

Math: Geometry: Geometric Measurement and Relationships

Students:

DesCartes Statements:

Students:

RIT Above 260:

- Defines pi and knows common estimates (3.14 and 22/7)
- Determines slope from an equation (analysis)
- Determines the slope of perpendicular lines
- Solves problems involving complex figures (e.g., triangle, parallelogram)
- Solves real-world problems involving surface area
- Using the slope of an equation, identifies parallel and perpendicular lines

Students:

RIT 251-260:

- Calculate the height of a trapezoid, given the area, without the formula given (metric)
- Calculates the length of one side of a cube, given the volume (customary units)
- Calculates the radius of a sphere, given the volume and formula (metric units)
- Classifies polygons by properties
- Determines an endpoint of a line segment on a coordinate grid, given the midpoint and the other endpoint
- Determines slope from an equation (analysis)
- Determines the area of a figure when plotting ordered pairs without a grid
- Determines the area of a parallelogram, given a labeled diagram
- Determines the circumference when given the area of a circle (or vice versa)
- Determines the diameter or radius when given the area of a circle (metric units)
- Determines the midpoint of a line on a coordinate grid
- Determines the slope of perpendicular lines
- Determines the volume of a cylinder
- Recognizes that the sum of the measures of two sides of a triangle must be greater than the measure of the third side
- Solves complex problems involving inscribed figures
- Solves problems involving complex figures (e.g., triangle, parallelogram)
- Solves real-world problems comparing volumes of figures
- Solves real-world problems involving surface area
- Using the slope of an equation, identifies parallel and perpendicular lines

Students:

RIT 241-250:

- Calculates the area of irregular shapes (metric units)
- Computes and interprets the midpoint, given a set of ordered pairs (horizontal and vertical lines)
- Describes the change in area of a rectangle when dimensions of an object are altered
- Determines slope from an equation (analysis)
- Determines the area of a figure when plotting ordered pairs without a grid
- Determines the area of a parallelogram, given a labeled diagram
- Determines the area of a triangle without the formula
- Determines the area of irregular shapes (customary units)
- Determines the circumference when given the area of a circle (or vice versa)
- Determines the circumference when given the diameter or radius (or vice versa)
- Determines the diameter or radius when given the area of a circle (metric units)
- Determines the effects of changing dimensions on volume (no units)
- Determines the figure when plotting ordered pairs
- Determines the midpoint of a line on a coordinate grid
- Determines the surface area of rectangular solids
- Identifies and determines missing angle measures for complementary angles
- Recognizes that the sum of the measures of two sides of a triangle must be greater than the measure of the third side
- Solves complex problems involving inscribed figures
- Solves problems comparing areas of different polygons
- Solves problems involving area of a circle
- Solves problems involving area of a rectangle and converts to larger or smaller units (customary)

Students:

RIT 231-240:

- Calculates the area of a rectangle, given labeled sides (customary units)
- Calculates the base or height of a parallelogram, given the area and formula (metric)
- Calculates the length, width, or height of a rectangular prism, given the area (customary units)
- Calculates the volume of a rectangular prism, and converts to a different measurement scale (customary units)

- Calculates the volume of rectangular solids
- Classifies isosceles triangles
- Classifies scalene triangles
- Compares area of numerous triangles
- Compares polygons by properties
- Describes the change in area of a rectangle when dimensions of an object are altered
- Describes the change in perimeter when dimensions of an object are altered
- Determines an appropriate scale for representing an object in a scale drawing
- Determines the area of a parallelogram, given a labeled diagram
- Determines the area of a trapezoid, given the formula (metric units)
- Determines the area of a triangle drawn on a grid
- Determines the area of a triangle, given the formula
- Determines the area of irregular shapes (customary units)
- Determines the circumference when given the area of a circle (or vice versa)
- Determines the circumference when given the diameter or radius (or vice versa)
- Determines the length or width of a rectangle, given the area (metric units)
- Determines which lines are perpendicular (analysis)
- Explores maps and relates them to measurements of real distances, using proportional reasoning
- Identifies properties of circles
- Identifies properties of quadrilaterals
- Identifies the formula for perimeter with a variable
- Knows the relationship between radius, diameter, and circumference
- Measures length to the nearest millimeter
- Solves problems comparing areas of different polygons
- Solves problems involving the perimeter of irregular or complex shapes
- Solves simple problems involving the area of a square or rectangle
- Understands the procedure for finding the area and surface area of figures
- Uses similarity to solve problems using scale drawings

Students:

RIT 221-230:

- Calculates area and perimeter of a rectangle (customary units)
- Calculates the area of a rectangle, given labeled sides (customary units)
- Calculates the base or height of a parallelogram, given the area and formula (metric)
- Calculates the volume of a rectangular prism, and converts to a different measurement scale (customary units)
- Calculates the volume of rectangular solids
- Classifies equilateral triangles
- Classifies polygons by type of angle
- Compares polygons by properties
- Describes the change in area of a triangle when 1 dimension of an object is altered (metric units)
- Describes the change in perimeter when dimensions of an object are altered
- Determines an appropriate scale for representing an object in a scale drawing
- Determines coordinates of geometric figures in the first quadrant
- Determines the area of irregular shapes (customary units)
- Determines the length or width of a rectangle, given the area (metric units)
- Determines the perimeter of a figure using non-standard units
- Determines which lines are perpendicular (analysis)
- Identifies acute angles
- Identifies and determines missing angle measures for supplementary angles
- Identifies and names a quadrilateral
- Identifies and names a rhombus
- Identifies properties of quadrilaterals
- Identifies rays
- Identifies the number of edges on rectangular prisms
- Measures length to the nearest millimeter
- Solves problems involving the perimeter of irregular or complex shapes
- Solves problems involving the perimeter of squares, rectangles, or triangles
- Solves simple problems involving the area of a square or rectangle
- Uses similarity to solve problems using scale drawings

Students:**RIT 211-220:**

- Calculates the volume of a rectangular prism, and converts to a different measurement scale (customary units)
- Classifies polygons by type of angle
- Describes the change in area of a triangle when 1 dimension of an object is altered (metric units)
- Describes the change in perimeter when dimensions of an object are altered
- Determines an appropriate scale for representing a distance on a map
- Determines the area of irregular shapes with partial square units
- Determines the diameter, given the radius, and vice versa
- Determines the perimeter of a figure using non-standard units
- Estimates and finds volume of a figure using cubic units
- Estimates the measure of acute, right, and obtuse angles using 45 and 90 degrees as referents
- Finds the perimeter of a polygon using a formula
- Identifies acute angles
- Identifies and names a quadrilateral
- Identifies and names a rhombus
- Identifies and names a trapezoid
- Identifies corners (vertices) of cubes
- Identifies obtuse angles
- Identifies properties of angles
- Identifies rays
- Identifies the net which makes a cube-like (open box) figure
- Identifies the number of edges on rectangular prisms
- Knows the approximate size of a millimeter
- Measures angles using a protractor
- Predicts and verifies the effects of combining or subdividing basic shapes
- Selects and uses the appropriate type and size of unit in metric system (mass)
- Solves problems involving the perimeter of squares, rectangles, or triangles
- Solves simple problems involving capacity
- Uses the appropriate unit of measure for length

Students:**RIT 201-210:**

- Classifies cubes by their properties (e.g., edges with equal lengths, faces with equal areas and congruent shapes, right angle corners)
- Classifies polygons by number of sides
- Classifies polygons by sides and angles
- Describes the change in area of a triangle when 1 dimension of an object is altered (metric units)
- Determines the area of irregular shapes with partial square units
- Determines the perimeter of a figure where some sides are labeled
- Estimates and finds volume of a figure using cubic units
- Estimates the area of rectangles using square units
- Estimates the measure of acute, right, and obtuse angles using 45 and 90 degrees as referents
- Identifies a cube from a net
- Identifies and names a cylinder
- Identifies and names a hexagon
- Identifies and names a parallelogram
- Identifies and names a trapezoid
- Identifies corners (vertices) of cubes
- Identifies parallel lines
- Identifies situations where it is appropriate to calculate area
- Knows the approximate size of a gram
- Knows the approximate size of a pound
- Knows the approximate size of a yard
- Measures length to the nearest centimeter
- Uses basic indirect methods to estimate measurements (grids for area of irregular figures)
- Uses models to compare angles relative to right angles
- Uses the appropriate unit of measure for length

Students:**RIT 191-200:**

- Creates a new shape by combining different shapes, or identifies the different shapes that were used to make the original shape
- Determines the perimeter of a figure where all sides are labeled
- Determines the perimeter of a figure where some sides are labeled

- Estimates the area of rectangles using square units
- Explores maps and relates them to measurements of real distances, using the scale
- Identifies and names a cylinder
- Identifies and names a sphere
- Identifies corners (vertices) of cubes
- Identifies lines
- Identifies parallel lines
- Identifies right angles
- Identifies the number of faces on rectangular prisms
- Selects and uses the appropriate type and size of unit in customary system (length)
- Solves simple problems involving the perimeter of squares, rectangles, or triangles
- Sorts 2-D shapes and objects according to their attributes
- Uses models to compare angles relative to right angles

Students:

RIT 181-190:

- Classifies polygons by sides and vertices
- Determines more capacity or less capacity
- Determines the area of irregular shapes by counting square units
- Determines the perimeter of a figure where all sides are labeled
- Identifies and names a cube
- Identifies and names a sphere
- Measures length with customary measures to the half-inch mark
- Selects and uses the appropriate type and size of unit in customary system (length)
- Uses a variety of non-standard units to measure the same length

Students:

RIT 171-180:

- Determines the area of irregular shapes by counting square units
- Estimates and measures length of an object to the nearest centimeter using a picture of a ruler
- Identifies and names a cube
- Identifies and names a square
- Identifies and names a triangle
- Measures length with customary measures to the inch mark
- Recognizes geometric shapes in real-world objects

Students:

RIT 161-170:

- Compares objects (shorter, longer)
- Compares open and closed figures
- Estimates and measures length of an object to the nearest inch using a picture of a ruler
- Identifies and names a cone
- Identifies and names a rectangle
- Identifies and names a square
- Identifies and names a triangle
- Identifies position of shapes (e.g., inside, outside, between)
- Identifies sides and vertices of polygons
- Measures length with customary measures to the inch mark
- Measures length with metric measures to the centimeter mark
- Sorts solid figures and objects according to attributes

Students:

RIT Below 161:

- Identifies and names a circle
- Identifies spatial sense concepts (e.g., outside, inside, between, over, under, above, below, behind, in front, middle)