

Curriculum Unit
Title

*Seeing, feeling, and understanding: a unit to support sixth grade
mathematics students in their development of proportional reasoning*

Author

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KEY LEARNING, ENDURING UNDERSTANDING, ETC.

Logical reasoning and emotional reaction can work together to help us to make meaning of our world, particularly when applied to our visual experience. Images in isolation provoke an emotional response; images with context have potential to tell important stories. When solving mathematical problems involving ratio, visualization—both internally and externally—provides a path toward understanding and, eventually, a solution. Similarly, analysis of ratio within images can help to further analyze the feelings and meanings that they can share.

ESSENTIAL QUESTION(S) for the UNIT

How does the mathematical concept of ratio influence our perceptions of imagery in our world? How can imagery serve as a vehicle to represent solutions to problems of ratio and proportion in mathematics?

CONCEPT A

“Art” and Aspect Ratio

CONCEPT B

Color and Student-Generated Representation

CONCEPT C

Scaling and the Double Number Line

ESSENTIAL QUESTIONS A

Mathematical: What occurs visually when two rectangles have the same aspect ratio?

Visual: Is there consistency in our preferences for certain aspect ratios over others? Do our preferences matter in determining what makes “art?”

ESSENTIAL QUESTIONS B

Mathematical: What occurs visually when a mix of paint has a different ratio of colors?

Visual: How can shades of colors communicate different visual ideas and emotional responses?

ESSENTIAL QUESTIONS C

Mathematical: How can information about the size of objects be used to scale proportionally?

Visual: How can the size of shapes communicate different visual ideas and emotional responses?

VOCABULARY A

Aesthetics, golden ratio, ratio

VOCABULARY B

Equivalent ratio, additive, multiplicative

VOCABULARY C

Double number line, pixels

ADDITIONAL INFORMATION/MATERIAL/TEXT/FILM/RESOURCES

Picture This, Molly Bang; Fairytale story contexts; Software applications for color mixing and graphic design; Screen displays of referenced works of art