Unit 4 - Measurement, Data Literacy & Geometry

Content Area: **Math**
Course(s):
Time Period: **Full Year**
Length: **Full Year**
Status: **Published**

Unit Overview

Enduring Understandings

Understand perimeter involves addition
Recognize perimeter as attributes of plane figures and find ways to measure.
Investigate the relationship between perimeter and area.
Solve real world problems involving perimeter and unknown side lengths.
Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects.
Represent and interpret measurement data.
Define and classify shapes by their attributes.
Understand that shared attributes make larger categories and subcategories.

Essential Questions

How can you solve problems involving perimeter?
How can you measure and find perimeter?
How can you find the unknown length of a side in a plane figure when you know its perimeter?
How can you estimate and measure liquid volume and mass in metric units?
How can you use models to solve liquid volume and mass problems?
How can you use measurement to describe the size of something?
How can you tell time?
How can you measure elapsed time in minutes?
How can you find a starting time or an ending time when you know the elapsed time?
How can you generate measurement data and show the data on a line plot?
What are some ways to describe and classify two-dimensional shapes?
What attributes can you use to classify quadrilaterals?
Why is it possible to draw two different quadrilaterals that match the same description?

Learning Objectives

Explore the perimeter of polygons by counting units on grid paper.
Estimate and measure perimeter of polygons using inch and centimeter rulers.
Find the unknown length of a side of a polygon when you know its perimeter.
Explore perimeter as attributes of polygons.

Estimate and measure liquid volume in millimeters and liters.
Estimate and measure mass in grams and kilograms.
Read, write, and tell time on analog and digital clocks to the nearest minute.
Measure time intervals in minutes.
Use a number line or an analog clock to add or subtract time intervals to find starting times or ending times.
Solve problems involving time intervals.
Understand scaled picture graphs.
Solve problems involving scaled graphs.
Measure halves or fourths of an inch
Show measurement data on a line plot.
Describe and classify polygons.
Identify polygons by the number of sides they have.
Describe and classify quadrilaterals.
Draw quadrilaterals with specific attributes
Use different strategies to find the perimeter of a figure, including counting, adding, and multiplying.
Solve real world and mathematical problems involving perimeter of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.
Solve one-step word problems by estimating, measuring, and comparing liquid volumes and masses using appropriate tools and units.
Estimate liquid volumes in millimeters and liters
Solve world problems involving time intervals.
Tell and write time to the nearest minute.
Create scaled picture graphs.
Solve problems using scaled graphs.
Measure objects to the nearest half and quarter inch.
Generate measurement data and create line plots to display data.
Describe polygons and classify them based on their shared attributes
Describe quadrilaterals based on their attributes.
Identify and classify quadrilaterals based on their attributes.
Use given attributes and an understanding of categories of quadrilaterals to draw quadrilaterals.

Standards: Content

3.M.A	Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects
3.M.A.1	Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.
3.M.A.2	Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.
3.M.C	Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures
3.M.C.6	Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area

	and different perimeters.
3.DL.A	Understand data-based questions and data collection.
3.DL.A.1	Develop data-based questions and decide what data will answer the question. (e.g., “What size shoe does a 3rd grader wear?”, “How many books does a 3rd grader read?”)
3.DL.A.2	Collect student-centered data (e.g., collect data on students’ favorite ice cream flavor) or use existing data to answer data-based questions.
3.DL.B	Represent and interpret data
3.DL.B.3	Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step “how many more” and “how many less” problems using information presented in scaled bar graphs.
3.G.A	Reason with shapes and their attributes
3.G.A.1	Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

Standards: Interdisciplinary

9.4.2.CT.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
9.4.2.CT.3	Use a variety of types of thinking to solve problems (e.g., inductive, deductive).
9.2.5.CAP.6	Compare the characteristics of a successful entrepreneur with the traits of successful employees.
9.2.5.CAP.7	Identify factors to consider before starting a business.
9.1.2.PB.1	Determine various ways to save and places in the local community that help people save and accumulate money over time.
9.1.2.PB.2	Explain why an individual would choose to save money.
8.1.5.DA.1	Collect, organize, and display data in order to highlight relationships or support a claim.
8.1.5.DA.5	Propose cause and effect relationships, predict outcomes, or communicate ideas using data.
9.4.2.IML.2	Represent data in a visual format to tell a story about the data (e.g., 2.MD.D.10).
9.4.2.IML.3	Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults (e.g., 6.3.2.GeoGI.2, 6.1.2.HistorySE.3, W.2.6, 1-LSI-2).
8.2.5.ED.2	Collaborate with peers to collect information, brainstorm to solve a problem, and evaluate all possible solutions to provide the best results with supporting sketches or models.
8.2.5.ED.3	Follow step by step directions to assemble a product or solve a problem, using appropriate tools to accomplish the task.
8.2.5.ED.5	Describe how specifications and limitations impact the engineering design process.

Assessment Evidence

Formative	Collaborative Activities, Homework, Daily Classwork, Discussion, Independent Class Assignment, Informal Observations of Students, Games, Exit Slips, Questioning, Teacher

	Made Pages, Learning Centers, Problem of the Day, Reveal Workbooks, Fluency Checks, Curious, Activity Based Exploration, Guided Exploration, On My Own.
Summative	Tests, Mid-Chapter Checkpoint assessments, teacher generated assessments
Alternative & Benchmark	Alternative – Reteaching, One on One Conferencing, Learning Centers, student portfolio of assignments, Homework, Higher Order Thinking Problems, Additional leveled practice, orally administered assessments. Benchmark - LinkIt Benchmark Assessments, Totowa TPA
Assessment Evidence Resource	

Instructional Resources

Smartboard, Computers, websites and digital interactives/models, Multi-media presentations, video streaming, Brain Pop, Microsoft 365, Primary and Secondary Source Documents, Reveal, Resources, manipulatives, post-it notes, markers, number lines, chart & graph paper, construction paper, glue, scissors, paperclips, crayons, envelopes, dot ink & cards, geo blocks, number cubes/dice.

Instructional Resource List

Curricular Mandates

Below are the curricular requirements as defined in NJ Administrative Code and Statute

	Amistad		Diversity, Equity, and Inclusion
	Holocaust		LGBT and Disabilities (Grades 6-12)
	Climate Change		Asian American & Pacific Islander

Social Emotional Learning (SEL) Competencies

NJ Social and Emotional Learning Competencies & Sub-Competencies

X	Self-Awareness	X	Relationship Skills
X	Responsible Decision-Making	X	Social Awareness

X	Self-Management		

21st Century Skills & Themes

	Global and Cultural Awareness	X	Technology Literacy		Planning and Budgeting
X	Creativity and Innovation		Financial Institutions		Risk Management and Insurance
	Information and Media Literacy		Digital Citizenship		Economic and Government Influences
X	Critical Thinking and Problem Solving		Credit Profile		Career Awareness and Planning
	Civic Financial Responsibility		Financial Psychology		