Sci-Port: LOUISIANA'S Science Center

Ratio Picasso

Grades: 3rd-5th grade

Duration: 60 minutes

Program Description
Kids mix up different ratios of paint colors to produce varying shades of rose or blue, and reproduce a work of art using the equivalent ratios they have created.

Louisiana GLE:
3rd Grade Science:
1 Ask questions about objects and events in the environment (e.g., plants, rocks, storms) (SI-E-A1)
4 Predict and anticipate possible outcomes (SI-E-A2)
3rd Grade Math:
3 Use region and set models and symbols to represent, estimate, read, write, and show understanding of fractions through tenths (N-1-E) (N-2-E)
17 Analyze and describe situations where proportional trades or correspondences are required (e.g., trade 2 pieces of candy for 3 pieces of gum, make equivalent actions on pans to keep balance scale in equilibrium, plan for the number of pieces of bread needed for *x* sandwiches) (A-1-E)
47 Find patterns to complete tables, state the rule governing the shift between successive terms, and continue the pattern (including growing patterns) (P-1-E) (P-2-E)
4th Grade Math:
6 Model, read, write, compare, order, and represent fractions with denominators through twelfths using region and set models (N-1-E) (A-1-E)
14 Solve real-life problems, including those in which some information is not given (N-9-E)
38 Solve problems involving simple deductive reasoning (D-3-E)
41 Apply appropriate probabilistic reasoning in real-life contexts using games and other activities (e.g., examining fair and unfair situations) (D-5-E) (D-6-E)
43Identify missing elements in a number pattern (P-1-E)
5th Grade Math:
2 Recognize, explain, and compute equivalent fractions for common fractions (N-1-M) (N-3-M)
11 Explain concepts of ratios and equivalent ratios using models and pictures in real-life problems (e.g., understand that 2/3 means 2 divided by 3) (N-8-M) (N-5-M)
33 Fill in missing elements in sequences of designs, number patterns, positioned figures, and quantities of objects (P-1-M)

Key Terms:
Ratio - a comparison of two numbers. We generally separate the two numbers in the ratio with a colon (:).

Connections to Permanent Exhibits:
How Tall: Use this exhibit to determine the height of our Sci-Port Discovery Center Eiffel Tower, Tai Mahal, and Statue of Liberty. What did you have to know to determine this?
Magic Abacus: Did you arrange the blocks so each line equaled 10? Did you discover a new pattern?
Circular Logic: What was your first step in solving this problem?
Cranium Crackers: What was your favorite math game? Why?
3-D Tic Tac Toe: Grab a friend or two and play this unique Tic Tac Toe game. Did you discover the magic position?
Crack the Code: Play a game of Crack the Code. What logic did you use to win this game?
Probability: Shoot the plinko balls into the grid. What is shape does it make? What is this shape called?
Equation Workshop: Choose your operation and play the game. In what operation were you best?
The Blue Square: Can you make a rectangular prism with a red top and blue sides? Can you make a cube that is yellow on all sides?

Web Resources:
On Line Picasso Project
http://picasso.tamu.edu/picasso/
A comprehensive Illustrated catalogue about Picasso.

Cubism Wikipedia
http://en.wikipedia.org/wiki/Cubism
Encyclopedia article about Cubism

Picasso's Blue Period Wikipedia
http://en.wikipedia.org/wiki/Picasso%27s_Blue_Period
Encyclopedia article about Picasso's Blue Period.

Pre-Visit Activities
Have students visit the following sites and do activities within the sites:

Algebra: Operations: Ratio and Proportions Regents Prep School
http://www.regentsprep.org/Regents/math/ALGEBRA/AO3/indexAO3.htm
What is a ratio?

Skillswise: numbers: Ratio and Proportions BBC
http://www.bbc.co.uk/skillswise/numbers/wholenumbers/ratioandproportion/ratio/game.shtml
This is an online game using ratios and proportions.

Historic Figures: Picasso BBC
http://www.bbc.co.uk/history/historic_figures/picasso_pablo.shtml
Pablo Picasso official website ARAGON
http://www.picasso.fr/us/picasso_page_index.php
Pablo Picasso Lucid Cafe
http://www.lucidcafe.com/library/95oct/ppicasso.html
Have students investigate Who is Picasso? Using the above sites.

All About Ratios Rice University School Mathematics, Cynthia Lanius
http://math.rice.edu/~lanius/proportions/rate.html
Place this interactive game to find ratios

Sagwa Online Coloring PBS Kids
http://pbskids.org/sagwa/color/paint/index_paint.html
Have students play with online coloring and mixing colors while painting online at PBS.

Online Color Mixing Palette for Painters About.com
http://painting.about.com/library/blpaint/blcolormixingpalette1.htm
This allows children to click on two colors and see what color they make (even ratio, this just deals with what colors are mixed to make other colors)

Math Tools The Math Forum @ Drexel
http://mathforum.org/mathtools/cell/m6,8.9,ALL,ALL/
Middle School teachers visit this site for activities and plans

Post-Visit Activities

Core Knowledge LunarPages
http://www.coreknowledge.org/CK/search-results.htm?cx=011541143642083252130%3Azprsoa146rk&cof=FORID%3A11&q=picasso#1220 Many elementary art activities and lesson plans can be found at the above site

Ratio Activity and lesson Plans University of Kentucky: Algebra Cubed
http://www.ms.uky.edu/algebracubed/lessons/Paint_LessonPlan.pdf
Have students complete the above painting ratio activity.