

DESE Model Curriculum

GRADE LEVEL/UNIT TITLE: 3/How do We Read Math?

Course Code: ELA

COURSE INTRODUCTION:

Course Introduction for Grade Three: Third grade students will be confident and fluent readers who make meaning of what they read. They will be able to problem solve in unfamiliar texts and read with expression. They will acquire and use grade-appropriate conversational, general academic, and domain-specific words. They will read and write on a range of topics and in a variety of genres. Students will engage in the writing process to produce finished pieces with emphasis on communicating a clear and concise message while integrating craft and conventions. They will participate in collaborative discussions, conduct basic research utilizing technology and present on topics supported by evidence.

In this document, teaching structures such as interactive writing, reading workshop, Socratic Seminar, etc. are highlighted in blue and linked directly to the State Literacy Plan in order to provide a more in-depth explanation

UNIT Description:

How Do We Read Math?

In this unit, students will learn how to read math by exploring math text books, math informational books and math stories in print and in electronic format. They will use text features to help them comprehend the meaning. They will study the structure of the math stories and write their own math story as

SUGGESTED UNIT TIMELINE: Three to five weeks

CLASS PERIOD (min.): This can be done partly in reading time and partly in writing time. Class periods of 30 minutes are used for the estimate of time needed.

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<p>a narrative with math concepts. They will read their story aloud to a group and explain the concepts involved in the story. Their summative assessment will be by test of their skills in using text features and rubrics scoring their narrative story and its presentation.</p> <p>Diverse Learners</p> <p>Strategies for meeting the needs of all learners including gifted students, English Language Learners (ELL) and students with disabilities can be found at http://www.dese.mo.gov/divimprove/curriculum/UD-Model-Curriculum-Introduction-Sheet.pdf. Resources based on the Universal Design for Learning principles are available at www.cast.org.</p> <p>Provide Feedback</p>						
<p>ESSENTIAL QUESTIONS:</p> <ol style="list-style-type: none"> 1. What text features can we use to help us comprehend a text? 2. What does it mean to read math? 						
<p>ESSENTIAL MEASURABLE LEARNING OBJECTIVES</p>		<p>CROSSWALK TO STANDARDS</p>				
		<p>CA GLE</p>	<p>Performance Goals</p>	<p>CCSS ELA Grade Level</p>	<p>CCSS ELA Anchor</p>	<p>DOK</p>
<p>1. Ask and answer questions about facts and characters to show understanding, referring</p>		<p>R.1.H.3.b R.1.H.3.c R.1.H.3.d</p>	<p>1.5 1.6 3.5</p>	<p>RI.3.1</p>		<p>2 3</p>

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specifically to the texts as a basis for the answers.		R.1.H.3.f R.1.H.3.g R.1.H.3.h R.1.H.3.i R.3.C.3.a R.3.C.3.b R.3.C.3.c R.3.C.3.d R.3.C.3.e R.3.C.3.f R.3.C.3.g R.3.C.3.h R.3.C.3.i R.3.C.3.j				
2. Determine the meaning of general academic and domain-specific words and phrases in math trade and text books.		R.1.E.3.a R.1.E.3.b R.1.E.3.c R.1.E.3.d R.1.E.3.e	1.5 1.6	RI.3.4		2
3. Use text features to comprehend the texts.		R.3.A.3	1.5 1.6 2.4 3.5	RI.3.7		2 3
4. Compare and contrast the most important points and details presented in two texts connected with math.		R.1.H.3.b R.1.I.3.a	1.5 1.6 3.5	RI.3.9		2 3
5. Read and comprehend informational texts about math.		R.1.D.3.a R.1.D.3.b R.1.H.3.a	1.5 1.6 3.5	RI.3.10		2

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<p>6. Read and comprehend narrative stories with math concepts.</p>		<p>R.1.D.3.a R.1.D.3.b R.1.H.3.a</p>	<p>1.5 1.6 3.5</p>	<p>RL.3.10</p>		<p>2</p>
<p>7. Decode and comprehend on-level text with purpose, accuracy, rate, fluency, expression and comprehension while using meaning to self-correct word recognition.</p>		<p>R.1.D.3.b R.1.F.3.d R.1.D.3.a R.1.G.3.b R.1.C.3</p>	<p>1.5 1.6 3.5</p>	<p>RF.3.3.a RF.3.3.b RF.3.3.c RF.3.3.d RF.3.4.a RF.3.4.b RF.3.4.c</p>		<p>1 2</p>
<p>8. Research online to find examples of math stories.</p>		<p>W.3.A.3.a</p>	<p>1.6</p>	<p>W.3.7</p>		<p>2</p>
<p>9. Write a narrative that revolves around a math concept.</p>		<p>W.3.A.3.a W.2.A.3.a W.2.A.3.b W.2.C.3.a W.2.D.3</p>	<p>1.8 2.1 2.2</p>	<p>W.3.3.a W.3.3.b W.3.3.c W.3.3.d</p>		<p>2 3</p>
<p>10. With guidance from teacher, produce a math narrative.</p>		<p>W.2.A.3.a W.2.A.3.b</p>	<p>2.1</p>	<p>W.3.4</p>		<p>2 3</p>
<p>11. With guidance, plan, revise and edit the math narrative.</p>		<p>W.1.A.3.a W.1.A.3.b W.1.A.3.c W.1.A.3.d W.1.A.3.e</p>	<p>1.8 2.1 2.2</p>	<p>W.3.5</p>		<p>2 3</p>
<p>12. Using technology, publish the math narrative.</p>		<p>W.1.A.3.a W.1.A.3.b W.1.A.3.c W.1.A.3.d W.1.A.3.e</p>	<p>1.8 2.1 2.2</p>	<p>W.3.6</p>		<p>2</p>

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18. Make effective choices in wording in the math narrative to show accurate meaning.		<u>W.2.D.3</u>	2.1	L.3.3.a L.3.3.b		2
19. Demonstrate meaning of unknown words in math text and trade books.		R.1.E.3.a R.1.E.3.c R.1.E.3.d R.1.E.3.e	1.5 1.6	L.3.4.a L.3.4.b L.3.4.c L.3.4.d		2
20. Acquire and use accurately academic and domain-specific words used in the unit.		R.1.E.3.a R.1.E.3.b R.1.E.3.c R.1.E.3.d R.1.E.3.e	1.5 1.6	L.3.6		2
ASSESSMENT DESCRIPTIONS*: (Write a brief overview here. Identify Formative/Summative. Actual assessments will be accessed by a link to PDF file or Word doc.)						
<p>1. ASSESSMENT DESCRIPTIONS*: Formative Search for text features of a math text book: Text Feature Scavenger Hunt (Several examples are listed in the Professional Resources section or there is one attached to the unit for classroom use. The scavenger hunt must reflect the text features being discussed for the instructional unit.)</p>						
<p>2. ASSESSMENT DESCRIPTIONS*: Formative Read a math story: T-Chart of story sequence and math concepts used in the story. A T-Chart is included in the attachments.</p>						
<p>3. ASSESSMENT DESCRIPTIONS*: Formative Read a math informational book: Teacher observation of small group discussions using focused questions and Running Records/Scoring Guides for assessing accuracy, rate, fluency, expression and self correction of word recognition (Focused questions can be devised the teacher or use the set called Focused Questions for nonfiction books with math content included with the unit.)</p>						
<p>4. ASSESSMENT DESCRIPTIONS*: Formative Search for text features in another textbook: Text Feature Scavenger Hunt repeated and small group presentations of evidence</p>						
<p>5. ASSESSMENT DESCRIPTIONS*: Formative Search online for math stories: Teacher observation (Use the Computer Research Checklist or devise one to fit your student internet situation. Some districts may already have a standard internet usage observation checklist.)</p>						

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Student created notes of stories found on internet sites and why they were interesting and math related.	
6. ASSESSMENT DESCRIPTIONS*: Formative Write a math narrative: Narrative Process Checklist for process of writing	
7. ASSESSMENT DESCRIPTIONS*: Formative Present the story and explain the math concepts: Use the Student portion of the Narrative Presentation Checklist and Rubric.	
Summative Assessment:	
1. ASSESSMENT DESCRIPTIONS*: Summative Test featuring a cold read text page for text feature analysis and vocabulary questions (This part of the summative assessment needs to be developed specifically for the classroom using the unit to cover the text features and vocabulary words considered important in that classroom.) An example of the design is Text Feature Section Design.	
2. ASSESSMENT DESCRIPTIONS*: Summative Rubric to score the written narrative: Narrative Presentation Checklist and Rubric and use of the Missouri Grade 3 Writing Scoring Guide available at www.dese.mo.gov	
3. ASSESSMENT DESCRIPTIONS*: Summative Rubric to score the presentation: Narrative Presentation Checklist and Rubric	
*Attach Unit Summative Assessment, including Scoring Guides/Scoring Keys/Alignment Codes and DOK Levels for all items. Label each assessment according to the unit descriptions above (i.e., Grade Level/Course Title/Course Code, Unit #.)	
Obj. # 2 3 5 19	INSTRUCTIONAL STRATEGIES (research-based): (Teacher Methods) 1. Search for text features of a math textbook: Teacher will provide various mini-lessons on the use of text features. Appropriate vocabulary study might include such terms as side bars, call out boxes, charts, graphs, bold and underlined text, and headings. Teacher will facilitate small strategy group work allowing students practice identifying and using text features. Teacher will formatively assess student comprehension with the Text Feature Scavenger Hunt and teacher observation . Examples of text feature scavenger hunts for this unit can be found in the Unit Resources section.
1 2 3 6 7	2. Read a math story: Teacher will introduce the book study of math stories by providing appropriate mini-lessons on the use of a T-Chart specifically for this project and narrative book selection. Appropriate vocabulary study would include graphic organizer, T-chart, and sequence as well as others suited to the needs of the class. Teacher will direct the students to fill out the T-Chart on the left side with the important events in the story in correct sequence and on the right side, with the math concepts explained at each point in the math story. Teacher will provide and introduce numerous literature choices of narrative books which incorporate math concepts. Important to review will be the reading level of

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	<p>the books and also the math concepts explained in the story. To ensure appropriate rigor in selections made for grade 3, teachers should refer to Appendix A of the Core Academic Standards Pages 4-16 and select books according to the three part model described in the Appendix. Introduction of the book choices might be by a mini-review by the teacher or by a classmate who has already read one of the books. Teacher will formatively assess student understanding by the completed T-charts. Examples of possible books to be used in this part of the unit can be found in the Unit Resources section.</p>
<p>1 2 3 4 5 7 19 20</p>	<p>3. Read a math informational book: Teacher will provide various mini-lessons on reading for information, choosing an appropriate informational book, and focused small group discussion. Appropriate vocabulary study would include terms like nonfiction, information, and those relating to the focus questions to be used. Teacher will provide and introduce numerous nonfiction choices of informational books that incorporate math concepts. Important to review will be the reading level of the books and also the math concepts explained with the content. After students have been given time to read their books, teacher will group them in strategy groups for discussion of the information in each of their books. Students will compare their books as to text features used in each book. Teacher will formatively assess student understanding by observing the small group work as students focus their questions and answers according to the Focused Questions list. Examples of possible books to be used in this part of the unit can be found in the Unit Resources section. Teacher will formatively assess student accuracy, fluency, rate and expression using a running record.</p>
<p>1 3 4</p>	<p>4. Search for text features in another textbook: Teacher will facilitate small strategy group work as students repeat the Text Feature Scavenger Hunt in their science, social studies or other text books. Appropriate vocabulary study would be the review of the text feature terms used in the first activity. This text feature search might even be done with sample books or older ones not currently being used by the classroom, since the value is in the understanding of the use of text features. The groups will be instructed to identify text features and explain to each other the importance of each one identified. They will compare text features used in each book with others they find. Teacher will formatively assess student understanding by teacher observation.</p>
<p>8</p>	<p>5. Search online for math stories: Teacher will provide appropriate mini-lessons on computer use, effective searching, and how to identify a math story which might give good ideas as students prepare to write their own stories. Appropriate vocabulary study might include those connected with internet research like search engine or those connected to story structure like characters and plot. Teacher will facilitate as students either link to pre-set websites where math stories are found or search for them with search engines. The important aspect of this part of the unit is that students see additional examples of narratives with math concepts woven into them. Small group or whole class discussion on interesting features of such stories would be useful in most classrooms. Teacher will formatively assess student understanding by the discussions, by the Computer Research Checklist and possibly by having students take notes on the</p>

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	stories that are interesting for their projects.
9 10 11 12 13 16 17 18	6. Write a math narrative: Teacher will provide appropriate mini-lessons on narrative story writing process, the special requirement of adding math concepts to the narrative, as well as any needed review of conventions, spelling, and grammar for the narrative. Appropriate vocabulary study would be terms connected to the writing process. Teacher will facilitate writer’s workshop approach from brainstorming, to first draft, revision and editing, and to the final product . Individual and small group consultation will be available as needed by students during the writing times. During these sessions, teacher will formatively assess student understanding of the writing process via the Narrative Process Checklist . The final story will be typed on the computer.
14 15 20	7. Present the story and explain the math concepts: Teacher will provide appropriate mini-lessons on effective presentation skills and listening skills as students prepare to read their math stories aloud to the group and explain the math concepts they included in the story. Teacher will allow students to formatively assess themselves on the student portion of the Narrative Presentation Checklist and Rubric .
Obj. # 2 3 5 19	INSTRUCTIONAL ACTIVITIES: (What Students Do) 1. Search for text features of a math text book: After participating in appropriate mini-lessons and vocabulary study , students in small strategy groups will practice finding and explaining text features in their math textbook and will fill out the Text Feature Scavenger Hunt form. This practice might be in an older book for the group with the scavenger hunt an individual activity in their current textbook or both parts may be small group work.
1 2 3 6 7	2. Read a math story: After participating in appropriate mini-lessons on T-Chart use and narrative book selection techniques and vocabulary study , students will choose and read a narrative that has math concepts woven into the story. They will show their comprehension of the narrative structure by filling out the left side of the T-chart with the sequence of important events and the right side of the chart with the important math concepts used at each point in the story sequence.
1 2 3 4 5 7	3. Read a math informational book: After participating in appropriate mini-lessons on informational book selection and vocabulary study , small group discussion techniques, and the use of focus questions for the discussions, students will choose and read an informational book that has math concepts woven into the content. They will gather in small strategy groups to discuss and compare their books using the Focused Questions for the discussions.

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19 20	
1 3 4	<p>4. Search for text features in another textbook: Students will again work in their small groups to identify and explain text features in additional textbooks. They will repeat the Text Feature Scavenger Hunt as they find the most important features and then explain to each other what they have found. They will compare text features found in one book to those found in another. They will discuss why these features are helpful to a reader.</p>
8	<p>5. Search online for math stories: After participating in appropriate mini-lessons and vocabulary study, students will research online to find math narratives. Particular attention needs to be paid to the story structure, the wording used, the math concepts embedded within the story, and the story idea used. Students can use these ideas as well as those they saw when reading print math stories as they brainstorm to write their own math story. They will be formatively assessed by the Computer Research Checklist.</p>
9 10 11 12 13 16 17 18	<p>6. Write a math narrative: After participating in appropriate mini-lessons on the writing process as well as reviews of conventions, grammar and spelling needed for the math narrative project, students will use the Writer's Workshop approach to write a math narrative. They will review the math stories they read, decide what characters they would like to use for their story, identify the math concepts they want to weave into the story and write. Their process will be a combination of small group and teacher-student consultation as needed by the students to bring the narrative to the final form. The final form will be typed on the computer. They will be assessed by the Narrative Process Checklist.</p>
14 15 20	<p>7. Present the story and explain the math concepts: After participating in appropriate mini-lessons on presentation and listening skills, students will read their math narratives to the group and explain the math concepts woven into the stories.</p>
<p>UNIT RESOURCES: (include internet addresses for linking)</p> <p>1. Professional Resources:</p> <p>a. http://www.mathcats.com/grownupcats/ideabankmathandliterature.html This site has resource for connecting math to reading.</p> <p>b. http://www.quantiles.com/resources/LiteratureMathematics.pdf This site gives some of the research supporting the connection of math with reading.</p> <p>c. file:///C:/Users/minnick642/Documents/How%20Do%20We%20Read%20Math/Exploring%20Nonfiction%20Text%20Features%20%</p>	

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[20%20Minds%20in%20Bloom.htm](#) This is a good teacher or student resource on the use and meaning of various text features.

- d. <http://quizlet.com/367721/vocab-1-nonfiction-text-features-flash-cards/> This website gives definitions and flash cards for text features which might be helpful for mini-lessons.
- e. <http://www.youtube.com/watch?v=VFpBWuarZr4> This rap identifies the various nonfiction text features and gives concise definitions for each. This might be used as a good introduction or mini-lesson for that part of the unit.
- f. <http://jessicawinston.blogspot.com/2011/09/teaching-nonfiction-text-features.html> This is a useful blog about teaching to grade three.
- g. http://www.scholastic.com/teachers/top_teaching/2011/03/my-march-top-ten-list-nonfiction-reading-resources This resource has text feature posters free to download and use in the classroom.
- h. <http://ethemes.missouri.edu/themes/1879> This is a resource that can lead teachers to a number of sites that help in the teaching of nonfiction text features,
- i. http://www.mswinston.com/NF_Scavenger_Hunt.pdf This is one example of a scavenger hunt for nonfiction text features.
- j. http://temp33.imavex.com/e65d2014d1_sites/www.smekenseducation.com/files/ExamineOurText.pdf This is another example of a scavenger hunt for nonfiction text features.
- k. <http://blog.mrmeyer.com/?p=10285> This blog discusses the structure of a math story.
- l. www.scholastic.com This site will instruct the use of running records.

2. Student Math Narrative Books:

- a. Charlesbridge Publishing (www.charlesbridge.com)
 - 1. A Very Improbable Story, Edward Einhorn
 - 2. Cut Down to Size at High Noon, Scott Sundby
 - 3. Multiplying Menace: The Revenge of Rumpelstiltskin, Scott Sundby

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4. Sold! A Mathematics Adventure, Nathan Zimelman
5. Zachary Zoomer: Shape Transformer, Joanne Reisberg
- b. Kindle books:
 1. The Tenttown Adventure - A Story about Learning Ten Times Tables (Multiplication and Maths Games Stories for Children and Teachers - Book 3), Professor Paradox, 2012.
 2. Ice Cream and Spiders - A Story about Learning Two Times Tables (Multiplication and Maths Games Stories for Children and Teachers - Book 1), Professor Paradox, 2012.
- c. MathStart Books Level 2 (www.mathstart.net)
 1. A Fair Bear Share (MathStart2), Stuart Murphy, 1997
 2. Sam's Old Horse (MathStart 2), Stuart Murphy, 2005
 3. Tally O'Malley (MathStart 2), Stuart Murphy, 2004
- d. MathStart Books Level 3 (www.mathstart.net)
 1. Divide and Ride (MathStart3), Stuart Murphy, 1997
 2. Hamster Champs (MathStart 3), Stuart Murphy, 2005
 3. The Penny Pot (MathStart 3), Stuart Murphy, 1998
 4. Treasure Map (MathStart 3), Stuart Murphy, 2004
- e. Scholastic Publishing (www.scholastic.com) These books have elements of fiction and nonfiction.
 1. Math Potatoes, Greg Tang, 2009
 2. Math-terpieces, Greg Tang, 2011

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- f. Scholastic Publishing (www.scholastic.com)
 - 1. Case of the Missing Birthday Party, The, Joanne Rocklin, 1996
 - 2. Just Add Fun!, Joanne Rocklin, 1999
- g. Sundance (www.newbridgeonline.com)
 - 1. King Arthur and the Square Table, Bill Condon, 2003

Student Math Informational Books:

- a. Math Works (www.garethstevens.com)
 - 1. Using Math to Survive in the Wild (Mathworks!) by Hilary Koll (Paperback - 2006)
 - 2. Using Math to Design a Roller Coaster (Mathworks!), Hillary Koll, (Paperback – 2006)
 - 3. Using Math to Build a Skyscraper (Mathworks!), Hillary Koll, (Paperback – 2006)
 - 4. Using Math in the ER (Mathworks!), Hillary Koll, (Paperback – 2006)
 - 5. Using Math to Climb Mount Everest (Mathworks!), Hillary Koll, (Paperback – 2006)
 - 6. Using Math to Conquer Extreme Sports (Mathworks!), David Clemson, (Paperback – 2004)
 - 7. Using Math to be a Zoo Vet (Mathworks!), Wendy Clemson, (Paperback – 2004)
- b. Enslow Publishing Company (www.enslow.net)
 - 1. Fractions and Decimals Made Easy, Rebecca Wingard Nelson, 2005
 - 2. Multiplication Made Easy, Rebecca Wkingard Nelson, 2005
- c. Weekly Reader (www.weeklyreader.com) Math Monsters series of books and videos
 - 1. Geometry: Looking Down on Monster Town, John Burstein, 2004
 - 2. How Many Gollywomples?, John Burstein, 2005
- d. Holiday House Publishing (www.holidayhouse.com)

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1. Fractions, Decimals, and Percents, David Adler, 2010
 2. Mystery Math, David Adler, 2011
 3. Perimeter, Area, and Volume, David Adler, 2012
 4. Working With Fractions, David Adler, 2009
- e. Capstone Publishers (www.capstonepub.com)
1. If You Were an Inch or a Centimeter, Marcie Aboff, 2009
 2. If You Were an Odd Number, Marcie Aboff, 2009
 3. If You Were a Triangle, Marcie Aboff, 2010
 4. Pigs, Cows, and Probability, Marcie Aboff, 2011
- f. Scholastic Publishing (www.scholastic.com) These books have elements of fiction and nonfiction in each one.
1. Math Potatoes, Greg Tang, 2009
 2. Math-terpieces, Greg Tang, 2011
 3. Jerry Pallotta's Math = Fun, Multiplication and Division, Jerry Pallotta, 2008
 4. Who Will Win? Killer Whale vs. Great White Shark, Jerry Pallotta, 2009

Online Resources for math narratives:

- a. Mr. R's Math Stories (www.mathstories.com)
- b. Primary stories for introducing the idea of math stories (www.cookie.com/games)

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