8-Bit Character Design

A return to 8-bit graphics! Learn how "retro" games get their look and design a unique pixelated character.

TEKS:

TECH K-2.1 C: The student is expected to explore virtual environments, simulations, models, and programming languages to enhance learning.

MATH 3.8 A: The student is expected to summarize a data set with multiple categories using a frequency table, dot plot, pictograph, or bar graph with scaled intervals.

Materials:

- 32x32 grid – attached
- 8x8 grid – attached
- 8-Bit Character Design Activity Supplement – attached
- Graph paper
- Markers
- Pencil or pen
- Ruler

How To:

1. Brainstorm a design for your very own video game character using the space provided in the attached Activity Supplement.
2. Once you've created your character design, transfer this character onto the 8x8 graph paper grid. Here's the catch: you can only use ONE color per box on the grid!
3. Next, transfer your character onto a 32x32 graph paper grid. Compare your two characters, and read the STEM Connection below to learn more about video game history, resolution, and graphic design!

STEM Explanation:

Take a look at the Super Mario photo in your activity supplement. The graphics for the Mario character have evolved quite a bit! Many video games designed in the 1980s and 1990s were developed using 8-bit graphics, or a "retro" style of graphic design. And while many of these games are still popular today (think Zelda, Super Mario, Space Invaders, etc.), their graphics look much different!

Pixels are the smallest unit of data in a picture. If you were able to magnify your TV screen or computer monitor many times, you'd see that the entire screen is arranged with thousands of small dots or squares, like a piece of graph paper. Each dot or square is a pixel. To make a picture, each pixel is filled in with a single color, and many pixels are placed next to each other to form an image.

How did your video game character look as an 8x8 pixel design? Probably not super great! 8x8 isn't very many pixels for an entire video game character design. Did your 32x32 video game character look better? **Resolution** refers to the number of pixels wide and high an image is. Generally, the higher resolution an image is, the more detail we can see and the better it looks to us. The character you made in the 32-by-32 pixels box has more pixels (1024 pixels) compared to the character you made in the 8x8 pixels box (which contained 64 pixels). This means that the character in the 32-by-32 pixel box is higher resolution and so should appear to have more detail, and overall look better, than the character you drew in the 8x8 pixels box.

The first home video game consoles couldn't store or display much data, so only a few pixels could be shown on the screen at a time. Because of this, the video game characters and other video game art only used a few pixels. But today's video game consoles can store much more data and so the characters are higher resolution.

Check out some more fun facts about video game graphic design:
- When Nintendo first released the Super Mario Bros™ game in 1985, Mario was only 16 by 12 pixels in size. Decades later, Mario now has more than 15 times as many pixels (he's 67 by 50 pixels)!
- How many pixels do you think the average smartphone screen contains? Most smartphones have at least 1280 x 720 screens! That's over 900,000 pixels, all for one tiny screen!
- Retro-style games with 8-bit graphics are still very popular as the game developers entice players with nostalgia. Many developers add retro designs to their games to attract fans!

Career Connection:

Graphic designers are visual communicators that use computer software to share ideas. Their designs–from websites to logos to billboards– are meant to engage consumers and inspire or inform an audience.

Resources:

https://www.sciencebuddies.org/stem-activities/seeing-science-why-do-video-game-characters-look-better-today?from=Blog
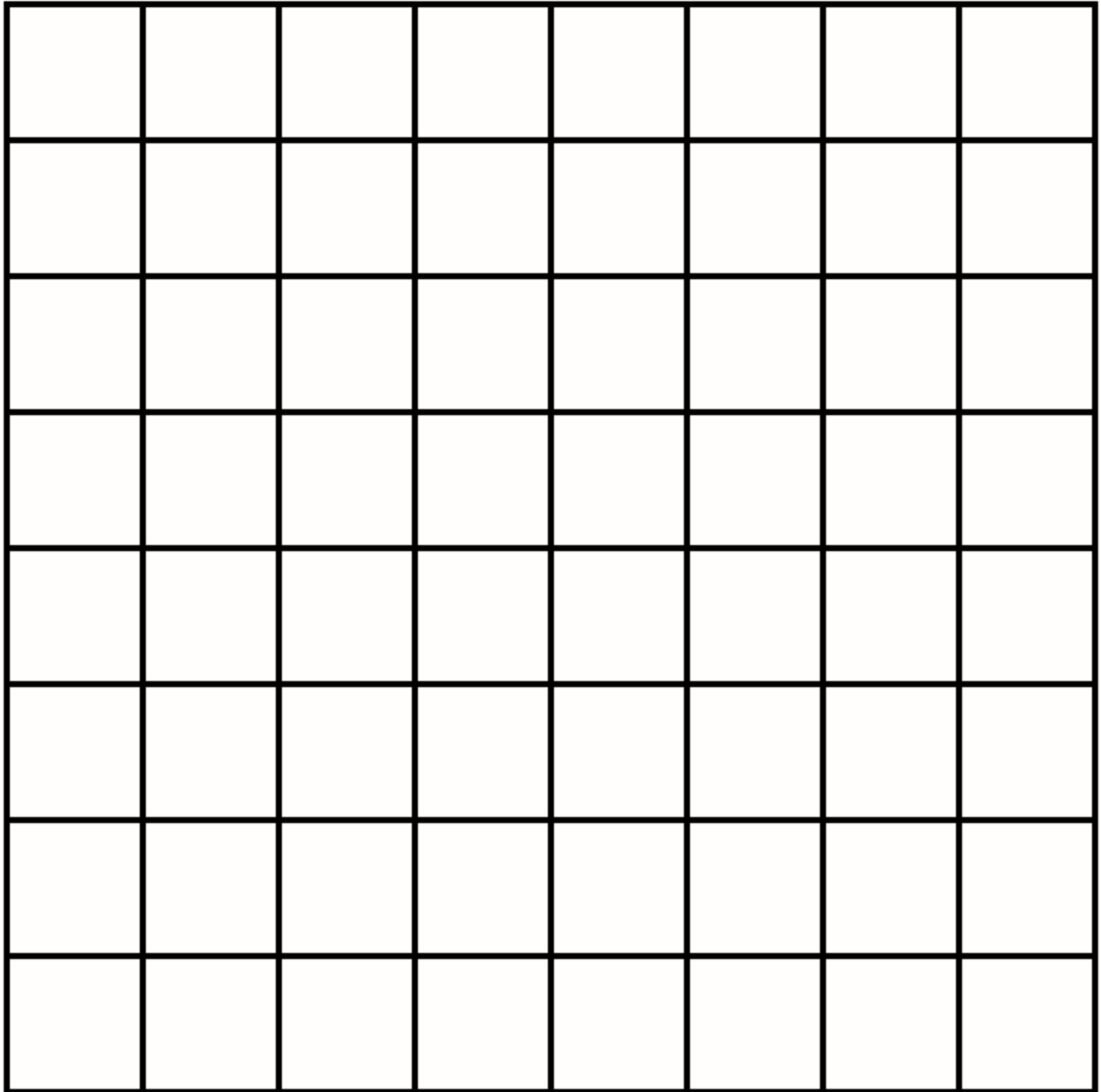https://www.wikihow.com/Draw-in-8-Bit
https://commons.wikimedia.org/wiki/File:Pattern_Grid_32x32.png

8x8 Grid

32x32 Grid
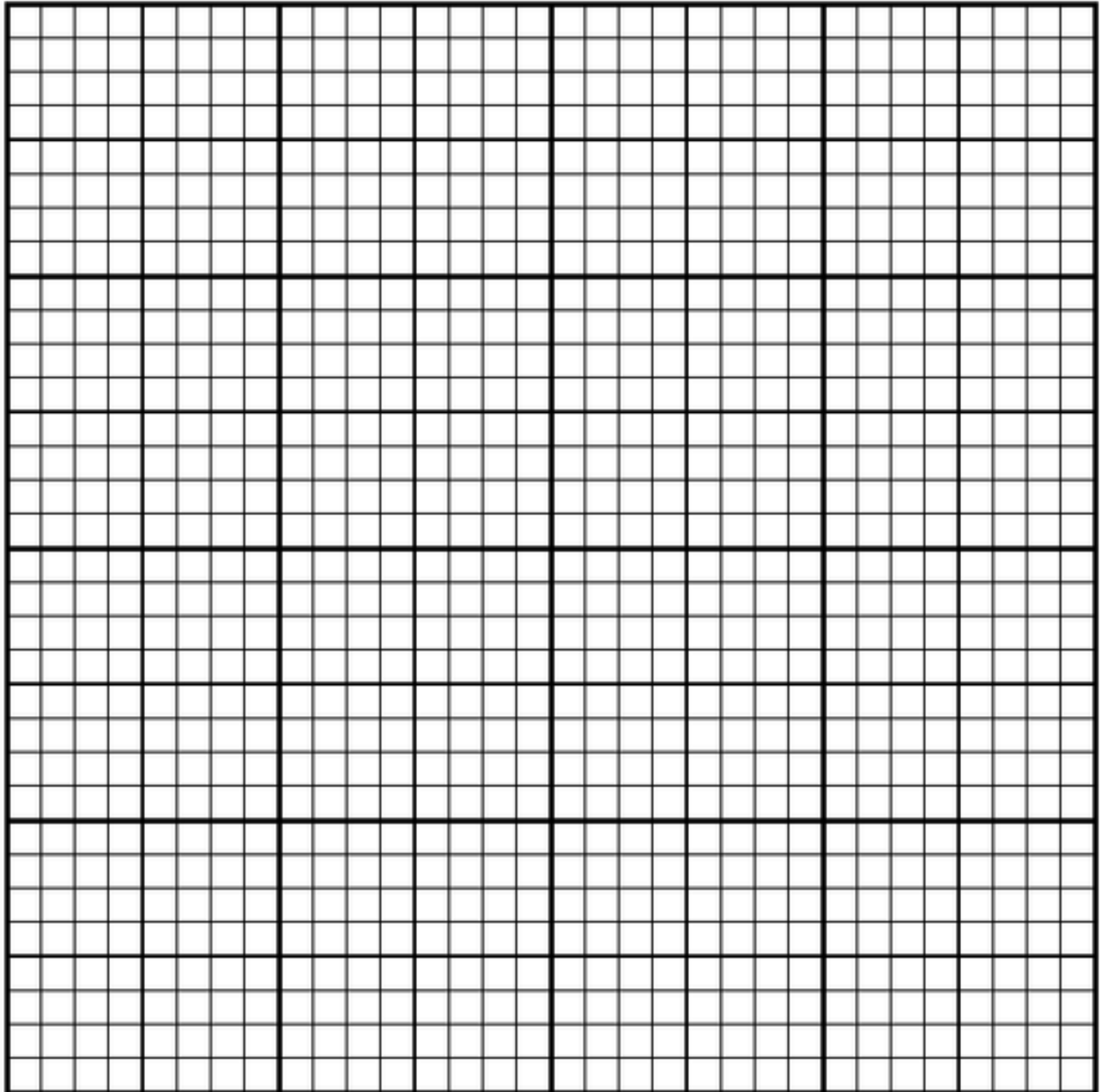
8-BIT CHARACTER DESIGN

**A return to 8-bit graphics! Learn how "retro" games get their look and design a unique pixelated character.**

What differences do you notice between video games from the 1980s and video games today?

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_____

_____
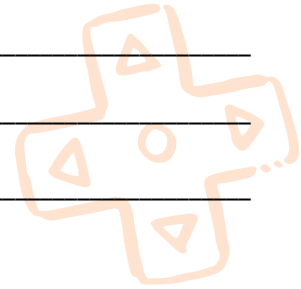
Draft a design of your video game character:

What shapes are easiest to draw in **pixel** form? Most difficult?

_____

_____

How many pixels do you think the average smartphone screen contains?

_____
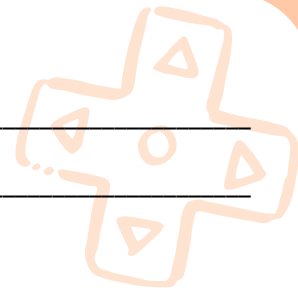
FUN FACT:

WHEN NINTENDO FIRST RELEASED THE SUPER MARIO BROS™ GAME IN 1985, MARIO WAS ONLY 16 BY 12 PIXELS IN SIZE. DECADES LATER, MARIO NOW HAS MORE THAN 15 TIMES AS MANY PIXELS (HE'S 67 BY 50 PIXELS)!

Today you were a Graphic Designer!

Graphic designers are visual communicators that use computer software to share ideas. Their designs–from websites to logos to billboards– are meant to engage consumers and inspire or inform an audience.

Meet Paula Scher!

Paula Scher is one of the most influential graphic designers in the world! She has been a partner of the prestigious New York design firm Pentagram since 1991. Paula's designs have been used by the Museum of Modern Art, the High Line, Tiffany & Co, Microsoft, and even Saturday Night Live! Scher has received hundreds of honors, including the National Design Award and the AIGA Medal - the most distinguished honor in the profession of communication design.