TeachersLOVE

Holiday Coding

A Screen-Free Introduction Coding Computer Graphics!

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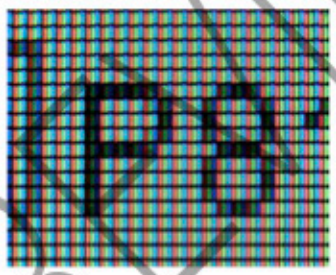
INTRODUCTION

The very first computers had no pictures on the screens. They only had words on the screen. People had to tell the computer how to show pictures on the screen. This is call 'programming' the computer. People write 'code' to give the computer instructions.

You can learn how to code, too! You can tell the computer how to show different pictures on its screen. How does his work? The computer screen is made up of tiny squares of light, call pixels. A **pixel** is so small that you can't see it without a magnifying glass. When pixels light up in different patterns of colors, you can see pictures on the computer screen. These pictures are called **graphics**. The screen on the computer that shows you all the graphics is called a **monitor**. Monitors can be big like a tv, or small like a phone or even tiny like a watch. The number of pixels on a computer screen is called the **resolution**. The more pixels a computer screen has, the clearer the pictures will be on the screen.

Did you know?

There are only three colors of pixels on any computer screen: red, green, and blue. All the other colors you see are made by combining these 3 colors together in different ways! The pixels are so small that your eye can't see them, but they light up in different ways to create the pictures we see on the computer screens. This picture shows a computer screen up close so you can see the red, green, and blue pixels.

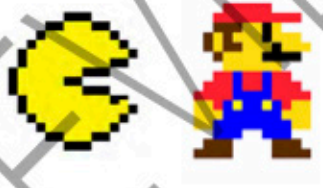


Programming Graphics

One of the first people to code computer graphics was a woman named Susan Kare, who worked for Apple. First, she would draw pictures on a piece of paper with squares on it. Then, she would code the picture into the computer so that the graphics on the screen matched her drawing. This symbol or picture that represents a program, or other things, is called an **icon**.

Graphics in Video Games

Video game characters are also made of pixels on a computer screen! Two of the very first video games were Pac-Man and Mario. When the games were being made, someone had to 'code' the pictures into the computer. This means that someone had to tell the computer which color each one of the pixels should be when it lights up. You can learn to make computer graphics like Pac-Man and code pictures too!



Binary Coding Chart

A	01000001	B	01000010	K	01001011
C	01000011	D	01000100	L	01001100
E	01000101	F	01000110	M	01001101
G	01000111	H	01001000	N	01001110
I	01001001	J	01001010	O	01001111
P	01010000	Q	01010001	R	01010010
S	01010011	T	01010100	U	01010101
V	01010110	W	01010111	X	01011000
Y	01011001	Z	01011010		

Name _____

Mystery Picture

Directions: Follow the coded instructions to color in the squares in the grid below and reveal the mystery school picture.

Row 1: Color 8 and 12 **black**
Row 2: Color 7 and 9-11 and 13 **black**; Color 8 **brown**; Color 12 **green**
Row 3: Color 7 and 10 and 13 **black**; Color 8-9 **brown**; Color 11-12 **green**
Row 4: Color 6, 8 and 9, and 10-13 **black**; Color 7 **brown**
Row 5: Color 5 and 6 and 7-9 and 14 **black**; Color 10 and 11-13 **red**
Row 6: Color 5 and 14 **black**; Color 6 and 7-13 **red**
Row 7: Color 1 and 17 **black**; Color 2-3 and 5-14 **red**
Row 8: Color 1 and 15 **black**; Color 2-14 **red**
Row 9: Color 1 and 15 **black**; Color 2-14 **red**
Row 10: Color 1 and 15 **black**; Color 2-14 **red**
Row 11: Color 1 and 15 **black**; Color 2-14 **red**
Row 12: Color 2 and 14 **black**; Color 3-13 **red**
Row 13: Color 3 and 13 **black**; Color 4-12 **red**
Row 14: Color 4-5 and 8-9 and 12 **black**; Color 6-7 and 10-11 **red**
Row 15: Color 6-7 and 10-11 **black**

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Row 1															
Row 2															
Row 3															
Row 4															
Row 5															
Row 6															
Row 7															
Row 8															
Row 9															
Row 10															
Row 11															
Row 12															
Row 13															
Row 14															
Row 15															

1

Name _____

Decode the Picture

Directions: Use the Binary Coding Chart to decode each color name. Then color the squares below with the name of each color to reveal the autumn scene.

1. _____ _____ _____ _____ _____
2. _____ _____ _____
3. _____ _____ _____ _____ _____
4. _____ _____ _____ _____ _____
5. _____ _____ _____ _____ _____
6. _____ _____ _____ _____ _____

2

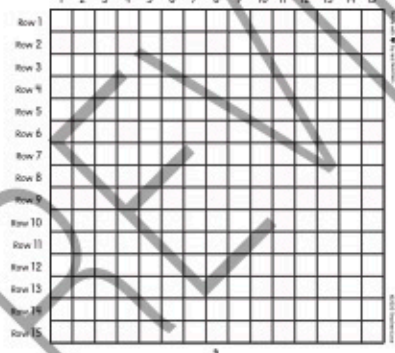
PREVIEW

Name _____

Mystery Picture

Directions: Follow the coded instructions to color in the squares in the grid below and reveal the mystery Halloween picture.

Row 1: Color 8-10 **brown**
Row 2: Color 7-10 **brown**
Row 3: Color 7-9 **brown**
Row 4: Color 14-12 **orange**
Row 5: Color 3-13 **orange**
Row 6: Color 3-14 and 7-9 and 13-13 **orange**
Color 5-6 and 10-11 **black**
Row 7: Color 2-3 and 8 and 13-14 **orange**
Color 4-7 and 9-12 **black**
Row 8: Color 2-79 **orange**
Row 9: Color 2-6 and 10-14 **orange**
Color 7-9 **black**
Row 10: Color 2-7 and 9-14 **orange**
Color 8 **black**
Row 11: Color 2-3 and 5-11 and 13-79 **orange**
Color 4 and 12 **black**
Row 12: Color 2-3 and 13-14 **orange**
Color 4-12 **black**
Row 13: Color 3-4 and 12-13 **orange**
Color 5-11 **black**
Row 14: Color 1-3 and 13-15 **green**
Color 14-12 **orange**
Row 15: Color 1-4 and 12-15 **green**
Color 5-11 **orange**



3

Name _____

Decode the Picture

Directions: Use the Binary Coding Chart to decode each color name. Then color the squares below with the number of each color to reveal the Thanksgiving surprise.

1 - 0001 0001 0000 0000 0001 0001
2 - 0000 0001 0001 0000
3 - 0000 0000 0001 0001 0000
4 - 0000 0000 0001 0000 0000
5 - 0000 0000 0000 0000 0000

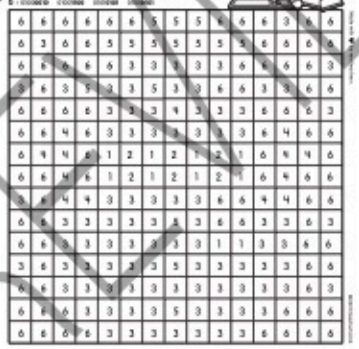
4

Name _____

Decode the Picture

Directions: Use the Binary Coding Chart to decode each color name. Then color the squares below with the number of each color to reveal the winter surprise.

1 - 0000 0000 0000 0000 0000
2 - 0001 0000 0000 0001 0000
3 - 0001 0000 0000 0000 0001
4 - 0001 0000 0000 0000 0000 0001
5 - 0001 0000 0000 0000 0000 0000
6 - 0000 0000 0000 0000 0000



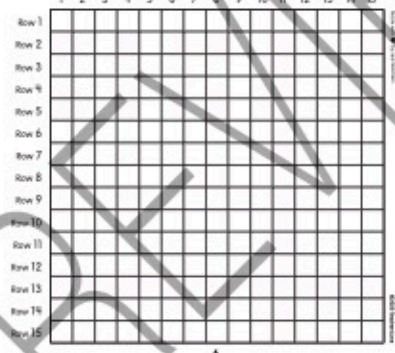
5

Name _____

Mystery Picture

Directions: Follow the coded instructions to color in the squares in the grid below and reveal the mystery winter picture.

Row 1: Color 11-5 and 11-10 **blue**
Color 6-13 **black**
Row 2: Color 11-9 and 13-13 **blue**
Color 5-13 **black**
Row 3: Color 11-8 and 13-14 **blue**
Color 4-5 and 8 and 11-12 **black**
Row 4: Color 11-7 and 13 and 15 **blue**
Color 9 and 12 **black**
Color 14 **red**
Row 5: Color 1-3 and 15 **blue**
Color 4 and 6 and 10 and 12 **black**
Color 13-79 **red**
Row 6: Color 1-2 and 14-15 **blue**
Color 9 **black**
Color 3 and 10-13 **red**
Color 8 **orange**
Row 7: Color 1-2 and 14-15 **blue**
Color 13 **black**
Color 3-5 and 11-12 **red**
Color 1 and 15 **blue**
Rows 8: Color 2-5 and 13-14 **black**
Color 5-8 **red**
Rows 9-12: Color 1 and 15 **blue**
Color 2-3 and 14 **black**
Color 3 and 13 **black**
Row 13: Color 3-5 and 11-13 **black**
Rows 14-15: Color 4 and 6 and 10 and 12 **black**
Color 5-6 and 13-11 **orange**



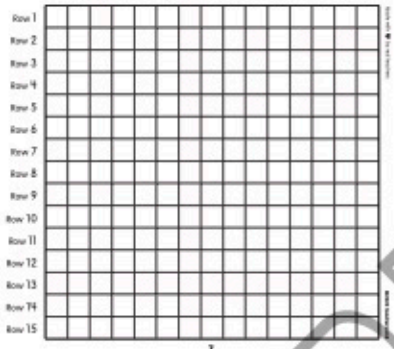
6

Name _____

Mystery Picture

Directions: Follow the coded instructions to color in the squares in the grid below and reveal the mystery love picture.

Row 1: Leave blank!
Row 2: Color 1-6 and 10-13 **black**
Row 3: Color 1 and 7 and 9 and 13 **black**
Color 4-6 and 10-12 **red**
Row 4: Color 2 and 8 and 14 **black**
Color 3 and 6-7 and 9 and 12-13 **red**
Row 5: Color 1 and 15 **black**
Color 3-3 and 5-9 and 11-14 **red**
Rows 6-8: Color 1 and 15 **black**
Color 2-14 **red**
Row 9: Color 2 and 14 **black**
Color 3-13 **red**
Row 10: Color 3 and 13 **black**
Color 4-12 **red**
Row 11: Color 14 and 12 **black**
Color 5-11 **red**
Row 12: Color 5 and 11 **black**
Color 6-10 **red**
Row 13: Color 6 and 13 **black**
Color 7-9 **red**
Row 14: Color 7 and 9 **black**
Color 8 **red**
Row 15: Color 8 **black**



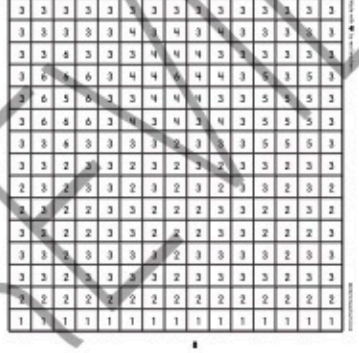
7

Name _____

Decode the Picture

Directions: Use the Binary Coding Chart to decode each color name. Then color the squares below with the number of each color to reveal the spring surprise.

1 - 0000 0000 0000 0000 0000
2 - 0000 0000 0000 0001 0000
3 - 0000 0000 0000 0000 0000
4 - 0000 0000 0000
5 - 0000 0000 0000 0000 0000 0000
6 - 0000 0000 0000 0000 0000 0000



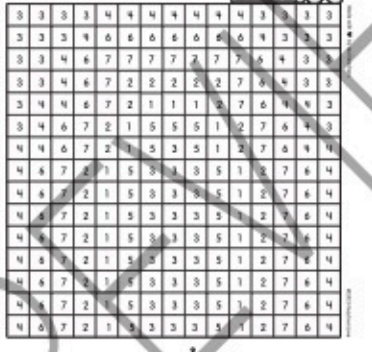
8

Name _____

Decode the Picture

Directions: Use the Binary Coding Chart to decode each color name. Then color the squares below with the number of each color to reveal the colorful surprise.

1 - 0000 0000 0000 0000
2 - 0000 0000 0000 0000 0000
3 - 0000 0000 0000 0001 0000
4 - 0000 0000 0000
5 - 0000 0000 0000 0000 0000
6 - 0000 0000 0000 0000 0000
7 - 0000 0000 0000 0000 0000



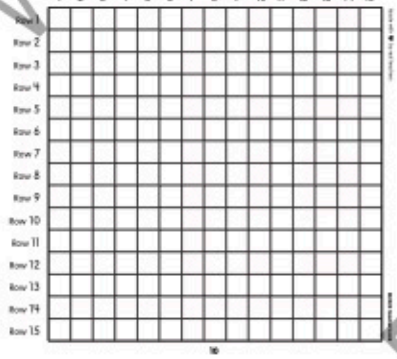
9

Name _____

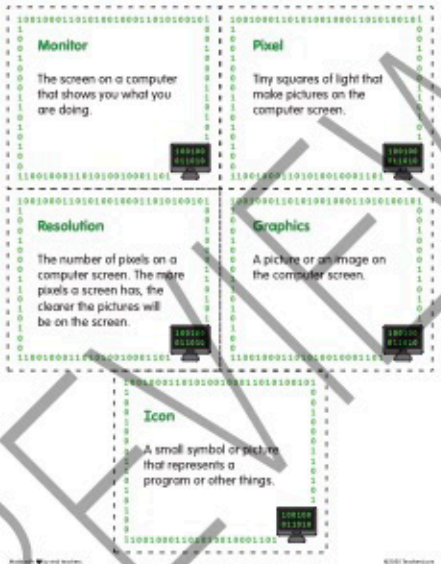
Mystery Picture

Directions: Follow the coded instructions to color in the squares in the grid below and reveal the mystery patriotic picture.

Row 1: Color 1-7 **blue**
Color 8-15 **red**
Row 2: Color 1 and 3 and 5 and 7 **blue**
Row 3: Color 1-2 and 4 and 6-7 **blue**
Color 8-15 **red**
Row 5: Color 1 and 3 and 5 and 7 **blue**
Row 6: Color 1-7 **blue**
Color 8-15 **red**
Row 6: Leave blank!
Row 7: Color 1-15 **red**
Row 8: Leave blank!
Row 9: Color 1-15 **red**
Row 10: Leave blank!
Row 11: Color 3 and 5 and 11-13 **blue**
Color 7-9 **red**
Row 12: Color 3 and 5 and 11 and 13 **blue**
Color 7 **red**
Row 13: Color 3 and 5 and 11-13 **blue**
Color 7-9 **red**
Row 14: Color 3 and 5 and 11 and 13 **blue**
Color 9 **red**
Row 15: Color 3-5 and 11 and 13 **blue**
Color 7-9 **red**



10



PREVIEW

Monitor

The screen on a computer that shows you what you are doing.

Resolution

The number of pixels on a computer screen. The more pixels a screen has, the clearer the pictures will be on the screen.

Icon

A small symbol or picture that represents a program or other things.

Pixel

Tiny squares of light that make pictures on the computer screen.

Graphics

A picture or an image on the computer screen.

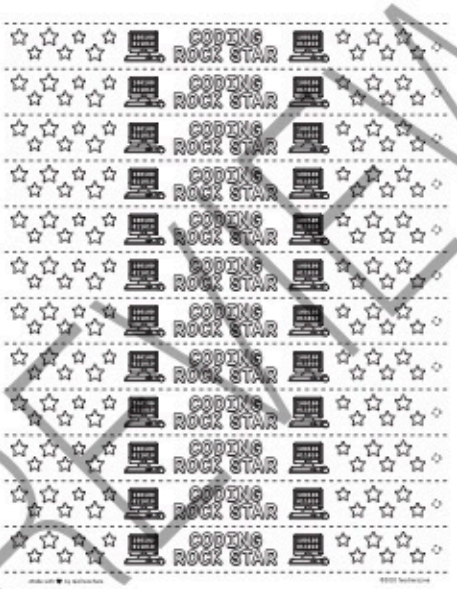
Name _____

Directions: Read each definition and write the matching word from the Word Bank in the box below it.

Word Bank

resolution pixel
icon monitor
graphics

Tiny squares of light that make pictures on the computer screen.	The screen on a computer that shows you what you are doing.
The number of pixels on a computer screen.	A small symbol or picture that represents a program or other things.
A picture or an image on the computer screen.	



PREVIEW PREVIEW PREVIEW