Measurement and Data: Grade 4

Stage 1 Desired Results

ESTABLISHED GOALS:

Competencies:

- ***Students will demonstrate the ability to reason with lines and angles in order to measure, draw, and classify.***
- ***Students will demonstrate the ability to solve arithmetic and algebraic problems by utilizing effective strategies and applying properties of operations to multi-digit whole integers and to fractions.***
- ***Students will demonstrate the ability to measure by converting between units of a system using whole numbers.***
- ***Students will demonstrate the ability to represent and interpret data with graphs involving fractions of a unit.***

Content Standards:

- 4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
- 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- 4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.
- 4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

Transfer

Students will be able to independently use their learning to ***use measurement processes in order to describe, organize data to construct meaning. Also to use measurement to describe and quantify.***

Meaning

ENDURING UNDERSTANDINGS

Students will understand that…

- measurement processes are used in everyday life to describe and quantify the world.
- data displays describe and represent data in alternative ways.
- strategic choice and use of tools can increase reliability and precision of results, enhance arguments, and deepen mathematical understanding.

ESSENTIAL QUESTIONS

- ***How different can lines really be?***
- ***How do you select the "right tool for the right job"?***

Acquisition

Students will know…

- the formulas for area and perimeter of rectangles.
- the parts of an angle.
- that an angle is measured in degrees related to the 360 degrees in a circle.
- that the angle measurement of a larger angle is the sum of the angle measurements of its decomposed parts.
- that standard units of measure enable people to interpret results or data.
- that data may be displayed in a variety of ways.

vocabulary:

metric units, standard units, fraction, decimal, scale, unit, area, perimeter, formula, line plot, fraction, ray, endpoint, angle, degree, arc, protractor

Students will be skilled at…

- describing the relative size of measurement units.
- representing a larger unit as a multiple of smaller units within the same system of measurement.
- recording equivalent measures in a two-column table.
- using the four operations to solve measurement word problems.
- solving word problems involving various measurements expressed by whole numbers, fractions, and decimals.
- applying area and perimeter formulas for multi-digit dimensions.
- convert a larger unit to a smaller unit within a single measurement system.
- measuring an angle using a protractor in whole-number degrees.
- sketching angles with a given measurement.
- using a protractor to create a given angle measurement.

• 4.MD.4 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: • 4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. • 4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. • MP1 Make sense of problems and persevere in solving them. • MP2 Reason abstractly and quantitatively. • MP5 Use appropriate tools strategically. • MP6 Attend to precision.		• writing an equation with an unknown angle measurement. • using addition and subtraction to solve for missing angle measurements. • solving word problems involving unknown angles. • creating a line plot with a given data set of measurements using fractions as a unit. • using the information on the line plot to solve addition and subtraction problems.
Content Area Literacy Standards		***21st Century Skills***
not applicable		• *solve problems* • *reason effectively*

Stage 2 - Evidence

Evaluative Criteria	***Assessment Evidence***
	PERFORMANCE TASK(S):
	OTHER EVIDENCE:

Stage 3 – Learning Plan

Summary of Key Learning Events and Instruction

Language Arts Integration	***Mathematics Integration***
• 1.OA.1 Use	**not applicable**

Technology Integration	***District Materials***
• 1.OA.1 Use	