

Measurement and Data: Grade 3

Stage 1 Desired Results

ESTABLISHED GOALS:

Competencies:

- **Students will demonstrate the ability to measure by applying minutes and standard units of mass and volume**
- **Students will demonstrate the ability to represent and interpret data with graphs involving fourths of a unit.**
- **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.**
- **Students will demonstrate the ability to model operations by utilizing objects, drawings, and equations.**

Content Standards:

- 3.MD.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.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (l).1 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.2
- 3.MD.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. For example, draw a bar graph in which each square in the bar graph might represent 5 pets.
- 3.MD.4 Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.
- 3.MD.5 Recognize area as an attribute of plane figures and understand concepts of area measurement
- 3.MD.6 Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).
- 3.MD.7 Relate area to the operations of multiplication and addition.

Transfer

Students will be able to independently use their learning to use measurement processes in everyday life and organize data to construct meaning.

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.

ESSENTIAL QUESTIONS

- ***Is there ever a wrong way to measure something?***
- ***What’s the best way to share information?***

Acquisition

Students will know...

- the names and attributes of polygons.
- that area can be calculated by counting the number of “square units” within a plane or by multiplying the lengths of adjacent sides.
- polygons with equal perimeters can have different areas.
- polygons with equal areas can have different perimeters.
- the appropriate units to use when measuring mass, volume and length
- what a scale on a bar or picture graph means and how it is used.
- that the structure of matter determines the form of measurement.
- that a change in dimension affects measurement.

vocabulary:

mass, volume, length, elapsed time, polygon, perimeter, area, scale, unit square, quarter/fourth, half/halves, standard unit, bar graph, picture graph, line plot, area model

Students will be skilled at...

- telling an writing time to the nearest minute.
- measuring duration of time in minutes.
- solving addition and subtraction word problems involving durations of time measured in minutes.
- estimating and measuring a liquid volume in liters.
- estimating and measuring the mass of an object using grams or kilograms.
- using a drawing to represent one-step word problems involving mass or volume.
- solving a 1-step problem involving mass or volume.
- drawing a scaled pictograph or scaled bar graph to represent a data set using up to six categories.
- solving a 1- or 2-step “how many more” or “how many less” problem using information presented in a scaled pictograph or scaled bar graph.
- using a ruler to measure lengths in whole, half, and quarter inches.
- gathering and recording measurement data using whole, half, and quarter inches.
- representing length measurement data with a line plot that has a fractional scale to fourths.
- finding the area of rectangles using tiles and multiplying side lengths.

3.MD.8 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. - MP1 Make sense of problems and persevere in solving them. - MP4 Model with mathematics. - MP5 Use appropriate tools strategically. - MP6 Attend to precision.		- finding the area of a rectilinear figure by decomposing it into non-overlapping rectangles and adding the areas of the non-overlapping parts. - finding the perimeter of a polygon given the side lengths. - finding an unknown side length of a polygon given the perimeter and the other side lengths. - solving word problems involving perimeter. - solving a problem involving rectangles with the same area and different perimeters (and vice-versa)
Content Area Literacy Standards		21st Century Skills
not applicable		<i>solve problems</i> <i>reason effectively</i> <i>make judgments and decisions</i>

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

<i>Technology Integration</i>	<i>District Materials</i>
• 1.OA.1 Use	