ADOPTED REGULATION OF THE

STATE BOARD OF EDUCATION

LCB File No. R073-01

Effective November 1, 2001

EXPLANATION – Matter in ***italics*** is new; matter in brackets ~~[omitted material]~~ is material to be omitted.

AUTHORITY: §§1-18, NRS 385.080 and 389.520; §19, NRS 385.080, 389.0185 and 389.520.

Section 1. Chapter 389 of NAC is hereby amended by adding thereto the provisions set forth as sections 2 to 11, inclusive, of this regulation.

Sec. 2. ***Instruction in kindergarten in English language arts must be designed so that pupils meet the following performance standards by the completion of kindergarten:***

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Read, in simple text, high-frequency words and environmental print such as that which appears on street signs or billboards;

(2) Use relationships between letters and sounds to identify some words;

(3) Identify initial and final sounds in some words; and

(4) Recognize and sequence letters of the alphabet;

(b) Use skills and strategies relating to the process of reading to build comprehension, as demonstrated by the pupil's ability to use prior knowledge and pictorial clues as strategies to aid comprehension;

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and periods, as demonstrated by the pupil's ability to listen:

(1) To stories from different cultures and eras;

(2) For rhythm, rhyme and alliteration; and

(3) To respond to poetry and prose; and

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Demonstrate that text, pictures and graphs provide information;

(2) Recall information from text, pictures and graphs;

(3) Distinguish between simple statements and questions; and

(4) Follow, with assistance from the pupil's teacher, simple pictorial or written directions.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Respond to information by drawing or writing with assistance from the pupil's teacher;

(2) Draw or write, with assistance from the pupil's teacher, to communicate;

(3) Draw or write, with assistance from the pupil's teacher, stories about familiar experiences and events; and

(4) Draw or write, with assistance from the pupil's teacher, responses to literature;

(b) Write with a clear focus and logical development, evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Select, organize and sequence ideas;

(2) Draw or write simple stories with teacher assistance; and

(3) Share drawings or writings with others; and

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Capitalize first letters of the pupil's own first and last name;

(2) Use correct spelling of the pupil's own first and last name; and

(3) Form letters correctly.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Listen for a variety of purposes such as to obtain information, to solve problems and for enjoyment;

(2) Be attentive and respond to stories and group discussions; and

(3) Listen to and follow an oral direction.

(b) Speak using organization, style, tone, voice and media aids appropriate to the audience and purpose, as demonstrated by the pupil's ability to:

(1) Use and expand vocabulary to communicate ideas;

(2) Speak clearly at an understandable pace to share and respond to ideas;

(3) Relate experiences and retell stories; and

(4) Give clear directions to complete a simple task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Take turns when sharing ideas and information in conversations and group discussions; and

(2) Ask and answer questions.

4. For the area of research, formulate research questions and use a variety of sources to obtain information, weigh evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate questions, with assistance from the pupil's teacher, to explore areas of interest; and

(b) Use, with assistance from the pupil's teacher, reference materials and technology.

Sec. 3. *By the end of the first grade, pupils must know and be able to do everything required in kindergarten for English language arts offered in public schools. Instruction in the first grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the first grade:*

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Read familiar words or text appropriate for the first grade with some fluency, accuracy and expression;

(2) Use high-frequency words to assist in reading fluently;

(3) Use phonics, word families, simple spelling patterns, blends and digraphs to comprehend words in context;

(4) Use common prefixes, suffixes, abbreviated words, synonyms and antonyms in context; and

(5) Alphabetize words by their first letter.

(b) Use skills and strategies relating to the process of reading to build comprehension, as demonstrated by the pupil's ability to:

(1) Use, with assistance from the pupil's teacher, strategies preliminary to reading such as accessing prior knowledge, predicting, previewing and setting a purpose;

(2) Use, with assistance from the pupil's teacher, self-correcting strategies such as rereading, substituting and reading on; and

(3) Recall and retell details of text with assistance from the pupil's teacher.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and periods, as demonstrated by the pupil's ability to:

(1) Identify characters, simple character traits, setting and sequence;

(2) Predict the outcome of the story;

(3) Listen to and read stories from different cultures and eras; and

(4) Read and identify rhythm, rhyme and alliteration in poetry and prose.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Use the parts of a book, including, without limitation, the title, author, illustrator, pictures, charts and graphs to locate information;

(2) Identify cause and effect and the main idea of a passage;

(3) Use text, pictures and graphs to answer questions; and

(4) Read and follow simple directions to perform a task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Use a source to write, with assistance from the pupil's teacher, a simple informational paper;

(2) Write friendly notes;

(3) Write simple stories; and

(4) Write, with assistance from the pupil's teacher, responses to literature.

(b) Write with a clear focus and logical development, while evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Generate, select, organize and sequence ideas with assistance from the pupil's teacher;

(2) Write stories or other compositions with assistance from the pupil's teacher;

(3) Revise writing to include details and edit for correct usage with assistance from the pupil's teacher;

(4) Identify, with assistance from the pupil's teacher, an audience for writing; and

(5) Read and share writing with others.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Write complete sentences using verbs and nouns or pronouns;

(2) Use ending punctuation, simple singular contractions and possessives;

(3) Capitalize names, months, days of the week and words at the beginning of sentences;

(4) Correctly spell words with a simple spelling pattern of a consonant followed by a vowel followed by a consonant, such as "cat," and words that are frequently used, such as "the"; and

(5) Print legibly using correct orientation of each letter and spacing between letters and words.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Identify purposes for listening such as to obtain information, to solve problems or for enjoyment;

(2) Be attentive and respond to presentations;

(3) Recognize that different dialects exist; and

(4) Follow simple oral directions to complete a task.

(b) Speak using organization, style, tone, voice and media aids appropriate to the audience and purpose, as demonstrated by the pupil's ability to:

(1) Speak clearly at an understandable pace using varied vocabulary to communicate ideas;

(2) Present ideas and ask questions in small and large groups;

(3) Relate experiences and retell stories in sequence; and

(4) Give clear directions to complete a simple task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Take turns when sharing ideas and information in small groups; and

(2) Ask and answer questions to gather and provide information.

4. For the area of research, formulate questions and use a variety of sources to obtain information, weigh evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate questions, with assistance from the pupil's teacher, to explore areas of interest;

(b) Locate and use, with assistance from the pupil's teacher, reference materials and technology; and

(c) Share, with assistance from the pupil's teacher, the pupil's findings from research using various media.

Sec. 4. *By the end of the fourth grade, pupils must know and be able to do everything required in the previous grades for courses in English language arts offered in public schools. Instruction in the fourth grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the fourth grade:*

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Use phonics, structural elements and syntax to determine the meaning of unfamiliar words in context;

(2) Identify and use common prefixes, suffixes, and roots or base words derived from Greek and Latin to determine the meanings of words in context;

(3) Use dictionaries and glossaries to determine meaning, pronunciation, syllabication and derivation of unknown words; and

(4) Use vocabulary and context clues to determine meanings of unknown words.

(b) Use skills and strategies of reading process to build comprehension, as demonstrated by the pupil's ability to:

(1) Use graphic organizers to access prior knowledge, predict, preview and set a purpose to aid comprehension;

(2) Select and use self-correcting strategies to gain meaning from text;

(3) Use skills and strategies of summarizing, paraphrasing, outlining and drawing conclusions to aid comprehension; and

(4) Adjust reading rate to suit difficulty and type of text.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and times, as demonstrated by the pupil's ability to:

(1) Use knowledge of character, setting, plot, conflict and resolution to comprehend a variety of works;

(2) Use text to verify inferences and predictions about conflicts and resolutions and character comparisons; and

(3) Identify cultural influences in literature;

(4) Identify themes in a variety of reading selections;

(5) Locate figurative language in text; and

(6) Identify structures of stories, plays, poetry and nonfiction selections.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Use information from titles, tables of contents, chapter headings, glossaries, indexes, diagrams, charts and maps to comprehend text;

(2) Compare main ideas and important concepts of various text;

(3) Develop hypotheses based upon prior knowledge and information from text;

(4) Draw conclusions about text and support them with evidence from a variety of sources;

(5) Identify authors' purposes for writing; and

(6) Read and follow multistep directions to complete a task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Write informative papers with a clear focus using several types of sources;

(2) Write organized and appropriately formatted letters and invitations;

(3) Write a sequential narrative or story that includes details to develop plot, characters and setting; and

(4) Write responses to literary selections, using supporting details from the selection.

(b) Write with a clear focus and logical development, evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Generate ideas for writing through discussions and individual activities;

(2) Use sequencing and classifying to organize ideas;

(3) Write compositions of at least one paragraph with a main idea and supporting details;

(4) Revise a draft to improve meaning and focus of writing by adding or deleting words, sentences and ideas;

(5) Edit for use of standard English; and

(6) Produce writing with a voice that shows awareness of an intended audience and purpose.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Identify and correctly use pronoun and antecedent agreement, subject and verb agreement, and verb tenses in writing simple, compound and complex sentences;

(2) Write compound and complex sentences;

(3) Use correct punctuation in compound sentences;

(4) Use irregular and plural possessives;

(5) Use rules of capitalization;

(6) Use correct spelling of frequently used words; and

(7) Use various spelling strategies and high-frequency spelling rules.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Listen to, identify and interpret a speaker's verbal and nonverbal messages and distinguish fact from opinion;

(2) Recognize that language and dialect usage vary in different contexts, regions and cultures; and

(3) Follow oral directions to complete a complex task.

(b) Speak using organization, style, tone, voice and media aids appropriate to the audience and purpose, as demonstrated by the pupil's ability to:

(1) Select and use varied vocabulary, standard English and appropriate public speaking techniques to communicate ideas;

(2) Give organized presentations that demonstrate a clear viewpoint;

(3) Read aloud or recite literary, dramatic and original works; and

(4) Give clear and concise directions to complete a task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Contribute to and listen attentively in conversations and group discussions;

(2) Ask and answer questions with relevant details to clarify ideas;

(3) Share ideas, opinions and information clearly and effectively; and

(4) Identify and express opinions and state facts.

4. For the area of research, formulate research questions and use a variety of sources to obtain information, weigh evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Develop research questions that establish a focus and purpose for inquiry;

(b) Use a variety of library resources, media and technology to find information on a topic;

(c) Give credit for the ideas, images and information of others by listing sources used in research;

(d) Organize and record information by taking notes from print and nonprint sources; and

(e) Present research findings for different purposes and audiences using various media.

Sec. 5. *By the end of the sixth grade, pupils must know and be able to do everything required in the previous grades for courses in English language arts offered in public schools.*

Instruction in the sixth grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the sixth grade:

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Recognize that the functions of words in text change when affixes are added;

(2) Use knowledge of common foreign words and phrases to increase comprehension; and

(3) Identify and define commonly used idioms to increase comprehension.

(b) Use skills and strategies of reading process to build comprehension, as demonstrated by the pupil's ability to:

(1) Use prereading strategies to aid comprehension;

(2) Confirm and deny predictions, identify main ideas and details, and adjust reading rate to aid comprehension; and

(3) Summarize information from several sources.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and times, as demonstrated by the pupil's ability to:

(1) Analyze the influence of setting on characters and make logical predictions about characters and plot development based on text;

(2) Compare several works from the same period by authors who portray different cultural, generational and gender perspectives;

(3) Compare a variety of themes on a single topic;

(4) Describe how an author creates mood by choosing words with appropriate rhythm and sound and specific connotations; and

(5) Compare how several literary forms address the same topic.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Identify and use the text features of newspapers, magazines and editorials to gain meaning;

(2) Find similarities and differences among texts in the treatment, scope or organization of ideas;

(3) Use information from and differentiate between primary and secondary sources;

(4) Verify information from one source by consulting other sources;

(5) Evaluate how the ideas and purposes of authors shape the content of advertisements and public documents; and

(6) Read and follow multistep directions to complete a complex task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Write informative papers, using a variety of sources, that support a topic and have a distinct beginning, middle and end;

(2) Extract and reformat information into workplace communications;

(3) Write narratives or short stories that include relevant, meaningful dialogue;

(4) Write responses to literary selections that demonstrate an understanding of character motivation and development;

(5) Write summaries of nonfiction text; and

(6) Write texts that propose a solution to a problem and offer simple persuasive evidence.

(b) Write with a clear focus and logical development, evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Generate ideas by responding to visual prompts;

(2) Use organizing techniques that may not be appropriate to purpose of writing;

(3) Draft paragraphs or compositions with clear transitions;

(4) Revise paragraphs or compositions for consistency using a rubric;

(5) Edit for use of standard English; and

(6) Produce writing with an awareness of intended purpose and audience.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Use correct verb tense consistently in writing;

(2) Identify and correct fragments and run-on sentences in writing;

(3) Use semicolons, colons and apostrophes correctly in writing;

(4) Use rules of capitalization; and

(5) Demonstrate conventional spelling, especially of homonyms that are often misspelled.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Identify the tone and mood in verbal and nonverbal communication;

(2) Identify effective speaking techniques using criteria;

(3) Recognize that language usage varies in formal and informal settings; and

(4) Follow multistep oral directions to complete a task.

(b) Speak using organization, style, tone, voice and media aids appropriate to the audience and purpose, as demonstrated by the pupil's ability to:

(1) Use specific and varied vocabulary, and use standard English to communicate ideas;

(2) Develop and deliver presentations that may include media aids appropriate to audience and purpose;

(3) Organize and deliver a logical "how-to" speech that may be enhanced by media aids;

(4) Read aloud or recite literary, dramatic and original work; and

(5) Give organized multistep directions to complete a task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Demonstrate active listening skills by participating appropriately in conversations and group discussions;

(2) Ask and answer questions to generate possible solutions to a problem;

(3) Develop criteria for evaluating effective group participation; and

(4) Evaluate the logic and effectiveness of a speaker's arguments.

4. For the area of research, formulate research questions and use a variety of sources to obtain information, weigh the evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate a plan for research to answer a focused question;

(b) Distinguish between information from primary and secondary sources;

(c) Document research sources in order to prevent plagiarism;

(d) Record information using an organizational format that requires taking notes; and

(e) Present research findings using written text or media.

Sec. 6. *By the end of the seventh grade, pupils must know and be able to do everything required in the previous grades for courses in English language arts offered in public schools. Instruction in the seventh grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the seventh grade:*

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Identify roots and affixes derived from Greek and Latin in words encountered in subject-specific text;

(2) Compare and contrast the meanings of closely related words; and

(3) Explain differences between literal and figurative language in text.

(b) Use skills and strategies of reading process to build comprehension, as demonstrated by the pupil's ability to:

(1) Use prereading strategies to aid comprehension;

(2) Confirm, deny and revise predictions, make inferences from text and adjust reading rate to suit text structure; and

(3) Select and use appropriate strategies to aid comprehension after reading.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and times, as demonstrated by the pupil's ability to:

(1) Distinguish among elements of a story, including plot and subplot, conflict and foreshadowing and compare and contrast the actions of the characters;

(2) Make inferences about an author's cultural and historical perspective as supported by the text;

(3) Compare a variety of themes using textual evidence;

(4) Interpret examples of imagery and explain their sensory impact;

(5) Determine the effects of an author's choice of point of view; and

(6) Identify characteristics and elements of various literary forms.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Compare and contrast the features and elements of consumer materials to gain meaning from text;

(2) Identify and trace the development of an author's argument, viewpoint or perspective in text;

(3) Paraphrase and synthesize information from several sources;

(4) Evaluate the author's use of evidence in support of an argument;

(5) Identify unsupported inferences, faulty reasoning and propaganda techniques in text; and

(6) Read and follow multistep directions to complete a complex task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Write informative papers that have a structured beginning, middle and conclusion and draw upon a variety of sources;

(2) Convert information from text into visual formats and visual formats into text for a specific audience and purpose;

(3) Write narratives or short stories that include appropriate transitional words or phrases;

(4) Write supported responses to literary selections that demonstrate an understanding of theme;

(5) Write summaries of procedures; and

(6) Write complete papers that offer persuasive evidence in support of a position.

(b) Write with a clear focus and logical development, evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Generate ideas by responding to visual prompts;

(2) Select and use organizing techniques appropriate to the purpose of writing;

(3) Draft focused, developed compositions;

(4) Revise writing to improve organization, to check the logic of the ideas and precision of the vocabulary and to meet the criteria of a rubric;

(5) Edit for use of standard English; and

(6) Produce writing with an awareness of intended purpose and audience.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Know and use usage rules in writing;

(2) Use varied sentence structure in writing;

(3) Use hyphens and parentheses correctly and correctly punctuate sentences;

(4) Use rules of capitalization; and

(5) Demonstrate conventional spelling.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Interpret a speaker's verbal and nonverbal messages to identify main ideas;

(2) Determine a speaker's stance by evaluating the use of speaking techniques;

(3) Recognize that colloquialisms and jargon are reflections of contexts, regions and cultures; and

(4) Follow multistep oral directions to complete a task.

(b) Speak using organization, style, tone, voice and media aids appropriate to the audience and purpose, as demonstrated by the pupil's ability to:

(1) Develop and deliver presentations, using standard English and specific and varied vocabulary, that integrate appropriate public speaking techniques and media aids;

(2) Organize and deliver a persuasive speech appropriate to audience and purpose;

(3) Give clear and concise multistep directions to complete a task; and

(4) Read aloud or recite literary, dramatic and original work.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Provide constructive feedback when participating in conversations and group discussions;

(2) Distinguish between relevant and irrelevant information offered in support of an opinion;

(3) Participate in discussions in a variety of formats such as committees, panels and debates; and

(4) Develop logical arguments in support of opinions.

4. For the area of research, formulate research questions and use a variety of sources to obtain information, weigh the evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate questions and statements of purpose to guide cross-curricular research;

(b) Locate and use primary and secondary sources of information to investigate a research question;

(c) Use a method of citing sources within compositions;

(d) Record information using a strategy selected by the pupil for taking notes or organization; and

(e) Organize and present research findings using written text or media.

Sec. 7. *Instruction in kindergarten in mathematics must be designed so that pupils meet the following performance standards by the completion of kindergarten:*

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Use concrete objects to model simple sums and differences;

(b) Count to 20;

(c) Recognize, read and write numbers from 0 through 10;

(d) Estimate the number of objects in a set with up to 10 members and verify by counting; and

(e) Use the ordinal positions from first through third.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Sort and describe objects by similar attributes;

(b) Recognize and replicate a pattern; and

(c) Identify and create sets of objects containing unequal numbers of items, describing them as more or less.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Compare and order objects by size, communicating their similarities and differences;

(b) Identify and sort pennies, nickels and dimes; and

(c) Recite, in order, the days of the week.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify,

represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Identify two-dimensional shapes such as circles, triangles and rectangles, including squares, regardless of orientation;

(b) Use position words such as "middle," "before" or "down" to place objects; and

(c) Identify two-dimensional figures as they appear in the environment, such as windows are shaped like rectangles.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to collect and describe data.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions; and

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct the pupil's own learning in all content areas to justify and enhance the pupil's ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas; and

(e) Determine the relevancy and sufficiency of information to solve mathematical problems.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) Identify practical applications of mathematical principles that can be applied to other disciplines;

(b) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(c) Link new concepts to prior knowledge; and

(d) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 8. *By the end of the first grade, pupils must know and be able to do everything required in kindergarten for mathematics offered in public schools. Instruction in the first grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the first grade:*

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a

pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Identify and model basic addition facts, sums through 100 and the corresponding subtraction facts;

(b) Write, model, and describe one-step addition and subtraction problems;

(c) Use the patterns in numbers to count by 1s, 2s, 5s and 10s to 100;

(d) Read, write, order and compare numbers from 0 through 100;

(e) Estimate the number of objects in a set through 10;

(f) Read and write number words from 0 through 10;

(g) Use the ordinal positions from first through tenth;

(h) Use, model, and identify place value positions of 1s and 10s; and

(i) Identify and model a whole and one-half.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Recognize, describe, extend and create simple repeating patterns using symbols, objects and manipulatives; and

(b) Create, compare and describe sets of objects as having more, fewer or an equal number of objects.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Compare and order objects by length and weight, communicating their similarities and differences;

(b) Compare and measure length and weight, using nonstandard units of measurement;

(c) Determine the value of any set of pennies, nickels and dimes;

(d) Recite the months of the year in order;

(e) Use a calendar to identify the days, weeks, months and year;

(f) Read time to the nearest hour and half hour; and

(g) Distinguish between day and night.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Name, sort and sketch two-dimensional shapes such as circles, triangles and rectangles, including squares, regardless of orientation;

(b) Use position words such as "between," "left" or "near" to describe the location of objects; and

(c) Identify and replicate two-dimensional designs that contain a line of symmetry.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize,

display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to collect and describe data.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions; and

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas; and

(e) Determine the relevancy and sufficiency of information to solve mathematical problems.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a

variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge; and

(e) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 9. *By the end of the fourth grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the fourth grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the fourth grade:*

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Immediately recall and use multiplication and corresponding division facts through 12;

(b) Generate and solve two-step multiplication and division problems based on practical situations using pencil and paper, mental computation and estimation;

(c) Multiply and divide money amounts by a one-digit whole number producing a solution with no remainder;

(d) Multiply and divide multidigit numbers by one-digit numbers;

(e) Model and explain division as repeated subtraction and equal groups;

(f) Read, write, order and compare whole numbers;

(g) Use estimation to determine the reasonableness of an answer;

(h) Use and identify place value positions of whole numbers; and

(i) Identify and compare fractions with like denominators using numbers, models and drawings.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Identify, describe and represent numeric and geometric patterns and relationships; and

(b) Find solutions to given equations from a given replacement set, such as finding the solution to 3 X 7 = , given the replacement set {19, 20, 21}.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Select and use appropriate units and tools to describe an attribute such as length, width or perimeter, measure to a required degree of accuracy and record the results;

(b) Communicate the difference between perimeter and area, and describe and determine the perimeter of polygons and the area of rectangles, including squares;

(c) Determine totals for monetary amounts in problem-solving situations;

(d) Identify equivalent periods of time, including relationships between and among seconds, minutes, hours, days, months and years, such as 60 seconds = 1 minute; and

(e) Describe the difference between perimeter and area and determine the perimeter of any polygon and the area of right triangles and rectangles, including squares.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Identify, draw, and classify angles according to their type, either right, obtuse or acute, and by given measurements;

(b) Represent concepts of similarity, congruence and symmetry using transformational motions;

(c) Identify, describe and classify two- and three-dimensional figures by relevant properties including the number of angles, edges and shapes of faces using models; and

(d) Identify, describe and draw geometric figures including points, intersecting lines, parallel lines, line segments, rays and angles.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to:

(a) Collect, organize, display, describe and interpret simple data using lines, pictographs, bar graphs and frequency tables; and

(b) Conduct simple probability experiments using concrete materials and represent the results using fractions.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid and logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in both concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 10. *By the end of the sixth grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the sixth grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the sixth grade:*

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Read, write, add, subtract, multiply and divide using fractions, decimals and percents;

(b) Apply decimals, fractions and percents to solve mathematical and practical problems;

(c) Use the concepts of number theory, including prime and composite numbers, factors, multiples and the rules of divisibility;

(d) Compare and order groups of fractions and groups of decimals;

(e) Round to a given decimal place;

(f) Estimate using decimals, fractions and percents;

(g) Use models and drawings to identify, compare, add and subtract fractions with unlike denominators; and

(h) Use models to translate among fractions, decimals and percents.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Use and create tables and charts to extend a pattern to find a rule;

(b) Identify, model, describe and evaluate relationships using charts and tables, with and without technology; and

(c) Use a rule to create a table and represent the ordered pairs on a coordinate grid.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Estimate and convert units of measurement for length, weight and capacity, within the same measurement system;

(b) Explain how the size of the unit used affects the precision;

(c) Given two measurements of the same object, select the one that is more precise;

(d) Estimate, measure to the required degree of accuracy, and derive and apply formulas to find the perimeter, circumference and area of plane figures; and

(e) Use ratios to describe and compare relationships between various objects.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Measure angles;

(b) Identify, describe by properties, classify, compare and draw regular and irregular quadrilaterals;

(c) Find the sum of the interior angles of triangles and quadrilaterals;

(d) Determine actual measurements represented on scale drawings;

(e) Using a coordinate grid, identify coordinates for a given point and locate points with given coordinates;

(f) Plot geometric shapes in all four quadrants;

(g) Make a model of a three-dimensional prism from a two-dimensional drawing and make a two-dimensional drawing of a three-dimensional prism;

(h) Model slope using concrete objects and practical examples;

(i) Draw complementary and supplementary angles;

(j) Identify and find measures of complementary and supplementary angles using arithmetic and geometric methods;

(k) Determine the measures of missing angles of triangles based on the Triangle Sum Theorem; and

(l) Construct circles, angles and triangles based on given measurements using a variety of methods.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to:

(a) Interpret data using various formats including circle graphs;

(b) Conduct simple probability experiments using concrete materials and represent the results using decimals, percents and ratios;

(c) Solve probability problems using a variety of methods including constructing sample spaces and tree diagrams;

(d) Analyze the effect a change of format will have on interpretation of statistical charts and graphs; and

(e) Analyze data in a variety of formats to draw conclusions and make predictions.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate those ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in both concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating

mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures by using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 11. *By the end of the seventh grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the seventh grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the seventh grade:*

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Read, write and find ratios and proportions;

(b) Read, write, add, subtract, multiply and divide positive and negative numbers;

(c) Apply positive and negative numbers, ratios and proportions to solve mathematical and practical problems;

(d) Use absolute value and the properties of real numbers including distributive, commutative and associative to solve problems;

(e) Compare and order groups containing a mix of fractions, percents and decimals;

(f) Select and use the appropriate significant digit in problem situations;

(g) Compare and describe a variety of estimation strategies; and

(h) Translate among fractions, decimals and percents.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Use and create coordinate graphs to represent or interpret patterns and relationships, with and without calculators;

(b) Identify, model, describe and evaluate relationships using graphs, with and without technology;

(c) Evaluate formulas and algebraic expressions for given values of a variable;

(d) Represent mathematical situations using algebraic language and symbols;

(e) Combine like terms in variable expressions;

(f) Model, identify and solve linear equations and inequalities using concrete and informal methods, and relate this process to the order of operations; and

(g) Generate and graph a set of ordered pairs that represent a linear equation.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Estimate and convert units of measurement for mass and volume, within the same measurement system;

(b) Compare, convert and estimate units of measure of capacity, mass and volume within the same measurement system;

(c) Compare corresponding units in the metric and customary systems;

(d) Given a measurement, determine the greatest possible error;

(e) Estimate, measure to the required degree of accuracy, derive and apply standard formulas to find the volume and surface area of solid figures;

(f) Write, solve and apply proportions; and

(g) Use elapsed time to solve practical problems.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Identify, describe by properties, classify compare, and draw regular and irregular polygons;

(b) Find the sum of the interior angles of polygons;

(c) Use ratio and proportions to create scale drawings;

(d) Use coordinate geometry and models to demonstrate geometric transformation, including rotate and turn, translate and slide, and reflect and flip by finding the ordered pairs that describe the location of the original and the transformed figures;

(e) Make a model of a three-dimensional figure from a two-dimensional drawing and make a two-dimensional drawing of a three-dimensional object;

(f) Use coordinate geometry to represent slope, midpoint, and horizontal and vertical distance;

(g) Describe the properties of geometric relationships, including parallel lines, perpendicular lines, bisectors, triangles and quadrilaterals, such as the properties of angles formed by a transversal of parallel lines;

(h) Model the Pythagorean Theorem;

(i) Solve for the hypotenuse using the Pythagorean Theorem; and

(j) Construct and verify congruent angles and parallel and perpendicular lines using hand tools.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to:

(a) Organize, display, read and analyze data, with and without technology, using a variety of displays including frequency distributions and circle graphs; and

(b) Select, use and graph, when possible, measures of variability including range, distribution and possible outliers.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate those ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect upon, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in both concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating

mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures by using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 12. NAC 389.243 is hereby amended to read as follows:

389.243 By the end of the second grade, pupils must know and be able to do everything required in the previous grades for courses in English language arts offered in public schools. Instruction in the second grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the second grade:

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Read familiar or independently chosen texts appropriate for the pupil's grade level with fluency, accuracy, intonation and expression;

(2) Read high-frequency words to build fluency;

(3) Apply the knowledge of phonics and structural elements, including, without limitation, letter-sound relationships, affixes and spelling patterns to understand words in context; and

(4) Apply the knowledge of synonyms, antonyms, homophones and homographs to understand text.

(b) Use skills and strategies of reading process to build comprehension, as demonstrated by the pupil's ability to:

(1) Apply prereading strategies, including, without limitation, accessing prior knowledge, predicting, previewing and setting a purpose;

(2) Use strategies of self-correction, including, without limitation, self-questioning and rereading; and

(3) Recall and retell the main idea of text.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and times, as demonstrated by the pupil's ability to:

(1) Provide well-developed descriptions of simple story elements, such as setting, characters, character traits and plot;

(2) Compare and contrast different versions of the same stories from different cultures and eras;

(3) Identify the main idea of the text;

(4) Differentiate among rhythm, rhyme and alliteration in poetry; and

(5) Distinguish between poetry and prose.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Use the parts of a book to locate information, including the table of contents, chapter headings, diagrams, charts and graphs;

(2) Identify relationships of cause and effect and the main idea of a passage;

(3) Formulate questions to gain understanding of important information in text; and

(4) Read and follow simple directions to perform a task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Write informative papers using two sources;

(2) Write friendly letters using a standard format; and

(3) Write a variety of literary forms, including stories, poems and responses to literature.

(b) Write with a clear focus and logical development, evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Apply, with the assistance of a teacher, the appropriate steps of the writing process, including, without limitation, prewriting, drafting, revising, editing and sharing;

(2) Generate and organize ideas for writing;

(3) Write stories and other compositions with ample detail for a specific audience;

(4) Revise and edit writing, with the assistance of the teacher, to attain sufficient detail, ample clarity and appropriate use of words; and

(5) Share written work with others and use responses for appropriate revision.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Identify and write complete sentences using nouns, verbs, pronouns, adjectives and adverbs;

(2) Use correct punctuation, including, without limitation, the use of:

(I) Punctuation at the end of a sentence;

(II) Commas in the greeting and closing of a letter, in dates and between words in a series; and

(III) Apostrophes in contractions and possessives;

(3) Capitalize proper nouns and initials correctly;

(4) Spell ***simple*** words correctly in writing, especially high-frequency irregular words and words with long and r-controlled vowels, blends and digraphs; and

(5) Write compositions that are readable and legible.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Determine the purposes for listening, such as to obtain information, to solve problems or to provide enjoyment;

(2) Listen and respond to public presentations and a variety of media;

(3) Distinguish generally among different dialects; and

(4) Follow two-step oral directions to complete a task.

(b) Speak using organization, style, tone, voice and media aids appropriate to the audience and purpose, as demonstrated by the pupil's ability to:

(1) Speak clearly, using an understandable pace and vocabulary to communicate ideas;

(2) Make oral presentations that maintain a clear focus;

(3) Recount experiences and tell stories that move through a logical sequence of events and include characters and a setting; and

(4) Give clear directions to complete a simple task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Allow others to speak, ~~[use eye contact]~~ ***be attentive*** and present ideas and information in conversations and group discussions; and

(2) Ask and answer questions to gather and provide information.

4. For the area of research, formulate research questions and use a variety of sources to obtain information, weigh the evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate questions to explore areas of interest;

(b) Obtain information from reference materials and available technology to answer questions; and

(c) Present the findings of the research by using media that is available.

Sec. 13. NAC 389.2435 is hereby amended to read as follows:

389.2435 By the end of the second grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the second grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the second grade:

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules

and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Identify and model basic addition facts for sums through 18 and the corresponding subtraction facts;

(b) Immediately recall from memory addition facts for sums through 10 and the corresponding subtraction facts;

(c) Add and subtract multiplace numbers without regrouping;

(d) Generate, write and solve one-step addition and subtraction problems based on practical situations;

(e) Use decimals to show amounts of money;

(f) Use the patterns in numbers to skip count ~~[by 2s, 3s, 5s, and 10s through 100 and beyond;~~

~~(g) Read and write numerals and order and compare numbers for 0 through 999;~~

~~(h)]~~ ***;***

(g) Estimate, with reasonable results, the number of objects in a set through 20;

~~[(i)]~~ ***(h)*** Read and write numbers through 20 and use modeling and identifying for the 1st through 20th ordinal positions;

~~[(j)]~~ ***(i)*** Use modeling and identifying to place value positions of 1s, 10s and 100s; and

~~[(k)]~~ ***(j)*** Identify, model and label 1/2 and 1/4 as parts of a whole.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Recognize, describe, extend, create and use repeating and increasing patterns, symbols, objects and manipulatives to solve problems;

(b) Use variables and open sentences to express relationships; ~~[and]~~

(c) Create, model, explain and solve problems by using addition and subtraction ~~[.]~~ ***; and***

(d) Generate and solve problems based on various numerical sentences and represent mathematical situations using numbers, symbols and words.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Compare and order objects by various measurable attributes, including, without limitation, time, temperature, length, weight, capacity ~~[, volume]~~ and area, and describe and define those various attributes;

(b) Compare objects that are greater than, less than, or equal to a given unit of measurement such as an inch, yard, centimeter and meter;

(c) Determine the value of any given set of coins ***;*** ~~[and bills;]~~

(d) Recite and use the months of the year in sequential order and use a calendar to identify days, weeks, months and years; and

(e) Read the time of day to the nearest quarter hour and distinguish between “a.m.” and “p.m.”

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent,

verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) ~~[Identify, name, sort, sketch, describe]~~ ***Describe*** and compare circles, triangles and rectangles, including squares, regardless of position;

(b) Describe the location of objects and place objects in position using descriptive words such as before, far, below and left;

(c) Compare the size of similar two-dimensional figures and identify shapes that are congruent;

(d) Identify symmetry in figures in the environment and create figures and designs that have a line of symmetry; and

(e) Identify, name, sort, describe, compare and contrast two-dimensional and three-dimensional figures.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to collect, organize, record and explain the classification of data using concrete materials.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid and logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in both concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 14. NAC 389.246 is hereby amended to read as follows:

389.246 By the end of the third grade, pupils must know and be able to do everything required in the previous grades for courses in English language arts offered in public schools. Instruction in the third grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the third grade:

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Apply knowledge of word families, phonics and structural elements to determine the meanings of unfamiliar words in context;

(2) Apply knowledge of prefixes, suffixes, roots and base words with minimal assistance from the teacher to determine the meanings of words in context;

(3) Use dictionaries, glossaries and other resource materials to determine the meanings of words; ~~[and]~~

(4) Develop and communicate an expanded vocabulary through the use of synonyms, antonyms, homophones and homographs ~~.~~ ***;***

(5) Read familiar or independently chosen grade-level text with fluency, accuracy, intonation and expression; and

(6) Alphabetize words consistently.

(b) Use skills and strategies of reading process to build comprehension, as demonstrated by the pupil's ability to:

(1) Apply prereading strategies with a variety of texts, such as stories, poems and novels;

(2) Apply self-correcting strategies, such as self-questioning and rereading to understand text;

(3) Organize essential points of text and make revised predictions while reading;

(4) Restate facts and details of text to share information and organize ideas; and

(5) Adjust the rate of reading as appropriate for the level of difficulty of the text.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and times, as demonstrated by the pupil's ability to:

(1) Compare one or more elements of a story and points of view in a variety of works by a variety of authors from different times and cultures;

(2) With minimal assistance from the teacher, make inferences about the traits of characters and check text for verification;

(3) With minimal assistance from the teacher, identify and compare themes or messages in text;

(4) Identify a simile, metaphor, onomatopoeia and hyperbole in text; and

(5) Read and identify stories, plays, poetry and nonfiction selections.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Identify relevant information from the text;

(2) With minimal assistance from the teacher, distinguish between cause and effect, fact and opinion, and main idea and supporting detail;

(3) With some assistance from the teacher, ask questions and provide support for answers by connecting prior knowledge with literal and inferential information in text;

(4) With minimal assistance from the teacher, draw conclusions about text and support the conclusions with evidence from the text and experience; and

(5) With minimal assistance from the teacher, read and follow three- and four-step directions to complete a simple task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to the purpose and audience, as demonstrated by the pupil's ability to:

(1) Use at least three sources to write informative papers;

(2) Write narratives, stories, responses to literature, and personal and business letters using appropriate organization and format;

(3) Write stories that develop sequentially and contain sufficient detail; ~~[and]~~

(4) Write compositions that retell the events in a story in sequence ~~[.]~~ ***; and***

(5) Write short expository stories.

(b) Write with a clear focus and logical development, evaluating, revising and editing for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) With minimal assistance from the teacher, use the steps of the writing process, such as prewriting, drafting, revising, editing and sharing;

(2) Write simple compositions that include a topic sentence, supporting sentences and details;

(3) Revise and edit written drafts for order of ideas and use of standard English; and

(4) Demonstrate effective use of tone by using appropriate words for given audiences.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Compose simple sentences using correct subject and verb agreement and correct use of past, present and future verb tenses;

(2) Write declarative, interrogative, imperative and exclamatory sentences;

(3) Use quotation marks in dialogue and correct punctuation for writing the name of a city, state, date and title of a book;

(4) Use correct capitalization and spelling; and

(5) Create readable and legible compositions in a standard format.

3. For the areas of listening and speaking:

(a) Listen to a speaker and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Retell and explain what has been said by a speaker;

(2) Listen to make connections between prior experiences, insights and ideas and the message of the speaker;

(3) Identify language, sayings and dialects that reflect regions and cultures; and

(4) Follow three- and four-step oral directions to complete a simple task.

(b) Speak using organization, style, tone, voice and media aids appropriate to audience and purpose, as demonstrated by the pupil's ability to:

(1) Use standard English to communicate ideas in a variety of tasks;

(2) Use appropriate techniques in public speaking and give organized and sequential presentations;

(3) Read aloud and recite prose and poetry with fluency, rhythm, pace, appropriate intonation and vocal patterns; and

(4) Give clear three- and four-step directions to complete a simple task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Speak, listen attentively and respond to questions with relevant detail in conversations and group discussions;

(2) Share ideas and information to complete a task; and

(3) Distinguish the difference between the opinion of the speaker and the facts.

4. For the area of research, formulate research questions and use a variety of sources to obtain information, weigh the evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate questions to investigate topics;

(b) Use a variety of resources, including, without limitation, resources available at the library, technological resources and print and nonprint resources to find and record information on a topic;

(c) Give appropriate credit for the ideas, images and information attributable to other persons by providing a list of sources; and

(d) Present research findings using available, selected media for different purposes and audiences.

Sec. 15. NAC 389.251 is hereby amended to read as follows:

389.251 By the end of the third grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the third grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the third grade:

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Immediately recall and use addition and subtraction facts and multiplication facts for products through 81;

(b) Add and subtract multiplace numbers with regrouping;

(c) Generate and solve two-step addition and subtraction problems based on practical situations by using paper and pencil, mental computation and estimation;

(d) Generate and solve one-step multiplication problems based on practical situations by using paper and pencil, mental computation and estimation;

(e) Add and subtract decimals that represent amounts of money;

(f) Use ***repeated*** addition to model and explain multiplication;

(g) Read and write numerals ***and words that represent numbers*** and compare and order numbers from 0 through ~~[9,999;]~~ ***999;***

(h) Determine the reasonableness of answers by rounding to the nearest 10 and 100;

(i) Use, model and identify the place value positions through 10,000;

(j) Model, sketch and label fractions with denominators through 10; and

(k) Write commonly used fractions using both numerals and words.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Recognize, describe, extend and create repeating and increasing patterns by using numbers, number patterns and their extensions to solve problems; and

(b) Identify missing symbols and missing numbers in open sentences involving number facts in addition and subtraction.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) Measure to a required degree of accuracy, record the measurement, evaluate the measurement for error and describe the appropriateness of selected units of measure;

(b) Estimate measurements and use measuring devices with standard and nonstandard units to measure length, area of a region, liquid volume, capacity, temperature and weight, and communicate the concepts of more, less and equivalent;

(c) Read, write and use notations of money and determine possible combinations of coins and bills to equal given amounts; and

(d) Read the time of day to the nearest minute using analog and digital clocks and measure time that has elapsed.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Describe, sketch, compare and contrast plane geometric figures;

(b) Demonstrate and describe the transformation of a geometric figure as a slide, rotation or flip; and

(c) ~~[Describe, sketch,]~~ ***Sketch,*** model, build, compare and contrast two-dimensional and three-dimensional geometric figures.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to:

(a) Collect, organize, display and describe simple data using number lines, pictographs, bar graphs and frequency tables by hand and with computers, if available; and

(b) Use concepts of probability such as impossible, unlikely, likely and certain to make predictions about future events.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a

need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate those ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in both concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a

variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 16. NAC 389.2943 is hereby amended to read as follows:

389.2943 By the end of the fifth grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the fifth grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the fifth grade:

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Immediately recall and use multiplication and corresponding division facts using factors of 0 through 12;

(b) Multiply and divide multiplace numbers by two-digit numbers, including ~~[multiples]~~ ***using strategies for multiplying and dividing powers*** of 10;

(c) Generate and solve addition, subtraction, multiplication and division problems that involve whole numbers and order of operations based on practical situations;

(d) Compare and order negative numbers based on practical situations and plot integer values on a number line;

(e) Estimate to determine the reasonableness of an answer by identifying and using the correct place value position; ~~[and]~~

(f) Model, draw, identify, compare, add and subtract decimals and fractions with like denominators to solve problems ~~[.]~~ ***; and***

(g) Add and subtract decimals and multiply and divide decimals by whole numbers in problems that represent practical situations.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Identify, describe and explain number patterns and relationships, including, without limitation, triangular numbers, perfect squares, and arithmetic and geometric sequences, using paper and pencil, concrete materials and calculators;

(b) Use variables in open sentences to describe simple functions and relationships;

(c) Solve simple whole number equations and inequalities using a variety of methods; and

(d) Generate number sequences given the first term of the sequence and any simple computation rule.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) ~~[Measure, compare and convert units of length, within the same system of measurement, to the nearest fractional or decimal part;~~

~~(b)]~~ Estimate and directly measure length, volume, capacity and quantity;

~~[(c)]~~ ***(b)*** Select and justify the use of estimation or direct measurement and weight in a given situation;

~~[(d)]~~ ***(c)*** Determine the total cost of purchases and the amount of change in practical situations;

~~[(e)]~~ ***and***

(d) Describe the difference between perimeter and area**.** ~~[and determine the perimeter of any polygon and the area of right triangles and rectangles, including squares; and~~

~~(f) Identify equivalent periods of time using relationships between and among seconds, minutes, hours, days, months and years.]~~

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) Draw and classify ~~[angles and triangles as right, acute or obtuse;]~~ ***triangles according to their proportions;***

(b) Identify and draw circles and elements of circles and describe the relationships between the various elements;

(c) Identify a transformation as translation, rotation, reflection, enlargement or reduction;

(d) Identify shapes that have congruence, similarity or symmetry using a variety of methods, including, without limitation, transformational motions and models, drawings and tools of measurement;

(e) Graph ordered pairs and identify coordinates for a given point in the first quadrant;

(f) Identify, describe, compare and classify two-dimensional and three-dimensional figures by their properties, including the number of vertices and edges and the number and shape of the faces; and

(g) Identify, describe, classify and draw one-dimensional and two-dimensional geometric figures, including lines that are intersecting, perpendicular and parallel, line segments, rays, and angles with given measurements.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to:

(a) Collect, organize, read and interpret data using graphic representations, including tables, line plots, stem and leaf plots, scatter plots and histograms;

(b) Use data and graphs to formulate and explain conclusions and predictions, with and without the assistance of technology;

(c) ~~[Conduct simple probability experiments using concrete materials and represent the results in fractional form;~~

~~(d) Solve probability problems using a variety of methods, including constructing sample spaces and tree diagrams;~~

~~(e)]~~ Model and compute measures of central tendency, including mean, median and mode; and

~~[(f)]~~ ***(d)*** Describe the limitations of various formats of graphs, select a type of graph to accurately represent the given data and justify the selection.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Apply previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information,

translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use this information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate those ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions by using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 17. NAC 389.401 is hereby amended to read as follows:

389.401 By the end of the eighth grade, pupils must know and be able to do everything required in the previous grades for courses in English language arts offered in public schools.

Instruction in the eighth grade in English language arts must be designed so that pupils meet the following performance standards by the completion of the eighth grade:

1. For the area of reading:

(a) Know and use skills and strategies of word analysis to comprehend new words encountered in text, as demonstrated by the pupil's ability to:

(1) Apply knowledge of Greek and Latin roots and affixes to comprehend new words;

(2) Use dictionaries and glossaries to determine meanings of new words encountered in text; and

(3) Analyze figurative language to infer literal and figurative meaning from text.

(b) Use skills and strategies of reading process to build comprehension, as demonstrated by the pupil's ability to:

(1) Apply prereading strategies;

(2) Apply and analyze skills and strategies that enhance comprehension;

(3) Use outlines, maps and graphic organizers to aid comprehension; and

(4) Adjust the rate of reading as appropriate for the purpose and task assigned and the level of difficulty of the text.

(c) Read to comprehend, interpret and evaluate literature from a variety of authors, cultures and times, as demonstrated by the pupil's ability to:

(1) ~~[Analyze and evaluate]~~ ***Evaluate*** the elements of a story to determine the importance of the elements to the story;

(2) Explain inferences regarding the motives of characters and consequences of action by citing to the text;

(3) Identify examples of connections that exist among an author, the cultural and historical context and the work;

(4) Distinguish theme from topic and cite to evidence from the text to support claims;

(5) Identify, analyze and compare techniques used by authors to elicit a response from the reader; and

(6) Compare characteristics and elements of various literary forms.

(d) Read to comprehend, interpret and evaluate informational texts for specific purposes, as demonstrated by the pupil's ability to:

(1) Use knowledge of the features of the text and common expository structures to comprehend the text;

(2) Locate, interpret, organize and synthesize information in text to answer specific questions and support ideas;

(3) Evaluate the validity, accuracy and adequacy of evidence that supports the ideas of the author and cite supporting evidence from the text;

(4) Summarize ideas and information in text, including, without limitation, advertisements and public documents; and

(5) Read and follow multistep directions to complete a complex task.

2. For the area of writing:

(a) Write a variety of texts that inform, persuade, describe, evaluate or tell a story and are appropriate to purpose and audience, as demonstrated by the pupil's ability to:

(1) Write well-developed informative papers using a variety of sources;

(2) Write personal and business communications;

(3) Write organized narratives or short stories that include relevant dialogue and details and that reveal the author's opinion concerning the subject;

(4) Respond to literary selections using supporting evidence from the text;

(5) Write summaries by presenting main ideas and supporting information;

(6) Write well-organized expository text that states a thesis and answers readers' concerns and counterarguments; and

(7) Write organized, persuasive editorials or essays that state a thesis supported by details, reasons and examples.

(b) Write with a clear focus and logical development and evaluate, revise and edit for organization, style, tone and choice of words, as demonstrated by the pupil's ability to:

(1) Generate ideas using a variety of strategies;

(2) Organize ideas according to the purpose and task;

(3) Draft coherent compositions with a dominant impression or thesis statement;

(4) Revise writing using identified criteria;

(5) Edit for use of standard English; and

(6) Write with a tone that is expressive and appropriate to audience and purpose.

(c) Write using standard English grammar, usage, punctuation, capitalization and spelling, as demonstrated by the pupil's ability to:

(1) Apply the rules of usage and grammar correctly;

(2) Use varied sentence structure to reinforce style;

(3) Use internal and external punctuation correctly;

(4) Use rules of capitalization; and

(5) Demonstrate conventional spelling.

3. For the areas of listening and speaking:

(a) Listen to and evaluate oral communications for content, style, purpose of the speaker and appropriateness for the audience, as demonstrated by the pupil's ability to:

(1) Paraphrase the main ideas of the speaker and the supporting evidence to determine the meaning of the communication and to ask relevant questions concerning the communication;

(2) Evaluate content and delivery and provide constructive feedback;

(3) Analyze dialects associated with informal and formal speaking contexts as they are reflected in slang, jargon and language styles; and

(4) Follow multistep oral directions to complete a complex task.

(b) Speak using organization, style, tone, voice and media aids appropriate to audience and purpose, as demonstrated by the pupil's ability to:

(1) Select and use vocabulary and techniques of public speaking that are appropriate to the audience and purpose;

(2) Organize and deliver planned and impromptu presentations appropriate to the audience and purpose; and

(3) Give clear and concise multistep directions to complete a complex task.

(c) Participate in discussions to offer information, clarify ideas and support a position, as demonstrated by the pupil's ability to:

(1) Participate in conversations and group discussions as an active listener to provide constructive feedback;

(2) Examine and provide specific evidence to support an opinion;

(3) Follow group rules and understand individual roles in a variety of discussion formats; and

(4) Express opinions with evidence to support those opinions and consider multiple or divergent points of view.

4. For the area of research, formulate research questions, use a variety of sources to obtain information, weigh the evidence, draw valid conclusions and present findings, as demonstrated by the pupil's ability to:

(a) Formulate questions and develop a purpose that leads to inquiry, investigation and research across the curriculum;

(b) Locate and select relevant information from multiple primary and secondary sources;

(c) Document sources used in research in accordance with a given format;

(d) Record information using a variety of note-taking and organizational strategies; and

(e) Organize and present research findings using appropriate multimedia.

Sec. 18. NAC 389.406 is hereby amended to read as follows:

389.406 By the end of the eighth grade, pupils must know and be able to do everything required in the previous grades for courses in mathematics offered in public schools. Instruction in the eighth grade in mathematics must be designed so that pupils meet the following performance standards by the completion of the eighth grade:

1. For the areas of numbers, number sense and computation, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must accurately calculate and use estimation techniques, number relationships, operation rules and algorithms, and determine the reasonableness of answers and the accuracy of solutions. A pupil must demonstrate the ability to:

(a) Read, write, apply and compute with real numbers in various forms, including, without limitation, radicals, exponentials and scientific notations;

(b) ~~[Determine, write and use ratios and proportions to solve problems;]~~ ***Compare and order rational numbers;***

(c) Estimate in problem-solving situations and practical applications to determine the reasonableness of answers and verify the results;

(d) Explain the relationship among fractions, decimals and percents and translate among representations; and

(e) Explain and use concepts of:

(1) Number theory such as factors and multiples;

(2) Properties of real numbers such as the commutative, associative and distributive; and

(3) Order of operations,

FLUSH to solve problems.

2. For the areas of patterns, functions and algebra, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use various algebraic methods to analyze, illustrate, extend and create numerous representations, including, without limitation, words, numbers, tables, and graphs of patterns, functions and algebraic relations. A pupil must demonstrate the ability to:

(a) Use inductive reasoning to find a missing term in numeric, arithmetic and geometric sequences and generalize basic patterns to the nth term, with and without the assistance of calculators;

(b) Identify, describe, model and evaluate relationships, including, without limitation, patterns, sequences and functions using oral, written and symbolic language, with and without the assistance of technology;

(c) Solve an equation or a formula for any variable;

(d) Describe how a change in one variable of a mathematical relationship affects the remaining variables by using various tools and methods;

(e) Model, identify and solve simple linear equations and inequalities and relate that process to the order of operations ***;*** ~~[by using formal and informal methods; and]~~

(f) Add and subtract binomials and describe the connection between the algebraic process and the arithmetic process ~~[.]~~ ***; and***

(g) Translate among verbal descriptions, graphic, tabular and algebraic representations of mathematical situations.

3. For the area of measurement, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must use appropriate tools and techniques of measurement to determine, estimate, record and verify direct and indirect measurements. A pupil must demonstrate the ability to:

(a) ~~[Compare and convert units of measure for length, weight, mass and volume within the same system of measurement, either customary or metric, and estimate conversions between like units of the two systems to solve problems;~~

~~(b)]~~ Identify the range of precision, error of measure and tolerance in measurement when using the appropriate tool of measurement and measure to the required degree of accuracy;

~~[(c)]~~ ***(b)*** Estimate and measure length, weight, mass and volume to the required degree of accuracy;

~~[(d) Derive and apply formulas to find:~~

~~(1) The perimeter, circumference and area of plane figures; and~~

~~(2) Volume and surface area of solid figures;~~

~~(e) Identify]~~

(c) Select and apply formulas to identify the relationship between changes in area and volume and changes in linear measures of figures;

~~[(f)]~~ ***(d)*** Evaluate formulas and algebraic expressions for given values of a variable; and

~~[(g)]~~ ***(e)*** Apply ratio and proportion to calculate rates and as a method of indirect measure.

4. For the areas of spatial relationships and geometry, to solve problems, communicate and make connections within and beyond the field of mathematics, a pupil must identify, represent, verify and apply spatial relationships and geometric properties. A pupil must demonstrate the ability to:

(a) ~~[Identify, classify, compare and draw regular and irregular polygons, if given specifications;~~

~~(b) Determine the sum of the interior angles of convex polygons;~~

~~(c)]~~ Apply the properties of equality and proportionality to solve problems that involve congruent or similar shapes;

~~[(d)]~~ ***(b)*** Use coordinate geometry and models to illustrate change in scale ~~[and other geometric transformations;~~

~~(e) Create a model of a three-dimensional figure from two-dimensional drawings and make a two-dimensional drawing of a three-dimensional object;~~

~~(f)]~~ ***;***

(c) Represent and interpret relationships defined by equations and formulas, including distance, midpoint and slope, on a coordinate plane, with and without the assistance of technology;

~~[(g)]~~ ***(d)*** Form generalizations and validate conclusions about properties of geometric shapes including those associated with parallel lines, perpendicular lines, bisectors, triangles and quadrilaterals;

~~[(h)]~~ ***(e)*** Verify, explain and use the Pythagorean Theorem ~~[and the Triangle Sum Theorem]~~ to determine missing sides and angles of triangles; and

~~[(i)]~~ ***(f)*** Construct, draw and sketch geometric figures, bisected angles and lines and line segments with given specifications by using hand tools and technology.

5. For the area of data analysis, to solve problems, communicate, reason and make connections within and beyond the field of mathematics, a pupil must collect, organize, display, interpret and analyze data to determine statistical relationships and probability projections. A pupil must demonstrate the ability to:

(a) Organize, display, read and analyze data, with and without the assistance of technology, by using a variety of displays, including ~~[circle graphs, frequency distributions, and]~~ box and whisker plots;

(b) Determine the theoretical probability of a simple or independent event using different counting methods, including tree diagrams, sample spaces and organized lists, and compare those results with the results of conducting an experiment;

(c) Differentiate between the probability of an event and the odds of an event;

(d) Identify the number of combinations possible in given situations by using a variety of counting methods;

(e) Evaluate the accuracy and validity of arguments based on data analysis and analyze the effect that a change of scale or a change of format has on statistical charts and graphs; and

(f) Formulate inferences and projections based on interpolations and extrapolations of data to solve problems.

6. For the area of problem solving, to develop the ability to solve problems, a pupil must engage in developmentally appropriate opportunities for problem solving in which there is a need to use various approaches to investigate and understand mathematical concepts to formulate problems, find solutions to problems, develop and apply strategies to solve problems, and integrate mathematical reasoning, communication and connections. A pupil must demonstrate the ability to:

(a) Use efficient approaches to investigate and understand mathematical concepts;

(b) Find solutions to problems that occur in everyday situations;

(c) Select, modify, develop and apply strategies to solve a wide variety of problems;

(d) Transfer and generalize previous experience to new problem-solving situations;

(e) Demonstrate persistence in problem solving;

(f) Explain and verify results; and

(g) Use technology as a tool in problem solving.

7. For the area of mathematical communication, to develop the ability to communicate mathematically, a pupil must solve problems in which there is a need to obtain information, translate the information into mathematical language and symbols, process the information mathematically and present the results in written, oral and visual formats. A pupil must demonstrate the ability to:

(a) Obtain information by reading, listening, observing and inquiring and use that information to solve mathematical problems;

(b) Use mathematical language and symbols to explain thinking and processes and translate those ideas into everyday language;

(c) Present mathematical ideas and solutions in written, oral and visual forms;

(d) Discuss, explain, justify and evaluate mathematical ideas and solutions;

(e) Use physical, pictorial and symbolic forms to represent mathematical ideas and relationships; and

(f) Make conjectures, present arguments and evaluate discussions concerning mathematical ideas presented in various written and oral forms.

8. For the area of mathematical reasoning, to develop the ability to reason mathematically, a pupil must solve problems in which there is a need to investigate significant mathematical ideas and construct his own learning in all content areas to justify and enhance his ability to think and reason logically. A pupil must demonstrate the ability to:

(a) Construct meaning and justify thinking by investigating mathematical ideas, patterns and relationships;

(b) Reinforce and extend abilities for logical reasoning;

(c) Ask questions to reflect on, clarify and extend thinking;

(d) Review, refine, explain and justify mathematical processes, arguments and solutions using manipulatives, physical models and abstract ideas;

(e) Determine the relevancy and sufficiency of information to solve mathematical problems;

(f) Follow, create and defend valid logical mathematical arguments; and

(g) Recognize and apply inductive and deductive reasoning in both concrete and abstract contexts.

9. For the area of mathematical connections, to develop the ability to make mathematical connections, a pupil must solve problems in which there is a need to view mathematics as an integrated whole, including identifying relationships between content strands and integrating mathematics with other disciplines, thereby allowing the flexibility to approach problems in a variety of ways within and beyond the field of mathematics. A pupil must demonstrate the ability to:

(a) View mathematics as an integrated whole and identify relationships between content strands;

(b) Identify practical applications of mathematical principles that can be applied to other disciplines;

(c) Use and analyze the connections within and beyond the field of mathematics in a variety of ways to solve problems;

(d) Link new concepts to prior knowledge;

(e) Explain the relationship of concepts to procedures by using models; and

(f) Apply mathematical thinking and modeling to solve problems that arise in other disciplines and in everyday life.

Sec. 19. NAC 389.368 is hereby repealed.

TEXT OF REPEALED SECTION

389.368 Applicability. (NRS 385.080, 389.0185, 389.520)

1. The provisions of NAC 389.381, 389.386 and 389.3905 apply to courses of study required whether or not the majority of subjects offered by the school for a particular grade are taught to a pupil by a single teacher.

2. The provisions of NAC 389.392, 389.393 and 389.443 apply to courses of study required or elected whether or not the majority of subjects offered by the school for a particular grade are taught to a pupil by a single teacher.

3. The provisions of NAC 389.391 apply to courses of study required whether or not the majority of subjects offered by the school for a particular grade are taught to a pupil by a single teacher.