Sherlock Gnomes

Math and Art, 1st Grade

Teacher Guide

Objective

Students will be able to understand the relationship between mathematical properties and visual elements in a work of art.

Introduction

Movie Marketing: A movie's Marketing Team performs the important role of making sure people are aware of the movie and are excited to go see it. The *Sherlock Gnomes* Marketing Team includes many departments, including Market Research, Publicity, and Digital Marketing. The focus of this lesson is the In-Theater Marketing department, which is responsible for producing and distributing advertisements that are displayed in movie theaters. Advertising at movie theaters is important because the Marketing Team wants to make sure they are reaching people who will go out and see the movie, and who better to advertise to than people who already like going to the movies?! This lesson follows the production of large-scale cardboard cutouts of the *Sherlock Gnomes* Goon character that can be displayed in movie theater lobbies across the country.

Artists Use Math: Artists must understand sizing and proportion to ensure that the characters they are drawing are accurate and consistent. Without this understanding, characters become stretched or distorted which can make the characters not look like themselves. Before an artist can think about color or details, they must first perform mathematical calculations to make sure that all of their characters' arms, legs, torsos, heads, and hats are the right size. This type of math is important for the artists working on the actual movie and also for the artists who produce marketing materials that vary dramatically in size. Artists are responsible for creating not only movie posters that can hang on a wall, but also small website pop-ups and giant eye-catching billboards.

Activities

Discuss: Play the video, "How to Draw Sherlock" from 0:00 to 0:58. Ask students to pay close attention to the animator's discussion of proportions. Ask: "what does the artist mean when he references the proportion of the hat?" Share with students that the artist is making sure that Sherlock's hat is the correct size when compared to the size of his face.

List: Working in groups, have students create a list of objects that are similar but their different proportions make them unique. Eg: car/limousine, shorts/pants, loaf of bread/baguette. Warn students that even though two items may have different sizes, their proportions may be the same. Eg: kitten/cat, tennis ball/basketball.

Distribute Worksheet: Distribute Worksheet 1-A. *Worksheet may be completed as a whole-class activity or can be assigned to students using the differentiated options on the next page.*

Subtract: Read #1 aloud. Have the students count how many bodies long the Goon's hat is. If you wish, you can make copies of the Goons and have them cut out the pieces and stand the bodies end to end to measure the hat.

Measure: Read #2 aloud. Have the students cut out small Goons and stand them end to end to measure the large Goon. Or, have the students draw small Goons that stand on top of the small Goon already printed on the worksheet (make sure students are careful to make them the same size!).

Draw: Share with students that establishing correct proportions before drawing will create more realistic characters. Tell the students that based on the answer to #1 on the worksheet, they know that the Goon's hat is twice as long as the body. Have the students sketch out the Goons, paying attention to the proportion of the hat to the body.

Share the following 2 strategies for drawing with proportion:

> Object: Draw a short vertical line for the body. Measure the line using an object like your finger or a book. Use this measurement twice to draw a vertical line that is two times as long as the line for the body. This longer line is the length of the hat.
>
> Stacking: Draw a body on a separate sheet of paper. Cut this body out to create a template. Trace the template once to create the Goon's body. Trace the template on top of the body two more times to create the length of the hat. Draw a triangle with the base laying on the Goon's body and the tip at the top of the 2 extra bodies you drew. Erase the extra lines but keep the triangular hat.

Draw: Have the students repeat this process but change the length of the body line each time. They should end up with a variety of Goons that are different sizes but all share the same proportions.

Draw: Play the video, "How to Draw a Goon" and ask students to follow along as the artists draws each of the features. Make sure the students use the proportions they set up to create hats and bodies that are appropriately sized. If you wish, pause the video to figure out the proportions of the face to the torso or the torso to the legs.

Goal Set: Ask students to assess their work (both math and art) and set a goal for future learning. Prompt and scaffold as appropriate, but provide the space for students to set their *own* goals.

Duration

1 hour

Standards

Common Core State Standards, Mathematics
1.MD.A.2

National Core Arts Standards
VA:Cr:1.2.1a

Differentiation

For advanced students, distribute Worksheet 1-B. This worksheet features more complex numbers and less prompting.

Vocabulary

Tier 2	Tier 3
Measure	Proportion
Size	

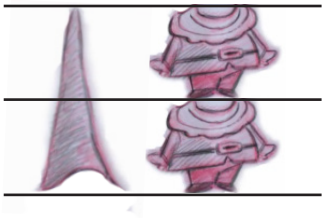
Sherlock Gnomes

Name _____

Ratios and Proportions, Worksheet 1-A

A cardboard company sends Goons to movie theaters. The Goons come in a large and small size. They come 2 pieces-- the hat and the body.

1. How long is the Goon's hat?



The Goon's hat is _____ bodies long.

2. How long is the large Goon?

The large Goon is _____ short Goons long.

3. Draw a Goon. Make the hat 2 bodies long.

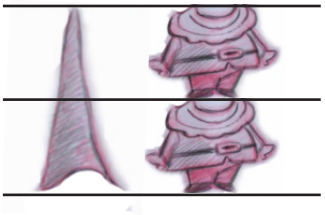
Sherlock Gnomes

Name _____

Ratios and Proportions, Worksheet 1-B

A cardboard company sends Goons to movie theaters. The Goons come in a large and small size. They come 2 pieces-- the hat and the body.

1. How long is the Goon's hat?



The Goon's hat is _____ _____ long.

2. How long is the large Goon?

3. Draw a Goon. Make the hat 2 bodies long.