Math in Art (Grades K-5)

LESSON DESCRIPTION

This lesson is a great way for students to see how math and art work together. Our educator will adapt the lesson to fit your specific grade and math concepts. Each lesson will include a hands-on art activity for students to apply what they have learned.

SC VISUAL ARTS STANDARDS

Kindergarten

- VAK-1.1 Use his or her own ideas in the creation of works of visual art.
- VAK-1.3 Use all art materials and tools in a safe and responsible manner.
- VAK-2.2 Identify the elements and principles of design used in a particular work of visual art.
- VAK-3.1 Identify and describe content used by artists.
- VAK-6.1 Identify connections between the visual arts and content areas across the curriculum.

First Grade

- VA1-1.1 Use his or her own ideas in the creation of works of visual art
- VA1-1.2 Identify and describe the materials, techniques, and processes used in a variety of works of visual art.
- VA1-1.4 Use all art materials and tools in a safe and responsible manner.
- VA1-2.1 Recognize and describe the differences in the composition and design of various works of visual art.
- VA1-2.2 Discuss the reasons that different elements and principles of design each cause their own distinct response in one who is creating or viewing artworks.
- VA1-2.4 Discuss the elements and principles of design found in works of visual art.
- VA1-3.1 Recognize and describe the content in a work of visual art.
- VA1-6.1 Identify similarities and connections between the visual arts and other subjects in the school curriculum.

Second Grade

- VA2-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA2-1.2 Discuss the reasons that different elements and principles of design each cause their own distinct response in one who is creating or viewing works of visual art.
- VA2-1.4 Use all art materials and tools in a safe and responsible manner.
- VA2-2.1 Recognize and describe the differences in the composition and design of various works of visual art and the ideas they convey.
- VA2-2.2 Discuss the reasons that different elements and principles of design each cause their own distinct response in one who is creating or viewing artworks.
- VA2-3.1 Describe the content in a work of visual art.
- VA2-6.1 Identify similarities and connections between the visual arts and other subjects in the school curriculum.

Third Grade

- VA3-1.1 Use his or her own ideas in creating works of visual art.
- VA3-1.2 Identify and describe the materials, techniques, and processes used in a variety of artworks.
- VA3-1.5 Use all art materials and tools in a safe and responsible manner.
- VA3-2.1 Recognize and describe the differences in the composition and design of various works of visual art and the ideas they convey.
- VA3-2.2 Discuss the reasons that different elements and principles of design each cause their own distinct response in one who is creating or viewing artworks.
- VA3-3.1 Recognize and describe the content in a work of visual art.
- VA3-6.1 Identify similarities and connections between the visual arts and other subjects in the school curriculum.

Fourth Grade

- VA4-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA4-1.2 Explain the reasons that different elements and principles of design each cause their own distinct response in one who is creating or viewing artworks.

- VA4-1.5 Use all art materials and tools in a safe and responsible manner.
- VA4-2.1 Explain the differences in the composition and design of various works of visual art and the ideas they convey.
- VA4-2.2 Explain the reasons that different elements and principles of design each cause their own distinct response in one who is creating or viewing artworks.
- VA4-3.1 Identify and describe the content in a work of visual art.
- VA4-6.1 Identify similarities and connections between the visual arts and other subjects in the school curriculum.

Fifth Grade

- VA5-2.2 Discuss the ways that the various elements and principles of design are used to communicate ideas.
- VA5-3.1 Identify and describe the content in a work of visual art.
- VA5-6.1 Identify connections between the visual arts and content areas across the curriculum.

Sixth Grade*:*

- VA6-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA6-1.2 Describe the ways that different materials, techniques, and processes evoke different responses in one who is creating or viewing artworks.
- VA6-1.4 Use art materials and tools in a safe and responsible manner.
- VA6-2.1 Select a work of art, analyze its composition, and discuss which elements of art and principles of design are used in the work.
- VA6-3.1 Identify and describe the content in works of visual art.
- VA6-5.1 Compare various purposes for the creation of works of visual art.
- VA6-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.

Seventh Grade:

- VA7-1.1 Identify the materials, techniques, and processes used in a variety of artworks.

- VA7-1.2 Describe the ways that different materials, techniques, and processes evoke different responses in one who is creating or viewing artworks.
- VA7-1.4 Use art materials and tools in a safe and responsible manner.
- VA7-2.1 Discuss similarities and differences in the composition and in the use of the elements and principles of design in two contrasting works of visual art.
- VA7-3.1 Compare and contrast the content in two works of visual art.
- VA7-5.1 Compare various purposes for the creation of works of visual art.
- VA6-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.

Eighth Grade:

- VA8-1.1 Identify the materials, techniques, and processes used in a variety of artworks.
- VA7-1.2 Describe the ways that different materials, techniques, and processes evoke different responses in one who is creating or viewing artworks.
- VA8-1.4 Use art materials and tools in a safe and responsible manner.
- VA7-2.1 Discuss similarities and differences in the composition and in the use of the elements and principles of design in two contrasting works of visual art.
- VA8-3.1 Compare and contrast the content in several works of visual art.
- VA8-5.1 Compare various purposes for the creation of works of visual art.
- VA7-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.

High School*:*

- VAH-1.1 Recognize and analyze the similarities and differences among the materials, techniques, and processes in works of visual art.
- VAH1-1.2 Describe ways that different materials, techniques, and processes evoke different responses in one who is creating or viewing artworks.
- VAH1-1.3 Communicate ideas through the effective use of a variety of materials, techniques, and processes in works of visual art.

- VAH-1.5 Use a variety of art materials, tools, and equipment in a skillful, safe, and responsible manner.
- VAH4-2.1 Recognize, describe, and analyze the elements and principles of design and other compositional structures and strategies used in the visual arts to communicate ideas.
- VAH-3.1 Explore the sources of the subject matter and the ideas in variety of works of visual art.
- VAH1-5.1 Analyze the intention of the artist in a specific artwork and justify his or her interpretation.
- VAH1-6.2 Compare and contrast concepts, issues, and themes in the visual arts and other subjects in the school curriculum.

SC MATH STANDARDS

Kindergarten

- K.G.2 Identify and describe a given shape and shapes of objects in everyday situations to include two-dimensional shapes (i.e., triangle, square, rectangle, hexagon, and circle) and three-dimensional shapes (i.e., cone, cube, cylinder, and sphere).
- K.G.3 Classify shapes as two-dimensional/flat or three-dimensional/solid and explain the reasoning used.
- K.G.4 Analyze and compare two- and three-dimensional shapes of different sizes and orientations using informal language.
- K.G.5 Draw two-dimensional shapes (i.e., square, rectangle, triangle, hexagon, and circle) and create models of three-dimensional shapes (i.e., cone, cube, cylinder, and sphere).

First Grade

- 1.G.1 Distinguish between a two-dimensional shape's defining (e.g., number of sides) and non-defining attributes (e.g., color).
- 1.G.3 Partition two-dimensional shapes (i.e., square, rectangle, circle) into two or four equal parts.
- 1.G.4 Identify and name two-dimensional shapes (i.e., square, rectangle, triangle, hexagon, rhombus, trapezoid, and circle).

Second Grade

- 2.G.1 Identify triangles, quadrilaterals, hexagons, and cubes. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.
- 2.G.3 Partition squares, rectangles and circles into two or four equal parts, and describe the parts using the words halves, fourths, a half of, and a fourth of. Understand that when partitioning a square, rectangle or circle into two or four equal parts, the parts become smaller as the number of parts increases.

Third Grade

- 3.G.2 Partition two-dimensional shapes into 2, 3, 4, 6, or 8 parts with equal areas and express the area of each part using the same unit fraction. Recognize that equal parts of identical wholes need not have the same shape.

Fourth Grade

- 4.G.4 Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Grade 6 Math Standards*:*

- 6.RP.1 Interpret the concept of a ratio as the relationship between two quantities, including part to part and part to whole.
- 6.RP.3 Apply the concepts of ratios and rates to solve real-world and mathematical problems.
    - f. Solve one-step problems involving ratios and unit rates (e.g., dimensional analysis).
- 6.EEI.2 Extend the concepts of numerical expressions to algebraic expressions involving positive rational numbers.
    - c. Evaluate real-world and algebraic expressions for specific values using the Order of Operations. Grouping symbols should be limited to parentheses, braces, and brackets. Exponents should be limited to whole-numbers.
- 6.EEI.6 Write expressions using variables to represent quantities in real-world and mathematical situations. Understand the meaning of the variable in the context of the situation.
- 6.EEI.7 Write and solve one-step linear equations in one variable involving nonnegative rational numbers for real-world and mathematical situations.

Seventh Grade Math Standards*:*

- 7.RP.2 Identify and model proportional relationships given multiple representations, including tables, graphs, equations, diagrams, verbal descriptions, and real-world situations.
    - d. Use equations to model proportional relationships.
- 7.RP.3 Solve real-world and mathematical problems involving ratios and percentages using proportional reasoning (e.g., multi-step dimensional analysis, percent increase/decrease, tax).
- 7.EEI.2 Recognize that algebraic expressions may have a variety of equivalent forms and determine an appropriate form for a given real-world situation.
- 7.EEI.3 Extend previous understanding of Order of Operations to solve multi-step real-world and mathematical problems involving rational numbers. Include fraction bars as a grouping symbol.
- 7.GM.2 Construct triangles and special quadrilaterals using a variety of tools (e.g., freehand, ruler and protractor, technology).
    - c. Construct special quadrilaterals (i.e., kite, trapezoid, isosceles trapezoid, rhombus, parallelogram, rectangle) given specific parameters about angles or sides.
- 7.GM.6 Apply the concepts of two- and three-dimensional figures to real-world and mathematical situations.
    - b. Understand that the concepts of volume and surface area are applied to three-dimensional figures such as cubes, right rectangular prisms, and right triangular prisms.

Eighth Grade Math Standards*:*

- 8.EEI.5 Apply concepts of proportional relationships to real-world and mathematical situations.
    - c. Compare two different proportional relationships given multiple representations, including tables, graphs, equations, diagrams, and verbal descriptions.

Algebra 1

- A1.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable. (Limit to linear; quadratic; exponential with integer exponents.)

- A1.ACE.4* Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.
- A1.NQ.1* Use units of measurement to guide the solution of multi-step tasks. Choose and interpret appropriate labels, units, and scales when constructing graphs and other data displays.

Foundations in Algebra

- FA.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable. (Limit to linear; quadratic; exponential with integer exponents.)
- FA.ACE.4* Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.
- FA.ASE.1* Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions. (Limit to linear; quadratic; exponential.)
- FA.NQ.1* Use units of measurement to guide the solution of multi-step tasks. Choose and interpret appropriate labels, units, and scales when constructing graphs and other data displays.

Intermediate Algebra

- IA.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable.
- IA.ACE.4* Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.
- IA.ASE.1* Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.

Algebra 2

- A2.ASE.1* Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.

Geometry

- G.GCO.11* Construct geometric figures using a variety of tools, including a compass, straightedge, dynamic geometry software, and paper folding, and use these constructions to make conjectures about geometric relationships.
- G.GGMD.3* Apply surface area and volume formulas for prisms, cylinders, pyramids, cones, and spheres to solve problems and justify results. Include problems that involve algebraic expressions, composite figures, geometric probability, and real-world applications.

Pre-Calculus

- PC.GGPE.3 Use the geometric definition of an ellipse and of a hyperbola to derive the equation of each given the foci and points whose sum or difference of distance from the foci are constant.