

Scale in Paintings

Overview: Students will use equivalent fractions to determine the hypothetical real world measurements of objects in paintings.

Goals: This lesson will

Support concepts and skills: applying math to the concept of scale

Fulfill Learning Standards: Mathematics 6.M.3, 6.N.4, 6.N.9

Practice: implementing equivalent fractions

Familiarize students with: how scale is used in realistic paintings



Still Life with Bottle of Olives
William M. Harnett,

Objectives for Students: Students will

Be able to: calculate new measurements based on a predetermined ratio

Understand: the concept of scale

Key Questions (to be answered by students):

1. What is scale?
2. How do fractions represent scale?
3. How do artists use scale when creating paintings?

Materials Needed: Scale Activity sheet; Landscape gallery (see paintings below); Pencils; Clipboards

Museum Objects:

- Object shown is *Still Life with Bottle of Olives* by William M. Harnett, oil on canvas, 1877, Gift of Mrs. Paul Mellon in memory of her grandfather Arthur H. Lowe (1969.3)
- *The Wedding* by Edward L. Henry, oil on canvas, 1903 (1973.1)
- *Platte Valley, Colorado* by William Chapman, oil on canvas, c. 1894 (1982.9)
- *A Dark Day in June* by Gustave Adolph Wiegand, oil on canvas, c. 1900

Pre-Museum Visit --Review the concepts involved in using equivalent fractions to determine scale. Review vocabulary terms: fractions, equivalent fractions, numerator, denominator, product, quotient, landscape, still life

At the Museum -- Lead a discussion about applying the math to paintings in the gallery, emphasizing concrete examples. Divide students into small cooperative groups and hand out the Museum Scale Activity sheet. Rotate groups through the four paintings, allowing 5-7 min for each painting.

Post-Museum Visit – As a group, review the students' answers on the activity sheet and discuss their methods for reaching their answers. Dispel any misconceptions. Discuss how scale was used by the artists.

Supportive Materials: Scale Activity sheet

Documentation and Assessment Options: Assess students on their ability to solve the problems on the activity sheet, and their understanding of concepts as demonstrated in group discussions.

Links to Other Curriculum: Connected Mathematics Program, *Bits and Pieces I*, Lesson 2: FOSS Landforms Science Kit, Investigation 1, 4, and 5

Authors of the lesson: Liz Canter and Jared Quinn

Scale Activity

Name: _____

Date: _____

Still Life with Bottle of Olives

Scale = 3cm:2cm (painting : real world)

Measurements in the painting:

Grape width = 3cm Olive width = 6cm
Apple width = 9cm Bottle height = 12cm

1. How wide is the grape in the real world?
2. How wide is the olive in the real world?
3. How wide is the apple in the real world?
4. How tall is the jar in the real world?

The Wedding

Scale = Unknown

5. How tall is the tree if the horse is 6 ft. tall?
Tree height = 28cm White horse = 4cm
6. How tall is the House column if the Lady in Pink is 5 ft. tall?
House Column = 18cm
Lady in Pink = 6cm
7. How tall is the boy if the dog is 2ft. tall?
Young Boy = 5cm
Dog = 2cm

Platte Valley, Colorado

Scale = 2cm:125m

Measurements in the painting:

Valley Width = 2cm

Valley Height = 8cm

8. How wide is the valley?

9. How tall is the valley?

10. Explain in words how you can use math to find the height of the valley?

A Dark Day in June

Scale = Unknown

11. How tall is the bare tree if the pink flowers are 3 ft. tall?

Tree height = 12cm pink flowers = 4cm

12. How tall is the tree behind the house if the house is 20 ft. tall?

House = 4 1/2cm

Tree behind house = 9cm

13. How tall is the large tree if the person is 6ft. tall?

Person = 3cm

Tree = 27cm