Unit 3: Geometry/Data Analysis/Statistics/Real Number System

Content Area: **Math**
Course(s):
Time Period: **MP3**
Length: **45**
Status: **Published**

NJSLS

HS.G-CO.A.1 Experiment with transformations in the plane 1. Know precise definitions of angle, circle, perpendicular line, parallel line, and line segment, based on the undefined notions of point, line, distance along a line, and distance around a circular arc.

HS.G-GMD.A.1 Explain volume formulas and use them to solve problems 1. Give an informal argument for the formulas for the circumference of a circle, area of a circle, volume of a cylinder, pyramid, and cone. Use dissection arguments, Cavalieri's principle, and informal limit arguments.

HS.A-APR.A.1 Perform arithmetic operations on polynomials 1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

HS.S-ID.A.1.2 1. Represent data with plots on the real number line (dot plots, histograms, and box plots). 2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets.

Rationale, Transfer Goals, and Enduring Understandings

Students will learn how to apply parallel and perpendicular line properties to word problems. The students will also apply the properties of circles and composite figures. The students will also learn how to apply the properties of the Pythagorean Theorem. Students will learn how Data Analysis and Statistics can be applied to solve and explain how they are used in our society. The unit finishes up with introduction to the Real Number System.

Essential Questions

- How do you write and graph the equation of a line in the coordinate plane?
- How do the angles formed by two parallel lines and a transversal relate to each other?
- How can you use information about the angles formed by two lines and a transversal to prove the lines are parallel?
- How can collecting and analyzing data help you make decisions or predictions?
- How can you make and interpret different representations of data?
- How can you represent quantities, patterns, and relationships with variables?
- Do I have an understanding of the real number systems and the basic operations that can be performed on these real numbers?

Content

-Lines and Angles

-Perimeter and Area

-Circles and Composite Figures

-Triangles

-Square Roots and the Pythagorean Theorem

-Mean, Median, Mode and Range

-Tables, Pictographs and Bar Graphs

-Creating Bar Graphs, Line Graphs and Pie Charts

-Predicting statistics from a graph

-Adding and Subtracting Real Numbers

-Multiplying and Dividing Real Numbers

-Order of Operations for Real Numbers

Skills

-Recognizes lines and line segments

-Find the measures of angles using complements and supplements

-Find the measures of angles using vertical, alternate interior and corresponding angles

-Identify polygons

-Find the perimeter and area of a polygon

-Find the circumference and area of a circle

-Find the perimeter and area of a composite figure

-Classify triangles by angles and sides

-Find measures of angles and lengths of sides of a triangle

-Find the square root of a perfect square

-Use the pythagorean theorem

-Calculate the mean of a data set

-Find the median, mode and range of a data set

-Compare the mean and the median of a data set

-Read and interpret a table

-Read and interpret a line, bar and pictograph

-Predict a line graph

-Use a table to create a line and a bar graph

-Read and create a Pie Graph

-Compute the quartiles of a data set

-Give a five-number summary of a data set

-Construct a box-and-whisker plot to describe a data set

-Represent an integer on a number line

-Order a set of real numbers

-Simplify absolute value expressions

-Add two numbers with the same and opposite signs

-Find the difference of two real numbers

-Find the product of two or more real numbers

-Find the reciprocal of a real number

-Evaluate expressions involving real numbers

-Find the quotient of two real numbers

-Recognize that division by zero is undefined

-Use the order of operations to evaluate expressions involving real numbers

Activities/Strategies

Math practice individually, whole group, and small group.

Peer group leadership

Student presentations of concepts and demonstration of skills

Partners or group work (groups formed heterogeneously according to ability)

Students given access to Google Classroom

Students given access to Screencastify

Edpuzzle

Khan Academy

Evidence (Assessments)

Formative

Teacher observation and questioning

Seat and or group work

Fist to five/ Thumbs up, thumbs down

Homework

Student participation at board

Summative

Edpuzzle pro quizzes

Notebook Quiz

Homework Checks

Regular Quizzes and tests

Unit 3 Benchmark Assessment

Camden County Final

Spiraling for Mastery

Content or Skill for this Unit	Spiral Focus from Previous Unit	Instructional Activity
-Geometry -Perpendicular and Parallel lines -Triangles and their properties -Circles and Composite Figures -Triangles -Square roots and the	-Adding, Subtracting, Multiplying and Dividing Fractions -Exponential Notation and the order of operations -Ratios and Proportions	Students given handouts of powerpoint notes Students provided with google slide presentations Students given access to online help from multiple locations

Pythagorean Theorem -Data Analysis and Statistics -MMM&R -Bar, Line and Pie Graphs -Statistics of a Graph -Real Number System -Integer operations	-Percents -Percent increase and decrease -Percents with respect to loans	Partners or group work (groups formed heterogeneously according to ability) IXL https://www.ixl.com/inspiration/get-started Open Source activities below from Illustrative Math • Symmetries of a Circle • Defining Parallel Lines • Christo's Building • Areas of Special Quadrilaterals • Wallpaper Decomposition • Powers of 11 • Non-Negative Polynomials • Differences and Distances • Comparing Freezing Points • Sharing Prize Money • Drill Rig • Estimating the Mean State Area • Valentine Marbles • College Athletes • Rolling Dice • Waiting Times

Career Awareness, Exploration, Preparation, and Training

9.2.12.CAP.2: Develop college and career readiness skills by participating in opportunities such as structured learning experiences, apprenticeships, and dual enrollment programs.

9.2.12.CAP.3: Investigate how continuing education contributes to one's career and personal growth

21st Century Skills

CRP2. Apply appropriate academic and technical skills.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

Interdisciplinary Connections

NJSLS ELA

NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.

NJSLA Science

HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength,

and speed of waves traveling in various media.

HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the

change in energy of the other component(s) and energy flows in and out of the system are known.