

MATH COMPETENCY CURRICULUM GUIDE

Exit Competency A: Students will demonstrate competency in number sense, properties, and operations, including:
4: Estimation and mental math

Objectives:	Assessment:	Possible Resources:	Possible Strategies:									
<p><u>By the end of 3rd grade students will:</u></p> <p>1. Make a rough estimate of answers to addition and subtraction problems with up to 2 digits.</p> <p>Time:</p> <p><u>1st</u> Taught throughout the year in chunks</p> <p><u>2nd</u> Often/ongoing 2-3 hours</p> <p><u>3rd</u> All year/ongoing</p> <p>2. Estimate the number of objects in a set up to 30. Example: Looking at a set of 24, would you estimate there are 2, 20, or 200.</p> <p>Time: Grades K-3</p> <p><u>1st</u> Introduction lesson(s) with ongoing practice lessons</p> <p><u>2nd</u> Follow-up throughout the year.</p>	<p><u>A-4 Assessment Examples</u></p> <p>EXAMPLES OF THE TYPES OF ALT ASSESSMENT ACTIVITIES THAT CAN BE USED TO ASSESS THE LEARNING OBJECTIVES</p> <p>Your bed is about how long?</p> <p>A. 2 centimeters B. 6 centimeters C. 1 meter <input checked="" type="checkbox"/> D. 2 meters E. none of these</p> <p>Which sums will be the same?</p> <table style="margin-left: auto; margin-right: auto;"> <tr> <td>a. 4</td> <td>b. 2</td> <td>c. 3</td> </tr> <tr> <td>2</td> <td>3</td> <td>4</td> </tr> <tr> <td>+ 3</td> <td>+ 4</td> <td>+ 2</td> </tr> </table> <p>A. a and c B. b and c C. a and b <input checked="" type="checkbox"/> E. all of them</p>	a. 4	b. 2	c. 3	2	3	4	+ 3	+ 4	+ 2	<p>1. Provided Instructional Resources:</p> <p>S Math book introduced and reinforced, chapters 2-9</p> <p>S Math book, 2nd grade level</p> <p>S <u>Houghton Mifflin Mathematics©2005</u>, Houghton Mifflin Co., 2005</p> <p>Supplementary Resources:</p> <p>S “Counting On Frank” computer software program</p> <p>S Mathematics Their Way</p> <p>S Teacher-made practice worksheets for work with rounding</p> <p>S <u>Investigations in Numbers, Data and Space</u>, Pearson Scott Foresman</p> <p>2. Provided Instructional Resources:</p> <p>S Several different lessons are provided in the 2nd grade math series that pertain to estimation. Some are in the time and money chapters and also in adding and subtracting. Also pertains to measuring.</p> <p>S <u>Houghton Mifflin Mathematics©2005</u>, Houghton Mifflin Co., 2005</p>	<p>1. Instructional strategies could include:</p> <p>S Coop groups</p> <p>S Daily calendar activity</p> <p>S Direct Instruction - guided practice</p> <p>S Estimate answers before figuring them out</p> <p>S Estimation jar using Hershey Kisses, hexagon blocks, Jolly Ranchers (compare sizes and amounts)</p> <p>S Natural - pumpkins or anything with seeds</p> <p>S Student-made number lines divided into 10's and 100's along with “bean markers” to note approximate locations of specific numbers on the line prior to rounding</p> <p>2. Instructional strategies could include:</p> <p>S Cooperative learning</p> <p>S Guess and check</p> <p>S Math manipulatives, jars</p>
a. 4	b. 2	c. 3										
2	3	4										
+ 3	+ 4	+ 2										

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<p>3. Understand common terms used with estimation such as:</p> <ul style="list-style-type: none"> S about S closer to S between <p>Time:</p> <p><u>K</u> 10-15 minutes a week. Ongoing and integrated.</p> <p><u>1st</u> 10-15 minutes a week, throughout the year.</p> <p><u>2nd</u> Ongoing throughout the year.</p> <p><u>3rd</u> Ongoing throughout the year</p>		<p>Supplementary Resources:</p> <ul style="list-style-type: none"> S AIMS activities S Math Their Way S <u>Investigations in Numbers, Data and Space</u> <p>3. Provided Instructional Resources:</p> <ul style="list-style-type: none"> S <u>Houghton Mifflin Mathematics©2005</u>, Houghton Mifflin Co., 2005 <p>Supplementary Resources:</p> <ul style="list-style-type: none"> S Family Math - University of California, Berkeley; Lawrence Hall of Science S Math Their Way opening ideas S 100's chart S <u>Investigations in Numbers, Data and Space</u> 	<p>3. Instructional strategies could include:</p> <ul style="list-style-type: none"> S Centers S Class number line S Classroom projects and graphs S Direct instruction with guided practice S Estimation jars with various items (daily or weekly) Resource available at D.O. Curriculum Office S Games S Manipulatives S Projects S Teacher-generated word problems S Time estimation for different activities that we do daily (e.g., "Is your bus ride about the same time as recess? or, "is your bus ride closer to lunch time?") S Vocabulary/language teacher-made book with blank pages to write "I think there are ____ candies in the jar." "My guess was between ____ and ____." "The actual number was <u>closer to</u> _____."

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<p>4. Mentally add and subtract combinations of single-digit whole numbers.</p> <p>Time: <u>1st, 2nd, 3rd</u> 5 minutes a day throughout the year</p> <p><u>By the end of 6th grade students will:</u></p> <p>1. Continue making rough estimates of answers to multiplication and division problems before doing them and checking the reasonableness of results after calculations.</p> <p>Time: <u>4th, 5th, 6th</u> Up to 10% of math time</p>		<p>4. Provided Instructional Resources: S <u>Houghton Mifflin Mathematics©2005</u></p> <p>Supplementary Resources: S Addition and subtraction bingo S Box It, Bag It games S Charts S Computer games for drill S “Counting on Frank” computer software program S Daily Oral Math S Flash cards S Mad Minutes S Math Their Way games S Playing card games and dice S <u>Investigations in Numbers, Data and Space</u></p> <p>1. Provided Instructional Resources: S <u>Houghton Mifflin Mathematics©2005</u></p> <p>Supplementary Resources: S <u>Mental Math</u> S Middle School: Pizzazz - Creative Publications S (All) problem solving sources S <u>Investigations in Numbers, Data and Space</u></p>	<p>4. Instructional strategies could include: S A/B partner’s games S “Around the World” whole group game S Daily oral practice S Direct instruction with guided practice S Fact families S Mental math problems/games such as math wrap-around, teacher questions and relay games S Playing card games and dice</p> <p>1. Instructional strategies could include: S Direct instruction S Guess & check S Mental Math S Menu</p>

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<p>2. Mentally add, subtract, multiply, and divide basic combinations of whole numbers under 100 with reasonable accuracy.</p> <p style="padding-left: 20px;">Example: Start with 50. Add 30. Divide by 8. Add 2. Are you at a dozen?</p> <p>Time: <u>4th, 5th, 6th</u> Throughout the year, frequent practice</p>		<p>2. Provided Instructional Resources:</p> <p>S <u>Houghton Mifflin Mathematics©2005</u></p> <p>Supplementary Resources:</p> <p>S Apple computers MECC software</p> <p>S Flash cards</p> <p>S Individual white boards and markers</p> <p>S Mad Minutes</p> <p>S Mental math, visual and audio, games</p> <p>S Zip Around</p> <p>S 100's chart</p> <p>S <u>Investigations in Numbers, Data and Space</u></p>	<p>2. Instructional strategies could include:</p> <p>S Around the World</p> <p>S Direct instruction</p> <p>S Guided practice</p> <p>S Mental math, visual and audio, games</p> <p>S Zip Around</p> <p>S 100's chart</p>
<p>3. Use estimation methods such as:</p> <p>S rounding (through hundred thousands)</p> <p>S compatible numbers ($2,541 \div 42 = 2,400 \div 40 = 60$)</p> <p>S clustering ($37 + 42 + 39 + 44 + 41 = 5 \times 40 = 200$)</p> <p>Time: <u>4th, 5th, 6th</u> One week on estimation at the beginning of the year, and then review periodically throughout the school year.</p>		<p>3. Provided Instructional Resources:</p> <p>S <u>Houghton Mifflin Mathematics©2005</u></p> <p>Supplementary Resources:</p> <p>S Bellwork</p> <p>S Manipulatives</p> <p>S Teacher Book of Lists</p> <p>S <u>Investigations in Numbers, Data and Space</u></p>	<p>3. Instructional strategies could include:</p> <p>S Centers</p> <p>S Direct Instruction</p> <p>S Guided practice</p> <p>S Menus</p>