

***Balanced Numeracy – A Mathematical Framework for Effective Instruction
Woodland Elementary School***

Woodland Elementary strives to balance procedural and conceptual understanding with whole group and small group instructional delivery methods utilizing both teacher directed and student focused instructor’s roles.

<i>Opening</i>		<i>Closing</i>
<p>Activating strategy to activate schema:</p> <ul style="list-style-type: none"> • Warm-up / DOM • Vocabulary preview • Pre-test • Agenda review <p>Whole Group (mini-lesson, teacher modeling) - explicit instruction aligned to the standards and/or elements that include a balance of:</p> <ul style="list-style-type: none"> • Skills • Conceptual understanding • Problem solving <p>Math Literature</p> <p>Modeling:</p> <ul style="list-style-type: none"> • Practices and procedures • A variety of problem-solving strategies • Mathematical vocabulary development in context <p>Set performance goals and expectations for the work session.</p>	<p>A pie chart illustrating the distribution of instructional time across three phases: Opening (30%), Closing (10%), and Work Session (60%). The Work Session is the largest segment, colored light green. The Opening segment is blue, and the Closing segment is red. A legend to the right of the chart identifies the colors: blue for Opening, red for Closing, and light green for Work Session.</p>	<p>Students:</p> <ul style="list-style-type: none"> • Show and explain approaches for solving problems • Ask questions • Use and review mathematical vocabulary • Summarize the main concepts for the day and link concepts to the standards • Journaling, Ticket out the door, Answer EQ, Community Circle <p>Teacher:</p> <ul style="list-style-type: none"> • Selects students to share solutions • Explicitly clarifies misconceptions • Informally assesses student understanding • Identifies future problems for adjustments in lessons and interventions <p>Celebrate progress towards meeting standards</p>
<i>Work Session</i>		
<p align="center">Teacher:</p> <p>Facilitates independent and small group work:</p> <ul style="list-style-type: none"> • Listens carefully to students • Allows students to struggle and make mistakes • Assesses student understanding of the standards (formative/diagnostic) • Provides appropriate hints / asks questions • Provides feedback and guidance <p>Monitors and documents student progress:</p> <ul style="list-style-type: none"> • Formative / diagnostic (progress monitoring) • Summative <p>Conferences with students:</p> <ul style="list-style-type: none"> • Informal conferences – daily • Formal conferences – approx. two students per day <p>Provides guided small group instruction</p>	<p align="center">Students:</p> <p>Struggle to apply skills and concepts to solve problems / gain insight from mistakes:</p> <ul style="list-style-type: none"> • Independent work • Small group work (games, centers, hands-on activities) <p>Participate in guided practice</p> <p>Engage in performance tasks</p> <p>Conference with teacher / peers</p> <p>Demonstrate process standards:</p> <ul style="list-style-type: none"> • Solve problems • Reason and evaluate mathematical thinking • Communicate mathematically • Make connections • Represent mathematics in multiple ways <p>Appropriately use manipulatives to solve problems</p> <p>Engage in content area literacy (reading / writing to learn)</p>	

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Math Strands

<p>Process Skills - Create and use representations to organize, record, and communicate mathematical ideas.</p> <ul style="list-style-type: none"> • Exemplars • Use of graphic organizers for problem-solving • Math Calendar • Problem of the Day • GRASP • GADOE tasks • Use of multiple models for explaining and recording thinking (rekenrek, open number line, clock or meter model, manipulatives, etc.) • ThinkMath! 	<p>Number Sense - Understand numbers, ways of representing numbers, relationships among numbers, and number systems. Compute fluently and make reasonable estimates</p> <ul style="list-style-type: none"> • Problem of the Day • Tiered Instructional Practices • Differentiated Instruction • Learning tasks • Strategy development • Multiple models and manipulatives used in thinking about and discussing number, number relationships, and problem solving • Math Calendar • Mental Math Computation • Guided Math Instruction • AIMS web – progress monitoring • CBM – Curriculum Based Measurement • GRASP • GloSS and IKAN- diagnostic assessment 	<p>Geometry- Compose and decompose plane and solid figures</p> <ul style="list-style-type: none"> • Relate to real world objects and contextualize vocabulary • Model visually using manipulative models of geometric shapes • Allow students to explore, categorize, and define shapes (containers/found objects, clay shapes, models) • Math 2 	<p>Measurement - Develop an understanding of measurement with meaning and processes including, underlying concepts such as partitioning.</p> <ul style="list-style-type: none"> • Teach relevance – making real world connections • Allow students to create measurement tools, explain unit, and use them to measure objects. • Change units and allow students to determine the tools and units needed for measuring task • Model how to transfer knowledge of measurement to varied tasks • Metric and Standard measurement comparisons • Math 2
<p>Algebra -</p>	<p>Data Analysis and</p>	<p>Vocabulary -</p>	

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<p>Identify, duplicate, and extend number, sequential and growth patterns</p> <ul style="list-style-type: none"> • Model for students in calendar how to identify core patterns and synthesize their extensions/growth • Allow students to create and share patterns for calendar • Relate literature to numerical patterns • Provide real-life application of skills through hands-on activities • Allow students to create algebraic situations and challenge peers to find unknown. 	<p>Probability- Create graphs from student-generated data Use data from graphs to solve problems</p> <ul style="list-style-type: none"> • Graphs for specific purposes across curricular areas • Graphs to tell a story about the data • Graphs to represent solutions to real-life/school-based problems • Graphic Organizers to organize math-thinking and problem-solving ideas 	<ul style="list-style-type: none"> • Word Walls • Use of math vocabulary and terminology • Integration of writing in Math • Use of mathematical language in discussions and in recording thinking • Use of graphic organizers • Anchor charts of strategies introduced by teachers or developed by students 	
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Technology and Online Resources

- Mathematics Organizations/Websites
 - <http://illuminations.nctm.org> (Lesson plan site)
 - <http://www.georgiastandards.org/mathframework.aspx> (GADOE Frameworks/units)
 - <http://standards.nctm.org/document/eexamples/index.htm>
 - www.eharcourt.com
 - <http://www.nzmaths.co.nz/> (Diagnostic assessments, tasks, manipulatives)
 - <http://www.learnnc.org/lessons/> (Lesson plan site)
- ALEKS
- Learning Village
- Angel
- Exemplars
- CRCT Online Assessment System
- Education City
- Mountain Math
- Keys texts (i.e. Keys to Multiplication)