HALLOWEEN
COLOR BY CODING

Left Brain Craft Brain

Left Brain Craft Brain

inspiring young engineers, one craft at a time

DISCOVER. MAKE. PLAY. LEARN.

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.

SAFETY FIRST!

STEAM EXPLORERS PROJECTS ARE INTENDED TO BE PERFORMED UNDER ADULT SUPERVISION. Although Color by Coding is a low risk activity, we like to leave this here... 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.

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WHAT'S INSIDE?

INSIDE THIS @LOR BY @DING ACTIVITY IS:

- Halloween cat color by number coloring page
- ASCII Binary and ASCII Decimal decipher the color code page
- ASCII code sheet
- Teacher guide
- What's the STEAM Behind It? background info
- Color code answer key

WHAT IS STEAM EXPLORERS?

discover • make • play • learn

STEAM Explorers is a monthly digital magazine plus kid-safe online project portal filled with STEAM. It's loaded with a monthly activity calendar, fun articles to read, jokes to tell, projects to do, printables to color, videos to watch, and more. Kids will enjoy making, playing, discovering, and learning their way through each month's issue!

YOU CAN LEARN MORE ABOUT STEAM EXPLORERS HERE:

LEFTBRAINCRAFTBRAIN.@M/EXPLORESTEAM

HOW TO JOIN THE STEAM EXPLORERS & LEFT BRAIN CRAFT BRAIN @MMUNITY

STEAM Explorers (and Left Brain Craft Brain, too) 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

LEFT BRAIN CRAFT BRAIN ON INSTAGRAM

TEACHER GUIDE

MATERIALS

- Paper
- Printer
- Printable coloring page, code sheets, and ASCII code guide
- Art supplies like crayons or markers in orange, green, yellow, pink, and grey.
- Rulers (optional, but can help kids find the codes easier)

PREPARATION

1. First decide whether to use the binary or decimal versions of the codes. The binary codes are significantly harder than the decimal codes. You can offer a choice to the children if desired.
2. Print out worksheets. Code pages can be printed on the back of the Christmas tree coloring page, but make sure that the ASCII codes list is on a separate sheet for ease of use.
3. Gather materials, 1 set per child or group into station quantities.

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

EXPLAIN: Describe the project they will be completing. Show how the colors in the color by number page need to be deciphered by figuring out the letters in each color's name. Show them where to find the codes to decipher the color codes sheet on the ASCII code list.

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):

- Want to add some learning to your your upcoming holidays? Grab another Color by Coding coloring page and other fun math-infused Christmas coloring pages in the **STEAM KIDS CHRISTMAS COLORING BOOK**. Or try this **CANDY CANE CODING CRAFT**.
- Play the **IF-THEN CODING GAME**, another screen-free way to learn about code.
- Want a new Color by Coding coloring page every month? **JOIN STEAM EXPLORERS**! The coolest new adventure for kids is a monthly digital magazine plus project portal. It's filled with hands-on STEAM projects, printables, recipes, and more. It's perfect for classrooms, libraries, and home!

OTHER RESOURCES:

- **VIDEO: BINARY NUMBERS - MATH BITES WITH DANICA MCKELLAR**
- **BOOKS: CODING BOOKS FOR KIDS**

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INSTRUCTIONS

Figure out the colors in this coloring page by finding the matching letters on the ASCII code sheet. Then color the picture with the numbers noted on the picture. There are two different code options, BINARY and DECIMAL. The binary coloring page is harder, so pick which one is best for you.

WHAT'S THE STEAM BEHIND IT?

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.

WHAT IS ASCII?

Computers speak the languages of zeros and ones, essentially on and off signals to computer parts called transistors. These zeros and ones have been translated into codes called the ASCII Binary code where every letter, number and character has an 8 digit combination of zeros 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 an 8 bit (or digit) pattern.

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

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ASCII

CHARACTER	BINARY	CHARACTER	DECIMAL
A	01000001	A	65
B	01000010	B	66
C	01000011	C	67
D	01000100	D	68
E	01000101	E	69
F	01000110	F	70
G	01000111	G	71
H	01001000	H	72
I	01001001	I	73
J	01001010	J	74
K	01001011	K	75
L	01001100	L	76
M	01001101	M	77
N	01001110	N	78
O	01001111	O	79
P	01010000	P	80
Q	01010001	Q	81
R	01010010	R	82
S	01010011	S	83
T	01010100	T	84
U	01010101	U	85
V	01010110	V	86
W	01010111	W	87
X	01011000	X	88
Y	01011001	Y	89
Z	01011010	Z	90

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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. The decimal version uses two digit numbers.

INSTRUCTIONS

Figure out the colors in this color by number coloring page by finding the matching letters on the ASCII code sheet **BINARY** column. Then color the picture with the numbers noted on the picture.

1 = _____ _____ _____ _____ _____

01010111 01001000 01001001 01010100 01000101

2 = _____ _____ _____ _____

01010000 01001001 01001110 01001011

3 = _____ _____ _____ _____ _____ _____

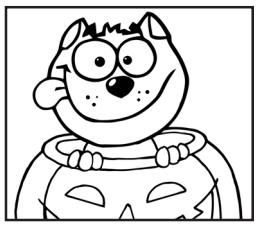
01001111 01010010 01000001 01001110 01000111 01000101

4 = _____ _____ _____ _____ _____ _____

01011001 01000101 01001100 01001100 01001111 01010111

5 = _____ _____ _____ _____

01000111 01010010 01000101 01011001



6 = _____ _____ _____ _____ _____

01000111 01010010 01000101 01000101 01001110

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INSTRUCTIONS

Figure out the colors in this color by number coloring page by finding the matching letters on the ASCII code sheet **DECIMAL** column. Then color the picture with the numbers noted on the picture.

1	=	_____	_____	_____	_____	_____
		87	72	73	84	69
2	=	_____	_____	_____	_____	
		80	73	78	75	
3	=	_____	_____	_____	_____	_____	_____
		79	82	65	78	71	69
4	=	_____	_____	_____	_____	_____	_____
		89	69	76	76	79	87
5	=	_____	_____	_____	_____		
		71	82	69	89		
6	=	_____	_____	_____	_____	_____	
		71	82	69	69	78	

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INSTRUCTIONS

Figure out the colors in this color by number coloring page by finding the matching letters on the ASCII code sheet **BINARY** column. Then color the picture with the numbers noted on the picture.

1	=	W	H	I	T	E
		01010111	01001000	01001001	01010100	01000101
2	=	P	I	N	K	
		01010000	01001001	01001110	01001011	
3	=	O	R	A	N	G	E
		01001111	01010010	01000001	01001110	01000111	01000101
4	=	Y	E	L	L	O	W
		01011001	01000101	01001100	01001100	01001111	01010111
5	=	G	R	E	Y	
		01000111	01010010	01000101	01011001	
6	=	G	R	E	E	N
		01000111	01010010	01000101	01000101	01001110

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INSTRUCTIONS

Figure out the colors in this color by number coloring page by finding the matching letters on the ASCII code sheet **DECIMAL** column. Then color the picture with the numbers noted on the picture.

1	=	W	H	I	T	E
		87	72	73	84	69
2	=	P	I	N	K	
		80	73	78	75	
3	=	O	R	A	N	G	E
		79	82	65	78	71	69
4	=	Y	E	L	L	O	W
		89	69	76	76	79	87
5	=	G	R	E	Y		
		71	82	69	89		
6	=	G	R	E	E	N	
		71	82	69	69	78	

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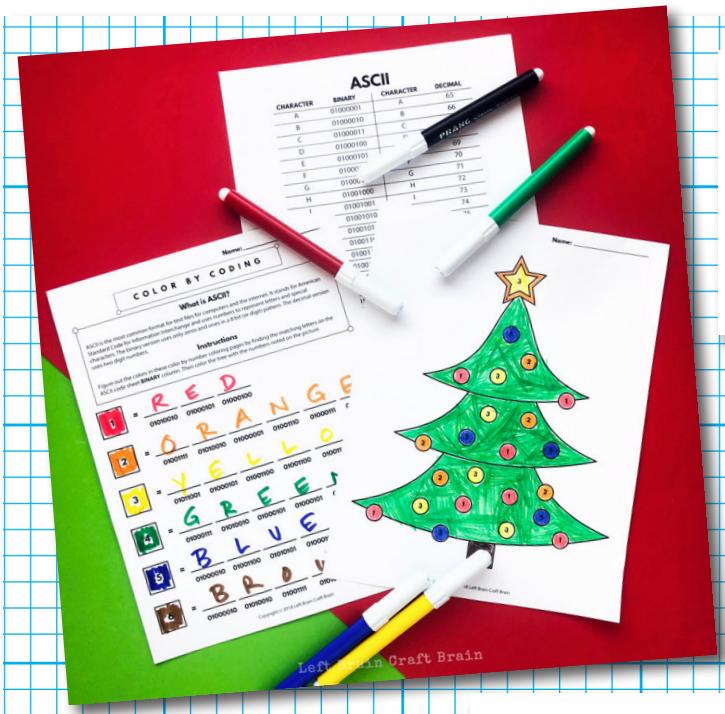
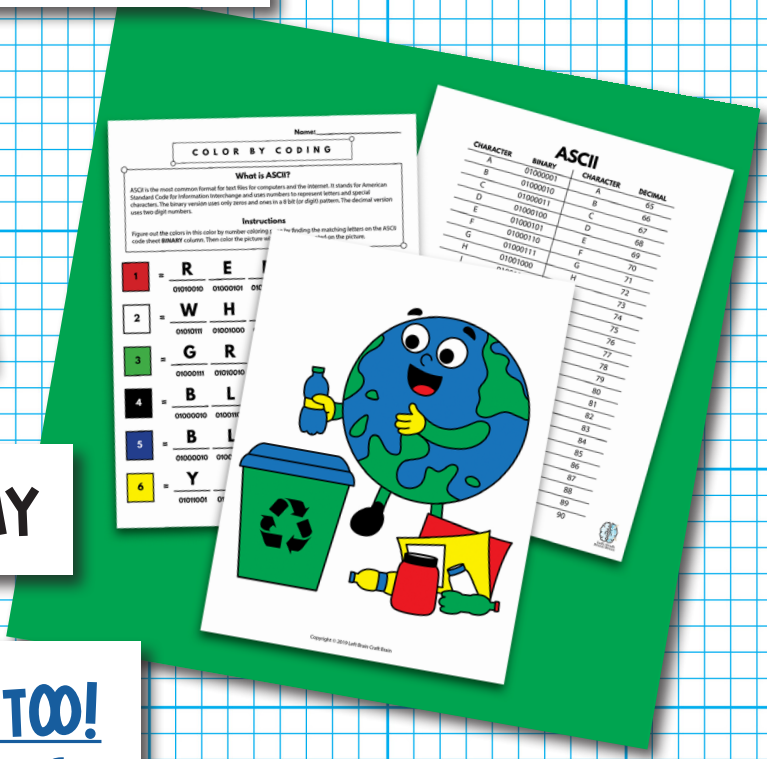


Be sure to check out our holiday color by coding coloring pages too!

Christmas

ThanksGiving



Earth Day

Plus more coming soon, too!
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