

## The Arts in STEM

### Charlene Parsons

The following is a project sheet for a Scratch animation I have my 6th grade math students design when we study ratios and rates. Scratch is a block based coding platform, and as I look over the arts standards, I believe that many aspects of Scratch qualify it as meeting a variety of media arts standards. One of the media arts standards for creating (MA.Cr.2.1.6) has students, “organize, propose and evaluate artistic ideas, plans and prototypes considering purposeful intent”. I feel like a Scratch animation could meet these standards. Additionally, I think this project could meet MA.Cr.3.1.6 for refining and completing artistic work, as well as MA.PRS.1.6 for problem solving. With some modification, since this particular Scratch project involves animating a story, I believe I could possibly tie in a theater standard focused on design and staging. I have included a music component in Scratch, so I could specifically structure that to meet a music standard like MU:Cr1.1.6 which involves generating simple rhythmic melodic and harmonic phrases. I looked over the visual arts standards for 6th grade, and was surprised to notice that most of them relate to making cultural connections and analyzing the intentions of works of art, so I’m not sure I can connect too much to those standards. However, I was SUPER excited when I opened The Arts and The Common Core documents, which outlined specific core arts connections to every single mathematical practice. Seriously, I’m a bit embarrassed how excited I got, my husband even came running to see if I was ok, apparently I expressed my excitement quite vocally. I’m pretty sure I can make a connection to most of the mathematical practices, and the core arts standards of imagining, investigation, construction and reflection. I think that incorporating these arts standards into a math Scratch project will result in more diversity in the products (and thus less monotony in grading). Students won’t simply program another Scratch animation with some math content, but an actual, intentional piece of art they can be proud of.

Name: \_\_\_\_\_

Date: \_\_\_\_\_

## **SCRATCH: Ratios and Rates Project**

### **Introduction to the Project**

Hello Math Nerds, this week we have been studying rates and ratios. Now it’s time to have some fun with them! We all know that when rates are expressed as a quantity of 1, such as in 35 miles per hour, they are called unit rates. If you have multiple unit rates, such as 129 students for every 3 busses (ugh, remember *that* field trip?), and want to find the single unit rate, you need to write a ratio equal to the multiple unit rate with 1 as the second term. We’ve done lots of practice problems on these concepts and now you have the opportunity to design your own in Scratch!

This project builds off of Scratch concepts we used in our About Me Polygons Project and our Math Nerd Characters Project, so if you get stuck, go back into your files and look over your programming blocks. Also be sure to reference the Scratch Programming cards and Tutorials. If you're a Scratch expert, awesome! I'll provide some challenge extensions for you to make your project even better.

Have fun and BE CREATIVE!!!

## The Math Content

In this project, you will create an Interactive Conversation for a ratio and rates problem you design, or you may choose to animate one of our examples from your interactive notebooks (Pages 78-84). You will need to include the following in your project:

1. An understanding of the concepts of rates and unit rates.
  - a. You must include a rate
  - b. You must include a unit rate
2. You must use ratio reasoning to convert measurement units.
3. You must illustrate how to solve the problem you have created and chosen
4. You must animate visuals that relate to the units in your selected problem (for example, miles could visually be represented by vehicles, or runners)

## The Scratch Content

In this project, you will experiment with:

1. Synchronizing interactions between Sprites (timing and broadcasting).
2. Developing greater familiarity with the computational concepts of events and parallelism.
3. Practicing remixing and reusing.
4. Incorporating Sounds (but don't forget to bring your headphones, my cat allergy extends to digital cat noises)

### PROJECT DUE:

- Proposal:
- Outline:
- First Draft:
- Peer Edit Reflection:
- Final Draft:
- Presentation:

### TO SUBMIT:

1. Title your project: Ratios and Rates: **Your Name**
2. Share your Project
3. Email the shareable link to my WCA account

Happy Scratching Math Nerds!