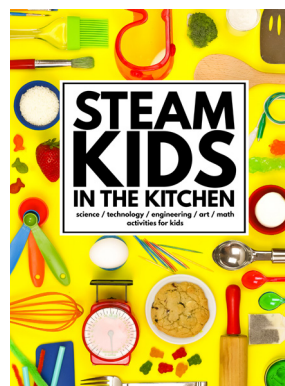
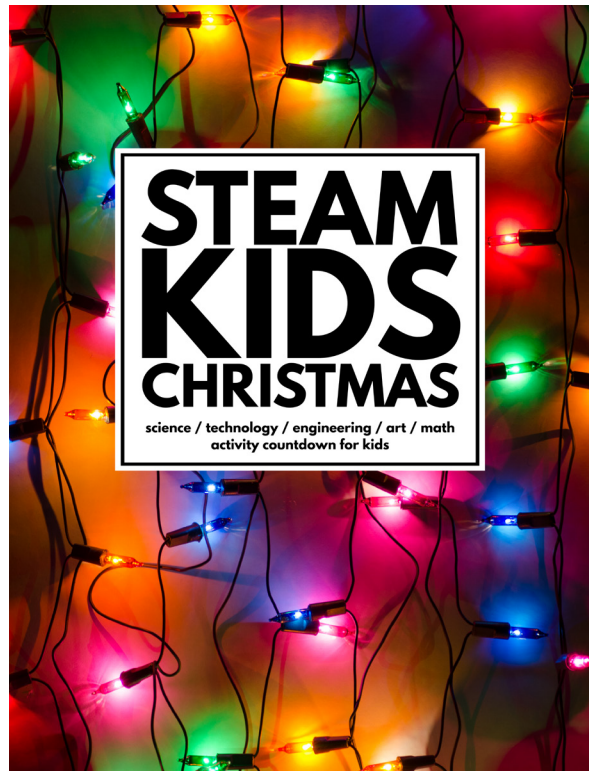
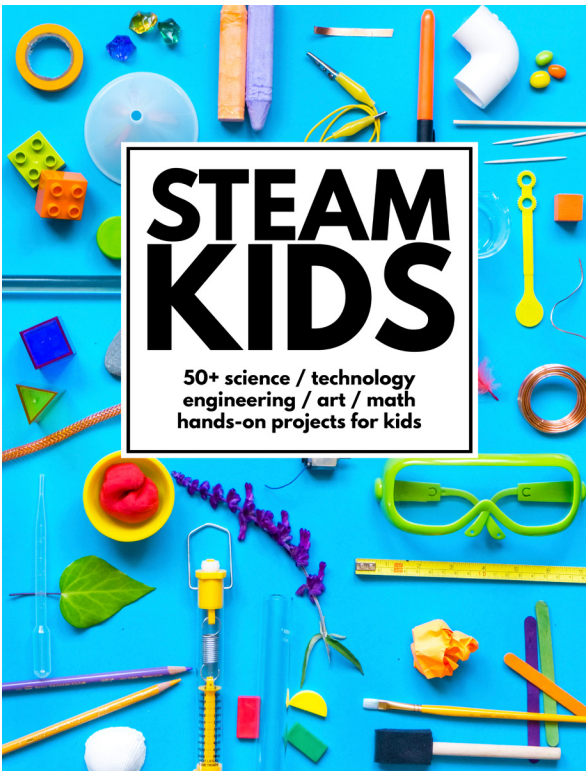
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LOVE STEAM?

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