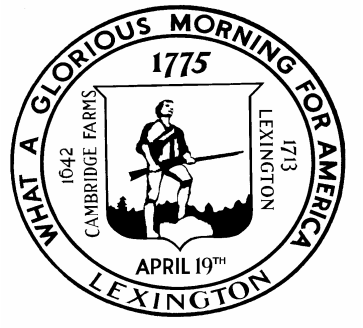

LEXINGTON PUBLIC SCHOOLS

K-5 Curriculum Benchmarks
2011-2012

Distributed by the Office of
K-12 Curriculum and Instruction

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Lexington Public Schools Core Purposes

Academic Excellence for All Children

- Set high standard in both the planning process and day-to-day interactions
- Use data and results to evaluate ourselves and our practices
- Work hard and persevere
- Confront problems without delay
- Take personal responsibility to improve the quality of programs

Respectful and Caring Relationships

- Use open and honest communication
- Help others
- Use effective teamwork
- Acknowledge that other people have value, even when you disagree with their ideas or behavior
- Treat people the way you would want to be treated

A Culture of Reflection, Conversation, Collaboration and Commitment to Continuous Improvement

Reflection – analyze our individual and collective practices
Conversation – generate and evaluate ideas and practices with colleagues
Collaboration – work with colleagues to achieve individual, group, school or system goals
Commitment to continuous improvement – act on multiple sources of data to improve practice

We work each and every day to make these Core Purposes a reality.

Administration

Paul B. Ash, Ph.D. ……..…….....*Superintendent of Schools*

Carol A. Pilarski...……...…*Assistant Superintendent for Curriculum, Instruction, and Professional Development*

Linda Chase……...….*Director of Student Services*

Mary Ellen Dunn……...….*Assistant Superintendent for Finance & Business*

Robert Harris.…….*Assistant Superintendent for Human Resources*

Thomas Plati.....*Director of Education Technology and Assessment*

Patrick Goddard.……..…..*Director of Facilities and Grounds*

Kathleen McCarthy……..…*K-5 Language Arts, Reading, English Department Head*

Karen Tripoli……..…….…....*K-5 Mathematics Department Head*

Karen McCarthy…….……...……..*K-5 Science Coordinator*

Jane Hundley.....*K-5 Social Studies Coordinator*

Eammon Sheehan……...…*K-12 Coordinator Physical Education and Wellness*

Jeffrey Leonard…….…....*K-12 Coordinator Performing Arts*

Sean Hagan…….....*K-12 Coordinator Fine Arts*

Harriet Wallen…….....*K-12 Library Media Department Chair*

Robyn Dowling Grant.....*K-12 English Language Learner Coordinator*

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Thomas Martellone, Principal

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Elaine Mead, Principal

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Louise Lipsitz, Principal

K-5 Literacy Benchmarks

Kindergarten

Benchmarks for Kindergarten Readers

The student reads or hears 50 books or book equivalents across various genres and authors.

- Self-selects material to enjoy and/or read for pleasure, information and insight
- Develops a personal appreciation for types of genres and favorite author/illustrators
- Develops concepts about print

The student reads grade-appropriate texts and responds critically to develop understanding and expertise. In Kindergarten, the expectation is that students are interacting with many and varied texts. These strategic behaviors can be demonstrated during read aloud, shared reading, guided reading, and/or independent reading. Children are expected to leave Kindergarten prepared to learn to read in the primary grades.

- Asks questions
- Makes predictions
- Makes connections
- Activates prior knowledge
- Applies knowledge

The student demonstrates characteristics of an emergent reader.

- Develops phonological awareness
- Understands the relationship between letters and sounds
- Develops a sight word vocabulary
- Recognizes letters of varied fonts
- Distinguishes between letters and numerals

Benchmarks for Kindergarten Writers

The student begins to develop personal style as a writer, acquires a way of thinking about writing, revisits, writing, and understands purposes for writing.

- Engages in the writing process
- Writes in response to prompts
- Uses drawing and words to express ideas
- Stays on selected topic
- Revises selected pieces for clarity
- Maintains a writing folder
- Demonstrates the characteristics of a emergent writer moving to a developing writer

The student produces various types of writing

- Personal narrative
- Exposition
- Everyday writing

The student demonstrates an understanding of punctuation, capitalization, spelling, handwriting, and grammar in writing.

- Forms upper and lower case letters
- Takes risks in attempting new conventions and spelling unfamiliar words

Benchmarks for Kindergarten Speakers, Listeners and Viewers

The student speaks, listens, and views effectively in formal and informal situations.

- Listens attentively
- Asks questions
- Follows directions
- Participates in discussions
- Describes common objects and events in general and specific language

The student speaks effectively using language appropriate to the situation and audience.

- Participates in conversations
- Participates in discussions
- Recites simple poems and/or rhymes
- Participates in dramatic play

The student demonstrates an understanding of grade-appropriate punctuation, capitalization, spelling, handwriting, grammar, and vocabulary development.

- Demonstrates an understanding of simple concepts about print
- Demonstrates an understanding of phonological awareness
- Demonstrates an understanding of letter/word knowledge
- Demonstrates an understanding of letter/sound relationships
- Uses grade appropriate grammar correctly
- Uses grade appropriate mechanics of written language
- Uses high frequency words correctly

Benchmarks for Kindergarten Researchers

The student uses multiple reference tools to acquire new knowledge and make informed decisions.

- Chooses reference materials appropriate to research purpose
- Forms relevant questions for inquiry

Grade 1

Benchmarks for Grade 1 Readers

The student reads or hears 50 books or book equivalents across various genres and authors.

- Self selects material to read for pleasure, information, and insight
- Listens to and/or reads at least 10 different authors and illustrators
- Listens to and/or reads at least 5 books by a single author, in a single genre, or on a single issue or subject
- Develops a personal appreciation for types of genres and favorite author/illustrators
- Develops concepts about print

The student reads grade-appropriate texts and responds critically to develop understanding and expertise.

- Relates prior knowledge
- Makes predictions
- Asks questions
- Makes connections
- Creates mental images
- Considers and applies knowledge of text structure and elements of genre (fiction and nonfiction)
- Retells key ideas of narrative and expository text

The student demonstrates characteristics of a beginning reader.

- Demonstrates phonemic awareness
- Uses reading strategies before, during, and after reading
- Integrates varied information sources (semantic, syntactic, graphophonic) by searching, predicting, confirming, self-correcting, and cross-checking to monitor reading
- Develops an expanding sight vocabulary
- Reads with appropriate phrasing, pacing, and expression

Benchmarks for Grade 1 Writers

The student begins to develop personal style as a writer, acquires a way of thinking about writing, revisits writing, and understands purposes for writing.

- Engages in the writing process
- Writes in response to prompts
- Uses less drawing and more words to express ideas
- Stays on selected topic
- Shares writing for feedback
- Revises selected pieces for clarity
- Maintains a writing folder
- Demonstrates the characteristics of a beginning writer moving to an expanding writer

The student produces various types of writing.

- Personal narrative
- Poetry
- Description
- Everyday writing

The student demonstrates an understanding of punctuation, capitalization, spelling, handwriting, and grammar in writing.

- Uses grade-level high frequency correctly
- Applies grade-level punctuation, capitalization, and grammar expectations consistently
- Takes risks in attempting new conventions and spelling unfamiliar words
- Prints legibly

Benchmarks for Grade 1 Speakers, Listeners, and Viewers

The student speaks, listens, and views effectively in formal and informal situations.

- Listens attentively
- Asks questions
- Participates in discussions
- Describes common objects and events in general and specific language

The student speaks effectively using language appropriate to the situation and audience.

- Participates in conversations
- Participates in discussions
- Recites simple poems
- Participates in dramatic play

Benchmarks for Grade 1 Wordsmiths

The student demonstrates an understanding of grade-appropriate punctuation, capitalization, spelling, handwriting, grammar, and vocabulary development.

- Demonstrates an understanding of more complex concepts about print
- Demonstrates an understanding of phonemic awareness
- Demonstrates an understanding of letter/word knowledge
- Demonstrates an understanding of letter/sound relationships
- Demonstrates an understanding of common spelling patterns
- Uses high frequency words correctly
- Uses strategies to determine pronunciation and/or meaning of simple words
- Uses grade appropriate vocabulary

Benchmarks for Grade 1 Researchers

The student uses multiple reference tools to acquire new knowledge and make informed decisions.

• Understands the purpose of various reference materials
• Chooses reference materials appropriate to research purpose with guidance
• Forms and revises relevant questions for inquiry

Grade 2

Benchmarks for Grade 2 Readers

The student reads or hears 50 books or book equivalents across various genres and authors.

• Self selects material to read for pleasure, information, and insight
• Listens to and/or reads at least 4 different genres, 10 authors and illustrators, and at least 5 books by a single author, in a single genre, or on a single topic of study
• Develops a personal appreciation for types of genres and favorite author/illustrators
• Maintains a balance between fiction and nonfiction

The student reads grade-appropriate texts and responds critically to develop understanding and expertise.

• Activates and relates prior knowledge
• Makes predictions
• Asks questions
• Considers author's purpose
• Makes connections
• Creates mental images
• Determines importance
• Synthesizes information
• Infers
• Considers and applies knowledge of text structure and elements of genre (fiction, nonfiction, and poetry)

The student reads aloud grade-appropriate texts with fluency and understanding.

• Uses reading strategies before, during, and after reading
• Integrates varied information sources (semantic, syntactic, graphophonic) by searching, predicting, confirming, self-correcting, reading ahead, and cross-checking to monitor reading
• Develops an expanding sight vocabulary
• Reads with appropriate phrasing, pacing, and expression
• Demonstrates the characteristics of an expanding reader

Benchmarks for Grade 2 Writers

The student begins to develop personal style as a writer, acquires a way of thinking about writing, revisits writing, and understands purposes for writing.

• Engages in the writing process
• Writes in response to prompts
• Stays on selected topic and maintains a focus
• Considers audience when writing
• Uses mostly writing to express ideas
• Revises selected pieces for clarity
• Shares writing for feedback and gives feedback to others
• Maintains a writing folder
• Demonstrates the characteristics of an expanding writer moving to a bridging writer

The student produces various types of writing.
• Narrative
• Poetry
• Friendly letter
• Informational article
• Description
• Everyday writing

The student demonstrates an understanding of punctuation, capitalization, spelling, handwriting, and grammar in writing.
• Uses grade-level high frequency words correctly
• Applies grade-level punctuation, capitalization, and grammar expectations consistently
• Takes risks in attempting new conventions and spelling unfamiliar words
• Writes legibly

Benchmarks for Grade 2 Speakers, Listeners, and Viewers
The student speaks, listens, and views effectively in formal and informal situations.
• Listens attentively
• Asks questions
• Participates in discussions
• Describes objects and events in general and specific language

The student speaks effectively using language appropriate to the situation and audience.
• Participates in conversations
• Participates in discussions
• Recites simple poems
• Participates in Reader's Theater and role play

Benchmarks for Grade 2 Wordsmiths
The student demonstrates an understanding of grade-appropriate punctuation, capitalization, spelling, handwriting, grammar, and vocabulary development.
• Demonstrates an understanding of letter/sound relationships
• Demonstrates an understanding of common and more complex spelling patterns
• Uses high frequency words correctly
• Uses word meaning, word solving, and word-solving strategies on increasingly complex words
• Uses grade appropriate vocabulary
• Demonstrates effective strategies to build vocabulary

Benchmarks for Grade 2 Researchers
The student uses multiple reference tools to acquire new knowledge and make informed decisions.
• Understands the purpose, basic structure, and organization of various reference materials with guidance
• Chooses reference materials appropriate to research purpose
• Uses appropriate research strategies and sources with guidance
• Forms and revises relevant questions for inquiry

Grade 3

Benchmarks for Grade 3 Readers
The student reads or hears at least 30 books or book equivalents across various genres and authors.
•Self selects material to read for pleasure, information, and insight
•Listens to and/or reads at least 4 different genres, 15 authors and illustrators, and at least 5 books by a single author, in a single genre, or on a single topic of study
•Develops a personal appreciation for types of genres and favorite author/illustrators
•Maintains a balance between fiction and nonfiction

The student reads grade-appropriate texts and responds critically to develop understanding and expertise.
•Uses reading strategies before, during, and after reading
•Activates and relates prior knowledge
•Makes predictions
•Sets a purpose for reading
•Asks questions
•Considers author's purpose and perspective
•Makes connections
•Creates mental images
•Determines importance
•Synthesizes information
•Infers
•Analyzes and applies knowledge of text structure and elements of genre (fiction, nonfiction, and poetry)

The student reads aloud grade-appropriate texts with fluency and understanding.
•Uses reading strategies before, during, and after reading
•Integrates cueing systems (semantic, syntactic, graphophonic) by searching, predicting, confirming, self-correcting, reading ahead, and cross-checking to monitor reading
•Develops an expanding sight vocabulary
•Reads with appropriate phrasing, pacing, and expression
•Demonstrates the characteristics of a bridging reader

Benchmarks for Grade 3 Writers
The student develops personal style as a writer, acquires a way of thinking about writing, revisits writing, and understands purposes for writing.
• Engages in the writing process
• Writes in response to prompts
• Stays on selected topic and maintains a focus
• Considers audience when writing
• Revises selected pieces for clarity
• Shares writing for feedback and gives feedback to others
• Maintains a writing folder
• Demonstrates the characteristics of a bridging writer moving to a fluent writer

The student produces various types of writing.
• Personal narrative
• Fiction
• Poetry
• Informational article/Research report
• Descriptive paragraph
• Everyday writing
• Open response to a prompt

The student demonstrates an understanding of punctuation, capitalization, spelling, handwriting, and grammar in writing.
• Uses grade-level high frequency correctly
• Applies grade-level punctuation, capitalization, and grammar expectations consistently
• Takes risks in attempting new conventions and spelling unfamiliar words
• Writes legibly
• Edits own writing

Benchmarks for Grade 3 Speakers, Listeners, and Viewers

The student speaks, listens, and views effectively in formal and informal situations.

• Listens attentively
• Asks questions
• Participates in discussions
• Listens for information
• Responds appropriately to speaker

The student speaks effectively using language appropriate to the situation and audience.

• Participates in conversations and discussions
• Recites poetry and other dramatic readings
• Participates in Reader's Theater and role play
• Conducts interviews
• Explains thinking
• Reports new information to peers

Benchmarks for Grade 3 Wordsmiths

The student demonstrates an understanding of grade-appropriate punctuation, capitalization, spelling, handwriting, grammar, and vocabulary development.

• Demonstrates the ability to write legibly in cursive
• Demonstrates an understanding of complex spelling patterns
• Uses high frequency words correctly
• Uses word meaning, word solving, and word-solving actions on increasingly complex words
• Uses grade-appropriate punctuation correctly
• Uses grade-appropriate high frequency words correctly
• Uses grade-appropriate grammar correctly
• Uses grade appropriate vocabulary
• Uses effective strategies to build an expanding written and spoken vocabulary

Benchmarks for Grade 3 Researchers

The student uses multiple reference tools to acquire new knowledge and make informed decisions.

• Understands the purpose, structure, and organization of various reference materials
• Chooses reference materials appropriate to research purpose
• Chooses an appropriate format to present new learning with guidance
• Reads various genres and writes in a variety of forms during the research process (e.g., notes, diagrams).
• Uses appropriate research strategies and sources
• Forms and revises relevant questions for inquiry
• Distinguishes and evaluates reference sources with guidance

Grade 4

Benchmarks for Grade 4 Readers

The student reads or hears at least 30 books or book equivalents across various genres and authors.

• Self selects material to read for pleasure, information, and insight
• Listens to and/or reads at least 6 different genres, 15 authors and/or illustrators, and at least 3 books by a single author, in a single genre, or on a single topic of study
• Develops a personal appreciation for types of genres and favorite author/illustrators
• Maintains a balance between fiction and nonfiction

The student reads grade-appropriate texts and responds critically to develop understanding and expertise.

• Uses reading strategies before, during, and after reading
• Activates and relates prior knowledge
• Makes predictions
• Sets a purpose for reading

• Asks questions
• Considers author's purpose, perspective and bias
• Makes connections
• Creates mental images
• Determines importance
• Synthesizes information
• Infers
• Analyzes and applies knowledge of text structure and elements of genre

The student reads grade-appropriate texts with fluency and understanding.
• Uses reading strategies before, during, and after reading • Integrates varied information sources (semantic, syntactic, graphophonic) by searching, predicting, confirming, self-correcting, reading ahead, and cross-checking to monitor reading
• Develops an expanding sight vocabulary
• Reads with appropriate phrasing, pacing, and expression
• Demonstrates the characteristics of a fluent reader

Benchmarks for Grade 4 Writers
The student develops personal style as a writer, acquires a way of thinking about writing, revisits writing, and understands purposes for writing.
• Engages in the writing process
• Writes an extended response to a prompt
• Stays on selected topic and maintains a focus
• Considers audience when writing
• Revises selected pieces for clarity
• Shares writing for feedback and gives feedback to others
• Maintains a writing folder
• Demonstrates the characteristics of a fluent writer moving to a proficient writer

The student produces various types of writing.
• Poetry
• Informational article/ Research report
• Narrative/Fiction
• Descriptive paragraph
• Explanatory paragraph
• Everyday writing
• Open response to a prompt

The student demonstrates an understanding of punctuation, capitalization, spelling, handwriting, and grammar in writing.
• *Uses grade-level high frequency words correctly*
• Applies grade-level punctuation, capitalization, and grammar expectations consistently
• Takes risks in attempting new conventions and spelling unfamiliar words
• Writes legibly
• Edits own writing

Benchmarks for Grade 4 Speakers, Listeners, and Viewers
The student speaks, listens, and views effectively in formal and informal situations.
• Participates in large and small-group discussions
• Participates in individual conferences
• Critically views media presentations
• Listens respectfully to presentations, peers, and adults

The student speaks effectively using language appropriate to the situation and audience.
• Participates in conversations and discussions
• Recites poetry and other dramatic readings, etc.
• Makes multimedia presentations
• Explains thinking
• Reports new information to peers

Benchmarks for Grade 4 Wordsmiths
The student demonstrates an understanding of grade-appropriate punctuation, capitalization, spelling, handwriting, grammar, and vocabulary development.
• Uses more complex spelling patterns and high frequency words correctly
• Writes legibly in cursive
• Chooses the appropriate and most effective writing form for particular assignments (print, cursive, keyboard)
• Uses correct grade-appropriate punctuation, capitalization, and grammar
• Monitors and proofreads daily assignments
• Applies knowledge of common root words and affixes to help determine word meanings
• Uses grade appropriate vocabulary and continues to use effective strategies to build an expanding written and spoken vocabulary
• Uses context to help determine word meanings
• Uses a dictionary and/or thesaurus to cross check meaning of unknown words

Benchmarks for Grade 4 Researchers
The student uses multiple reference tools to acquire new knowledge and make informed decisions.
• Understands the purpose, structure, and organization of various reference materials
• Chooses reference materials appropriate to research purpose • Chooses an appropriate format to present new learning
• Reads various genres and writes in a variety of forms during the research process (e.g., notes, diagrams, captions, labels)
• Uses appropriate research strategies and sources
• Forms and revises relevant questions for inquiry
• Distinguishes and evaluates reference sources

Grade 5

Benchmarks for Grade 5 Readers
The student reads or hears at least 30 books or book equivalents across various genres and authors.
• Self selects material to read for pleasure, information, and insight
• Listens to and/or reads at least 6 different genres, 20 authors and illustrators, and at least 3 books by a single author, in a single genre, or on a single topic of study
• Develops a personal appreciation for types of genres and favorite author/illustrators
• Maintains a balance between fiction and nonfiction

The student reads grade-appropriate texts and responds critically to develop understanding and expertise.
• Uses reading strategies before, during, and after reading
• Activates and relates prior knowledge
• Makes predictions
• Sets a purpose for reading
• Asks questions
• Considers author's purpose, perspective and bias
• Makes connections
• Creates mental images
• Determines importance
• Synthesizes information

• Infers
• Considers and applies knowledge of text structure and elements of genre

The student reads grade-appropriate texts with fluency and understanding.
• Uses reading strategies before, during, and after reading
• Integrates cueing systems (semantic, syntactic, graphophonic) by searching, predicting, confirming, self-correcting, reading ahead, and cross-checking to monitor reading
• Develops an expanding sight vocabulary
• Reads with appropriate phrasing, pacing, and expression
• Demonstrates the characteristics of a proficient reader

Benchmarks for Grade 5 Writers

The student develops personal style as a writer, acquires a way of thinking about writing, revisits writing, and understands purposes for writing.
• Engages in the writing process
• Writes in response to prompts
• Stays on selected topic and maintains a focus
• Considers audience when writing
• Revises selected pieces for clarity
• Shares writing for feedback and gives feedback to others
• Maintains a writing folder
• Demonstrates the characteristics of a proficient writer moving to a connecting writer

The student produces various types of writing.
• Poetry
• Informational article/ Research report
• Narrative essay
• Fiction
• Descriptive paragraph
• Explanatory paragraph
• Persuasive paragraph
• Everyday writing
• Open response to a prompt

The student demonstrates an understanding of punctuation, capitalization, spelling, handwriting, and grammar in writing.
• Uses grade-level high frequency words correctly
• Applies grade-level punctuation, capitalization, and grammar expectations consistently
• Takes risks in attempting new conventions and spelling unfamiliar words
• Writes legibly
• Edits own writing

Benchmarks for Grade 5 Speakers, Listeners, and Viewers

The student speaks, listens, and views effectively in formal and informal situations.
• Participates in large and small-group discussions
• Participates in individual conferences
• Critically views media presentations
• Listens respectfully to presentations, peers, and adults

The student speaks effectively using language appropriate to the situation and audience.
• Participates in conversations and discussions
• Recites poetry and other dramatic readings, etc.
• Makes multimedia presentations
• Explains thinking
• Reports new information to peers

Benchmarks for Grade 5 Wordsmiths

The student demonstrates an understanding of grade-appropriate punctuation, capitalization, spelling, handwriting, grammar, and vocabulary development.

• Uses increasingly more complex spelling patterns and high frequency words correctly
• Writes legibly in cursive
• Uses correct grade-appropriate punctuation, capitalization, and grammar
• Monitors and proofreads daily assignments
• Applies knowledge of root words and affixes to help determine word meanings
• Uses grade appropriate vocabulary and continues to build an expanding written and spoken vocabulary
• Uses context to help determine word meanings
• Uses a dictionary and/or thesaurus to cross check meaning of unknown words
• Engages in ³word play² with the English language (e.g., figurative language, idiomatic phrases, word origins)

Benchmarks for Grade 5 Researchers

The student uses multiple reference tools to acquire new knowledge and make informed decisions.

• Understands the purpose, structure, and organization of various reference materials
• Chooses reference materials appropriate to research purpose
• Chooses an appropriate format to present new learning
• Reads various genres and writes in a variety of forms during the research process (e.g., notes, diagrams, captions, labels)
• Uses appropriate research strategies and sources
• Forms and revises relevant questions for inquiry
• Distinguishes and evaluates

3/10

K-5 Mathematics Benchmarks

Kindergarten

Number Sense and Operations

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Rote count by ones to 30+.
- Rote count backwards 10-0.
- Match quantities up to at least 10 with numerals and spoken words "one," "two," "three," "four," "five," "six," "seven," "eight," "nine," "ten."
- Count out sets to 20 using 1:1 correspondence.
- Keep track when counting objects.
- Tell how many after counting.
- Demonstrate an understanding of the concept of zero.
- Identify positions of objects in sequence up to fifth.
- Demonstrate an understanding of the concept first and last.
- Compare sets of up to at least 10 concrete objects using appropriate language (e.g., none, more than, fewer than, same number of, one more than) and order numbers.
- Use manipulatives to demonstrate an understanding of numbers and their relationships to each other (1 – 5).
- Identify one more than any number up to 20.
- Identify one less than any number up to 10.
- Identify larger, smaller, and equal sets (up to 20).
- Organize sets in order from smallest to largest up to sets of 10.
- Demonstrate an understanding of the relative position and magnitude of whole numbers to 10.
- Show one-half as part of a whole using area and set (to six) models.
- Name and identify the value of a penny.
- Use objects and drawings to model number stories and solve related addition and subtraction problems to ten.
- Estimate a set of objects to 20 and count to verify results.

Patterns, Relations, and Algebra

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify attributes of color, shape, and size for purposes of sorting and classifying.
- Sort, classify, and order objects by size, number, and other properties/attributes.
- Identify common connections between objects in order to group them into familiar sets.
- Identify, reproduce, describe, extend, and create color, rhythmic, shape, number, and letter repeating patterns with simple attributes, (e.g., ABABAB…).
- Count by 10's to 50+.
- Use tallies to count and organize groups of objects.

Geometry

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Recognize, name, build, draw, compare, and sort two-dimensional shapes.
- Identify square, circle, triangle, and rectangle.
- Describe shapes (square, circle, triangle, rectangle) by naming number of sides, corners/vertices, etc.
- Use knowledge of shapes to identify objects in the environment that share similar attributes.
- Compare and sort three-dimensional shapes.
- Describe, name, and interpret relative positions in space and apply ideas about relative position.
- Demonstrate an understanding of the terms: beside, inside, next to, close to, above, below, apart, over, under, around, on top.

Measurement

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Recognize and compare the attributes of length, volume/capacity, weight, area, and time using appropriate language (e.g., longer, taller, shorter, same length; heavier, lighter, same weight; holds more, holds less, holds the same amount).
- Make and use estimates of measurements from everyday experiences.
- Use nonstandard units to measure length, area, weight, and capacity.
- Use initial strategies for measuring length and weight (e.g., show a beginning and ending point, measure in a straight line, add and take away weights to balance an object on a balance scale).

Data Analysis, Statistics, and Probability

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Pose questions and gather data.
- Analyze and explain results.
- Sort and classify objects according to their attributes and organize data about the object(s).
- Read and interpret data from a graph with two columns/rows.

Grade 1

Number Sense and Operations

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Use multiple models and demonstrate initial understanding of place value (to 100) and the base-ten number system.
- Recognize the relative position and magnitude of whole numbers to 100.
- Identify the total when the number of tens and ones is known.
- Connect number words and numerals to the quantities they represent, using various physical models and representations, including numbers as labels and measurements, and ordinal and cardinal numbers.
- Represent and use a sense of whole numbers in flexible ways including relating, composing, and decomposing numbers.
- Read number words "one – ten".
- Name and write numerals 1 – 100.
- Identify and represent the fraction one-half as two equal parts of the whole using the area model, set model, ruler, and the clock.
- Demonstrate an understanding of the relationships of whole numbers to 100 and compare them using terms and symbols (< = > less than, greater than, equal to).
- Identify odd and even numbers.
- Use manipulatives to determine whether a set of objects (up to 20) has an even or odd number of elements.
- Name and identify the value of all U.S. coins.
- Find the value of a collection of coins to $1.00.
- Use appropriate money notation (e.g., 69¢, $1.35).
- Demonstrate an understanding of the effects of adding and subtracting whole numbers.
- Demonstrate an understanding of various meanings of addition and subtraction (e.g., addition as combination (plus, combined with, more); subtraction as comparison (how much less, how much more), equalizing (how many more are needed to make these equal), and separation (how much remaining)).
- Model situations that involve the addition and subtraction of whole numbers, using objects, pictures, and symbols.
- Demonstrate an understanding of the various meanings of addition and subtraction of whole numbers and the relationship between the two operations.
- Illustrate general principles and properties of operations (such as commutativity) using specific numbers (4+5=9, 5+4=9).
- Demonstrate the knowledge of addition and related subtraction facts, using number composing and decomposing strategies, including addends to 10, doubles, plus and minus one, plus and minus zero.

- Estimate, calculate, and solve problems involving addition and subtraction of numbers to 20.
- Demonstrate strategies for estimating.

Patterns, Relations, and Algebra

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Recognize, describe, and extend patterns such as sequences of sounds and shapes or simple numeric patterns and translate from one representation to another (e.g., red, blue, red, blue=ABAB=1212).
- Identify patterns on the hundred grid.
- Describe and create simple addition and subtraction number patterns.
- Recognize, describe, and extend numeric patterns starting at 0 and going to 100, by 2s, 5s, and 10s.
- Skip count by tens up to at least 50, starting at any number.
- Skip count by 2s and 5s up to 50+ starting at a multiple of 2 or 5.
- Count backwards by 1s from 32.
- Construct and solve open sentences that have variables (e.g., $\square + 7 = 10$).
- Write number sentences using +, –, <, =, and/or > to represent mathematical relationships in everyday situations.
- Describe quantitative change, using coin trades (5 pennies=1 nickel, 10 pennies=1 dime…) and following a rule to solve problems.

Geometry

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe attributes and parts of two-dimensional shapes (square, circle, triangle, rectangle, rhombus, hexagon, and trapezoid).
- Sort and classify two- and three-dimensional objects according to their attributes and organize data about the objects.
- Recognize, name, build, draw, compare, and sort two-dimensional shapes.
- Illustrate and describe mental images of two-dimensional geometric shapes using spatial memory and spatial visualization.
- Recognize geometric shapes and structures in the environment.
- Recognize and represent shapes from different perspectives (e.g., rotated shapes).
- Compare geometric shapes in terms of size and shape.
- Recognize and represent shapes from different perspectives (e.g. rotated shapes).
- Recognize and create shapes that have symmetry.

Measurement

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify parts of the day, days of the week, and months of the year.
- Use a calendar to identify dates.
- Tell time to the hour and half hour intervals on analog and digital clocks.
- Demonstrate an understanding of the terms length and weight and be able to compare two or more objects.
- Use measuring tools to measure and compare the length of common objects to the nearest inch and centimeter.
- Select and correctly use the appropriate measurement tools (e.g., ruler, balance scale, thermometer).
- Use the attributes of length and weight to make estimates and solve everyday problems.

Data Analysis, Statistics, and Probability

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Pose questions and gather data about themselves and their surroundings.
- Represent data using concrete objects, tallies, pictures, and graphs.
- Describe parts of the data and the set of data as a whole to determine what the data show.
- Discuss events related to the students' experiences as likely or unlikely.

Grade 2

Number Sense and Operations

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Use multiple models to demonstrate initial understanding of place value and the base ten number system to 1000 (base ten blocks, 100 grids).
- Identify the place values of the digits and order the numbers.
- Name and write (in numerals) whole numbers to 1000.
- Identify the total when the number of hundreds, tens, and ones is known.
- Connect number words and numerals to the quantities they represent using various physical models and representations (cardinal, ordinal, labels, and measurements).
- Identify and represent commonly used fractions (1/2, 1/3, 1/4) as equal parts of wholes (area model, set model, numbers on a number line).
- Demonstrate an understanding of the relationships of whole numbers (to 1000) and compare them using terms and symbols (less than, greater than and equal to, <, >, =).
- Identify odd and even numbers by recognizing the number pattern.
- Demonstrate an understanding that an even number is divisible by two.
- Identify the value of all U.S. coins, and $1, $5, $10, and $20 bills.
- Identify equivalent values (1 dime = 2 nickels = 10 pennies and 4 quarters = 1 dollar).
- Use appropriate money notation.
- Find the value of a collection of coins and bills.
- Demonstrate an understanding of various meanings and applications of addition and subtraction [e.g., addition as combination (plus, combined with, more); subtraction as comparison (how much less, how much more, what is the difference?), equalizing (how many more are needed to make these equal), and separation (how much remaining)].
- Understand and use the inverse relationship between addition and subtraction (e.g., 8 + 6 = 14 is equivalent to 14 – 6 = 8 and is also equivalent to 14 – 8 = 6) to solve problems and check solutions.
- Demonstrate fluency with basic number combinations for addition and subtraction (sums to 20) using a variety of strategies such as doubles, doubles plus 1, relating known facts, making tens, and composing and decomposing numbers.
- Develop and use a variety of strategies for whole number computation with a focus on addition and subtraction of multi-digit numbers.
- Demonstrate in the classroom the ability to use a variety of strategies for addition and subtraction of multi-digit numbers.
- Solve problems using a variety of methods and tools to compute, including objects, mental computation, estimation, paper and pencil, calculators, and 100 grids.
- Identify and use strategies for estimating.

Patterns, Relations, and Algebra

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify, reproduce, describe, extend, and create simple rhythmic, shape, size, number, color, and letter repeating patterns (red, blue, red, blue = A B A B = 1 2 1 2).
- Analyze how both repeating and growing patterns are generated.
- Identify and describe different patterns on the number grid.
- Describe and create addition and subtraction number patterns (e.g., 1, 4, 7, 10…; or 25, 23, 21…).
- Skip count by twos and fives beyond 100.
- Skip count by tens starting at any number (e.g., 12, 22, 32…).
- Recognize, describe, and extend numeric patterns.
- Skip count backwards by 10 starting at any number.
- Demonstrate an understanding of whole numbers and represent and use them in flexible ways, such as in open sentences using missing addends.
- Model situations that involve the addition and subtraction of whole numbers, using objects, pictures, and symbols and show the relationship in a number sentence.
- Write number sentences using +, –, <, =, and/or > to represent mathematical relationships in everyday situations.

- Describe functions related to trading, including coin trades and measurement trades (e.g., five pennies make one nickel or four cups make one quart).

Geometry

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe attributes and parts of two- and three-dimensional shapes (e.g., length of sides, and number of corners/vertices, edges, faces, and sides).
- Recognize, name, build, draw, compare, and sort two- and three-dimensional shapes.
- Recognize congruent shapes.
- Identify shapes that have been rotated (turned), reflected (flipped), translated (slid), and enlarged.
- Identify symmetry in two-dimensional shapes.
- Predict the results of putting together and taking apart two-dimensional shapes (e.g., pattern blocks, Tangrams).
- Relate ideas in geometry to ideas in number and measurement (e.g., seeing rows in an array as a model of repeated addition).

Measurement

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify parts of the day (e.g., morning, afternoon, evening), days of the week, and months of the year. Identify dates using a calendar.
- Tell time at quarter-hour intervals on analog and digital clocks using a.m. and p.m.
- Compare the length, weight, area, and volume of two or more objects by using direct comparison.
- Use referents for measures to make comparisons and estimates.
- Measure and compare the length of common objects to the nearest 1/2 inch or 1/2 centimeter.
- Select and correctly use the appropriate measurement tools (e.g., ruler, balance scale, thermometer).
- Make and use estimates of measurement, including time, volume, weight, and area.

Data Analysis, Statistics, and Probability

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Use interviews, surveys, and observations to gather data about themselves and their surroundings.
- Organize, classify, represent, and interpret data using tallies, charts, tables, bar graphs, pictographs, and Venn diagrams; interpret the representations.
- Formulate inferences (draw conclusions) and make educated guesses (conjectures) about a situation based on information gained from data.
- Discuss events related to students' experiences as likely or unlikely.

Grade 3

Number Sense and Operations

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Exhibit an understanding of the values of the digits in the base ten number system by reading, modeling, writing, comparing, and ordering whole numbers through 10,000.
- Represent, order, and compare numbers through 10,000 using various forms including: expanded notation (e.g., 853 = 8 x 100 + 5 x 10 + 3), numbers written out in words (e.g., eight hundred fifty-three), and through generating numbers by decomposing and composing them.
- Identify and represent fractions (between 0 and 1 with denominators through 10) as equal parts of unit wholes (area model) and parts of groups (set model), using concrete objects, representational drawings, and symbolic (fractional) notation.
- Model and represent a mixed number (with denominator 2, 3, or 4) as a whole number and a fraction (e.g., 1 2/3, 3 1/2).
- Demonstrate an understanding of fractions as equal parts of unit wholes (area model), as parts of a collection (set model), and as locations on a number line.
- Compare fractions between 0 and 1 with denominators 2, 3, 4 (e.g., 2/3) using models or measurement tools.
- Use models, landmarks (1/2, 1/4, 3/4) and equivalent forms to judge the size of fractions.

- Recognize classes to which a number belongs, and identify the numbers in these classes (odd numbers, even numbers, and multiples of numbers through 10).
- Demonstrate understanding of various meanings of multiplication and division.
- Select, use, and explain various meanings and models of multiplication (through 10 x 10).
- Relate multiplication problems to corresponding division problems (e.g., draw a model to represent 5 x 6 and 30 ÷ 6).
- Identify such properties as commutativity, associativity, and identity, and use these properties to compute addition and subtraction examples with whole numbers (e.g., 3 + 4 + 7 = 3 + 7 + 4 = 10 + 4).
- Select and use appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.
- Demonstrate fluency with basic number combinations (including known facts) for multiplication and related division examples, and use these combinations to compute related problems (e.g. 2 x 5 is related to 2 x 50).
- Know multiplication facts for 2, 5, 10 and related division facts (e.g., 2 x 8 = 16 and 16 ÷ 2=8). Use these facts to solve related problems (e.g., 2 x 5 is related to 2 x 50).
- Add and subtract (up to four-digit numbers) and multiply (up to two-digit numbers by a one-digit number) accurately and efficiently, explaining the strategy used.
- Round whole numbers through 1,000 to the nearest 10, 100, and 1,000.
- Understand and use the strategies of rounding and regrouping to estimate quantities, measures, and the results of whole-number computations (addition, subtraction, and multiplication) up to two-digit whole numbers and amounts of money to $100, and to judge the reasonableness of the answer.
- Use concrete objects and visual models to add and subtract common fractions (only when the answer is greater than or equal to zero) with like denominators (halves, thirds, fourths, sixths, and eighths).

Patterns, Relations, and Algebra

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Create, describe, explain, extend, and make generalizations about symbolic and numeric addition and subtraction patterns (e.g., 2, 6, 10; and 50, 45, 40).
- Translate patterns from one representation to another (red, blue, red, blue, green = A B A B C = 1 2 1 2 3).
- Express mathematical relationships using equations and common symbols. Use <, >, or = (e.g., 7 x 8 □ 49 + 6).
- Determine the value of a variable (through 10) in simple equations involving addition, subtraction, or multiplication (e.g., 2 + □ = 9; 5 x □ = 35).
- Express mathematical relationships to represent everyday situations using equations.
- Write number sentences using +, –, x, ÷, <, =, and/or >.

Geometry

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify, compare and analyze attributes of two-dimensional shapes and use vocabulary to describe the attributes (e.g., number of sides, corners/vertices, angles, diagonals, and lines of symmetry).
- Describe, model, draw, compare, and classify two-dimensional shapes according to their properties and develop definitions of classes of shapes.
- Identify and describe simple three-dimensional shapes (e.g., cubes, spheres, and pyramids).
- Identify angles as right angles, less than a right angle, and greater than a right angle.
- Identify and draw parallel lines, perpendicular lines, and other intersecting lines.
- Use ordered pairs of whole numbers and/or letters; locate and identify points on a grid.
- Identify and draw lines of symmetry in two-dimensional shapes.
- Predict, estimate, describe, and explain the results of taking apart and transforming two-dimensional shapes (e.g., a square can be taken apart to make two triangles).

Measurement

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Demonstrate an understanding of the attributes of length, area and weight, select the appropriate type of unit for measuring each attribute, and accurately compute each measurement.
- Use both the U.S. Customary (English) and metric systems.
- Demonstrate an understanding of what happens to measurements of a two-dimensional shape (perimeter and area) when the shape is changed in some way.
- Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches).
- Identify time to the minute on analog and digital clocks using a.m. and p.m.
- Compute elapsed time using a clock for times less than one hour (e.g., minutes since), and using a calendar (e.g., days since).
- Estimate and find area and perimeter of a rectangle, using diagrams and grids, or by measuring.
- Identify and use appropriate metric and U.S. Customary (English) units and tools (e.g., ruler, scale, thermometer, clock), to estimate, measure, and solve problems involving length, area, weight, temperature, and time.

Data Analysis, Statistics, and Probability

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Collect and organize data using observations, measurements, surveys, or experiments, and identify appropriate ways to display the data.
- Match representations of a data set in the forms of tables, line plots, pictographs, tallies, or bar graphs with the actual data set.
- Construct and draw conclusions from representations of data sets in the forms of tables, line plots, pictographs, tallies, and bar graphs.
- Explain and justify conclusions and predictions.
- List and count the number of possible combinations of objects from two sets (e.g., how many different outfits can one make from a set of two sweaters and a set of three skirts?).

Grade 4

Number Sense and Operations

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Demonstrate an understanding of the place-value structure of the base-ten number system by reading, modeling, and writing whole numbers to at least 100,000, by identifying the values of the digits, and by comparing and ordering the numbers.
- Represent, order, and compare large numbers (to at least 100,000) using various forms, including expanded notation, decomposing, and composing numbers.
- Demonstrate an understanding of fractions as parts of unit wholes, as parts of a collection, and as locations on the number line.
- Use models, landmarks (1/2, 1/4, 3/4), and equivalent forms to judge the size of fractions and to order them.
- Recognize and generate equivalent forms of commonly used fractions, mixed numbers, and decimals (1/2, 1/3, 1/4, 1/5, 1/6, 1/8, 1/10, 1/12 and 1 1/2).
- Identify and generate equivalent forms of common decimals and fractions less than one whole (halves, quarters, fifths, and tenths).
- Demonstrate an understanding of the place-value structure of the base-ten number system by reading, naming, and writing decimals between 0 and 1 up to the hundredths.
- Recognize classes (in particular, odds, evens; factors or multiples of a given number; and squares) to which a number may belong, and identify the numbers in those classes. Use these in the solution of problems.
- Select, use, and explain various meanings and models of multiplication and division of whole numbers.
- Demonstrate an understanding of the effects of multiplying and dividing whole numbers.

- Identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems.
- Select, use, and explain the commutative, associative, and identity properties of operations on whole numbers in problem situations (e.g., 37 x 46 = 46 x 37, (5 x 7) x 2 = 5 x (7 x 2)).
- Select, use and explain appropriate operations (addition, subtraction, multiplication, and division) to solve problems, including those involving money.
- Demonstrate fluency with basic facts for multiplication and division (to 12 x 12) and use these combinations to mentally compute extended problems, such as 30 x 50.
- Demonstrate fluency in adding, subtracting, (up to 5 digits) and multiplying (up to 3 digits by 2 digits) whole numbers.
- Demonstrate fluency in dividing whole numbers (up to three digits with a single digit divisor) and interpret the remainders.
- Demonstrate in the classroom the ability to use a variety of strategies for addition and subtraction (up to five-digit numbers), and multiplication (up to three digits by two digits).
- Demonstrate the ability to use a variety of strategies for division of up to a three-digit whole number with a single-digit divisor (with or without remainders).
- Round whole numbers through 100,000 to the nearest 10, 100, 1000, 10,000, and 100,000.
- Develop and use strategies to estimate the results of whole-number computations and to judge the reasonableness of such results.
- Select appropriate methods and tools for computing with whole numbers such as mental computation, estimation, calculators, and paper and pencil according to the context and nature of the computation and use the selected method or tool.
- Use concrete objects and visual models to add and subtract common fractions.

Patterns, Relations, and Algebra

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe, extend, and make generalizations about geometric and numeric patterns including multiplication patterns. Translate patterns from one representation to another (3, 30, 300 = n x 1, n x 10, n x 100).
- Represent and analyze patterns and functions, using words, tables, and graphs.
- Use symbol and letter variables (e.g.,Δ, x, to represent unknowns or quantities that vary in expressions and in equations or inequalities (mathematical sentences that use =, <, >)).
- Determine values of variables in equations involving addition, subtraction, multiplication and division.
- Model problem situations with objects and use representations such as pictures, models, tables, charts, graphs, words, number sentences, and mathematical notations to interpret mathematical relationships.
- Solve problems involving proportional relationships, including unit pricing (e.g., four apples cost 80¢, so one apple costs 20¢) and map interpretation (e.g., one inch represents five miles, so two inches represent ten miles).
- Determine how change in one variable relates to a change in a second variable (e.g., input-output tables).

Geometry

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify, compare, and analyze attributes of two- and three-dimensional shapes and use vocabulary to describe the attributes, such as length of sides, number of vertices, edges, faces, sides, angles, diagonals, and lines of symmetry.
- Identify quadrilaterals and their attributes.
- Describe, model, draw, compare, and classify two- and three-dimensional shapes (e.g., circles, polygons—especially triangles and quadrilaterals—cubes, spheres, and pyramids).
- Recognize similar and congruent figures.
- Identify angles as acute, right, or obtuse.
- Describe and draw intersecting, parallel, and perpendicular lines.
- Graph, locate, identify points, and describe paths (first quadrant) using ordered pairs of numbers and/or letters.

- Describe and apply techniques such as reflections (flips), rotations (turns), and translations (slides) for determining if two shapes are congruent.
- Identify and describe line and rotational symmetry in two-dimensional shapes and designs.
- Identify multiple lines of symmetry in 2-dimensional shapes and designs.
- Predict and validate the results of subdividing, combining, folding, and transforming two-and three-dimensional shapes.

Measurement

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Demonstrate an understanding of such attributes as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute.
- Carry out simple unit conversions within a system of measurement (e.g., hours to minutes, cents to dollars, yards to feet or inches, meters to centimeters, etc).
- Identify time to the minute on analog and digital clocks using a.m. and p.m.
- Compute elapsed time using a clock and calendar.
- Describe what happens to measurements of a two-dimensional shape (such as its perimeter and area) when the shape is changed in some way.
- Develop and use strategies for estimating and finding the perimeters and areas of rectangles, triangles, or irregular shapes.
- Select and use landmarks to estimate measurements.
- Develop and use formulas to find the area of rectangles and related triangles and parallelograms.
- Demonstrate an understanding of the need for measuring with standard units and become familiar with standard units in the customary and metric systems.
- Select and apply appropriate standard units and tools to measure length (to the nearest 1/4 inch), area, volume, weight, time, angle size, and temperature.

Data Analysis, Statistics, and Probability

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Design investigations to address a question and consider how data-collection methods affect the nature of the data set.
- Collect data using observations, surveys, and experiments and identify appropriate ways to display the data.
- Match a representation of a data set such as lists, tables, or graphs (including circle graphs) with the actual set of data.
- Construct, draw conclusions, and make predictions from various representations of data sets, including tables, bar graphs, pictographs, line graphs, line plots, and tallies.
- Represent the possible outcomes for a simple probability situation (e.g., the probability of drawing a red marble from a bag containing three red marbles and four green marbles).
- List and count the number of possible combinations of objects from three sets (e.g., how many different outfits can one make from a set of three shirts, a set of two skirts, and a set of two hats?).
- Classify outcomes as certain, likely, unlikely, or impossible by designing and conducting experiments using concrete objects such as counters, number cubes, spinners, or coins.

Grade 5

Number Sense and Operations

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Demonstrate an understanding of (positive integer) powers of ten (e.g., 10^2, $10^{5)}$.
- Demonstrate an understanding of place value through millions and thousandths.
- Recognize equivalent representations for the same number and generate them by decomposing and composing numbers.
- Represent and compare large (millions) and small (thousandths) positive numbers in various forms, such as expanded notation without exponents (e.g. 9724 = 9 x 1000 + 7 x 100 + 2 x 10 + 4).
- Demonstrate an understanding of fractions as a ratio of whole numbers, as parts of unit wholes, as parts of a collection, and as locations on the number line.

- Identify and determine common equivalent fractions (with denominators 2, 4, 5, 10) and mixed numbers (with denominators 2, 4, 5, 10), decimals, and percents (through one hundred percent), (e.g., 3/4 = 0.75 = 75%).
- Find and position whole numbers, positive fractions, positive mixed numbers, and positive decimals on a number line.
- Compare and order whole numbers, positive fractions, positive mixed numbers, positive decimals, and percents.
- Apply the number theory concepts of common factor, common multiple, and divisibility rules for 2, 3, 5, and 10 to the solution of problems. Demonstrate an understanding of the concepts of prime and composite numbers.
- Demonstrate an understanding of the effects of multiplying and dividing whole numbers.
- Identify and use relationships between operations, such as division as the inverse of multiplication, to solve problems.
- Solve problems involving multiplication and division of whole numbers, and multiplication of positive fractions with whole numbers.
- Demonstrate an understanding of how parentheses affect expressions involving addition, subtraction, and multiplication, and use that understanding to solve problems (e.g., 3 x (4 + 2) = 3 x 6).
- Identify such properties as commutativity, associativity, and distributivity and use them to compute with whole numbers.
- Demonstrate an understanding of the inverse relationship of addition and subtraction, and use that understanding to simplify computation and solve problems.
- Accurately and efficiently add and subtract whole numbers and positive decimals.
- Multiply and divide (using double-digit divisors) whole numbers.
- Multiply positive decimals with whole numbers.
- Accurately and efficiently add and subtract positive fractions and mixed numbers with like denominators and with unlike denominators (2, 4, 5, 10 only).
- Multiply positive fractions with whole numbers.
- Simplify fractions in cases when both the numerator and the denominator have 2, 3, 4, 5, or 10 as a common factor.
- Select appropriate methods and tools for computing with whole numbers such as mental computation, estimation, calculators, and paper and pencil according to the context and nature of the computation and use the selected method or tool.
- Estimate sums and differences of whole numbers, positive fractions, and positive decimals. Estimate products of whole numbers and products of positive decimals with whole numbers. Use a variety of strategies and judge the reasonableness of the answer.

Patterns, Relations, and Algebra

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Analyze and determine the rules for extending symbolic, arithmetic, and geometric patterns and progressions (e.g., ABBCCC; 1, 5, 9, 13…; 3, 9, 27...).
- Replace variables with given values and evaluate/simplify (e.g., 2(□) + 3 when □ = 4).
- Use the properties of equality to solve problems with whole numbers (e.g., if □ + 7 = 13, then □ = 13 – 7, therefore □ = 6; if 3 x □ = 15, then □ = 15 ÷ 3, therefore □ = 5).
- Represent real situations and mathematical relationships with concrete models, tables, graphs, and rules in words and with symbols (e.g., input-output tables).
- Solve problems involving proportional relationships using concrete models, tables, graphs, and paper-pencil methods.
- Draw conclusions from model problem situations with objects and use representations such as graphs, tables, and equations.
- Interpret graphs that represent the relationship between two variables in everyday situations.

Geometry

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Identify, compare, and analyze attributes of two- and three-dimensional shapes and use common vocabulary to describe the attributes.
- Identify, describe, and compare special types of triangles (isosceles, equilateral, right) and quadrilaterals (square, rectangle, parallelogram, rhombus, trapezoid), (e.g., recognize that all equilateral triangles are isosceles, but not all isosceles triangles are equilateral).
- Identify, describe, compare, and define special types of three-dimensional shapes (cubes, prisms, spheres, pyramids) based on their properties, such as edges and faces.
- Identify relationships among points and lines (e.g., intersecting, parallel, perpendicular).
- Measure the distance between points along horizontal and vertical lines of a coordinate system.
- Graph, locate, and identify points, and describe paths on the Cartesian coordinate plane using ordered pairs of whole numbers (including zero).
- Describe and explain the results of subdividing, combining, and transforming shapes.
- Describe and perform transformations on two-dimensional shapes (e.g., translations, rotations, and reflections).
- Identify and describe line symmetry in two-dimensional shapes, including shapes that have multiple lines of symmetry.
- Make and test conjectures about geometric properties and relationships and develop logical arguments to justify conclusions.
- Determine if two triangles or two quadrilaterals are congruent by measuring sides or a combination of sides and angles, as necessary; or by motions or series of motions (e.g., translations, rotations, and reflections).
- Use geometric models to solve problems in other areas of mathematics, such as number and measurement.
- Recognize geometric ideas and relationships and apply them to other disciplines and to problems that arise in the classroom or in everyday life.

Measurement

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Estimate the perimeter, and area of irregular shapes.
- Apply the concepts of perimeter and area to the solution of problems involving triangles and rectangles. Apply formulas where appropriate.
- Demonstrate an understanding of attributes such as length, area, weight, volume, and size of angle and select the appropriate type of unit for measuring each attribute.
- Build and draw geometric objects.
- Identify and draw a two-dimensional representation of a three-dimensional object.
- Identify measure, describe, classify, and draw various angles. Draw triangles given two sides and the angle between them, or given two angles and the side between them (e.g., draw a triangle with one right angle and two sides congruent).
- Carry out simple unit conversions, such as from centimeters to meters, within a system of measurement.
- Find volumes and surface areas of rectangular prisms.
- Estimate volume of irregular shapes.
- Find the sum of the measures of the interior angles in triangles by measuring the angles, and without measuring the angles.
- Demonstrate an understanding of how measurements are approximations and understand how differences in units affect precision.
- Select and apply appropriate standard units and tools to measure length, area, volume, weight, time, temperature, and the size of angles.
- Select and use landmarks to estimate measurements. For example, the personal reference of an inch is about half your thumb.

Data Analysis, Statistics, and Probability

Students engage in problem solving, communicating, reasoning, connecting, and representing as they:

- Describe the shape and important features of a set of data and compare related data sets, with an emphasis on how the data are distributed.
- Recognize the differences in representing categorical and numerical data [i.e. favorite flavor of ice cream (chocolate, vanilla as categorical) vs. number of people who like chocolate ice cream].
- Compare different representations of the same data and evaluate how well each representation shows important aspects of the data.
- Given a set of data, find the median, mean, mode, maximum, minimum, and range, and apply to solutions of problems.
- Construct and interpret line plots, line graphs, and bar graphs. Interpret and label circle graphs.
- Propose and justify conclusions and predictions that are based on data and design studies to further investigate the conclusions or predictions.
- Design investigations to address a question and consider how data-collection methods affect the nature of the data set.
- Predict the probability of outcomes of simple experiments (e.g., tossing a coin, rolling a number cube) and test the predictions.

3/10

K-5 Science Benchmarks

Kindergarten

Inquiry Skills:
• Observes and describes familiar objects and events
• Communicates science-related ideas through writing, drawing and discussion

Animals and Plants :(includes Chick Hatching)
• Observes, identifies and describes some life processes of animals: breathing, movement, taking in nourishment, growth and reproduction
• Gives examples of an animal interacting with its environment through its senses
• Keeps a pictorial record of the development of a chick
• Recognizes that plants and animals have specific needs in order to live: food, water and a place to live
• Distinguishes plant parts such as roots, stems, leaves, flowers and seeds
• Distinguishes between things that are alive and things that are not alive

Investigating Water:
• Describes the properties of water drops under different conditions
• Demonstrates that water takes the shape of its container
• Devises a variety of ways to move water
• Predicts that water will always flow down unless something pushes it up
• Recognizes that water sticks to itself and to other things
• Gives examples of things that float in water and things that sink

Magnets:
• Senses that a force is a push or a pull
• Selects materials attracted by a magnet
• Demonstrates that magnetic force can pass through various materials
• Demonstrates that the ends of magnets sometimes attract each other and sometimes repel

Grade 1

Inquiry Skills:
• Observes and describes familiar objects and events
• Uses scientific tools such as rulers, thermometers, and hand lenses
• Makes predictions based on prior knowledge about a particular material or object
• Communicates science-related ideas through writing, drawing and discussion

Balls and Ramps:
• Uses senses to sort objects into subsets using similarities and differences
• Explores, observes and describes properties of balls and their motion
• Explores relationship between the properties of balls and their movement on ramps of different degrees of steepness and surface texture
• Conducts experiments using ramps, balls and different surfaces
• Gains experience with the concepts of gravity, energy, speed acceleration, momentum and friction

Organisms:
• Uses a hand lens to observe and draw organisms
• Describes the basic needs of plants: water, light, nutrients and air.
• Plants seeds and observes and records their growth
• Sequences the stages of plant development
• Describes the basic needs of animals: food, water, space and shelter.
• Recognizes that each type of organism has specific needs, such as type of food, amount of water, amount of space, and that these needs are met in the organism's habitat.

• Observes, compares, and records structures, and behaviors of a variety of plants and animals in woodland and freshwater habitats
• Describes changes in appearance that plants and animals go through as the seasons change

Investigating Light and Shadow:
• Lists a variety of light sources, including the sun
• Gains experience with the effect of materials on light; light can pass through, be reflected, or be absorbed by different materials
• Identifies three things needed to produce a shadow: light, an object to block the light, and a surface on which the shadow is cast
• Observes that shadows change depending on the location of the light source
• Recognizes that light comes in different colors

Grade 2

Inquiry Skills:
• Observes and describes familiar objects and events
• Uses scientific tools such as rulers, thermometers, and hand lenses
• Makes predictions based on prior knowledge about a particular material or object
• Communicates science-related ideas through writing, drawing and discussion

The Life Cycle of the Butterfly:
• Uses a hand lens to draw and identify insect structures
• Compares, predicts and discusses the larva's appearance and change over time
• Compares the basic needs of a caterpillar (food, water, air and space) to those of a butterfly
• Relates the differences in structure between caterpillar and butterfly mouthparts to the type of food each eats
• Shows the life cycle of the butterfly through a diagram that includes egg, larva, chrysalis and adult; indicates that the cycle starts over when the butterfly lays eggs
• Relates growth of a butterfly to his/her own growth and development.

Changes:
• Describes some common changes that occur in the physical world around us
• Recognizes that some changes happen quickly, and others take place over a period of time
• Identifies three states of matter (gas, liquid, and solid) according to properties
• Describes how water can be changed from one state to another by adding or taking away heat
• Demonstrates that liquid water can freeze into a solid and then melt into a liquid again; and, can also evaporate into a gas and then condense into a liquid again; this can happen over and over (cycle)
• Investigates mixtures of solids and liquids

Soils:
• Performs simple tests to describe and identify soil components: remains of plants and animals and bits of rock
• Compares soil samples on the basis of color, particle size, and the ability to hold water
• Predicts how plants will grow in different soils; documents investigation to confirm prediction
• Explains the role of worms in soil formation
• Analyzes the composition of backyard soil

Grade 3

Inquiry Skills:
• Uses appropriate science process skills: observing, classifying, measuring, predicting, inferring, recognizing patterns, recording and analyzing data
• Plans investigations with teacher assistance
• Communicates science-related ideas through writing, drawing and discussion

Food Chains:
- Describes the important role of the sun as the source for all food energy
- Recognizes the relationships between organisms in a food chain/web
- Identifies green plants as producers (organisms that make their own food) and animals as consumers (organisms that eat plants or other animals)
- Conducts investigations to learn about primary consumers and secondary consumers (i.e., crickets and anoles, or pond animals)
- Describes the role of decomposers in breaking down dead plant and animal matter in soil
- Recognizes that some organisms can become endangered if food sources change as habitats are disturbed

Chemical Tests:
- Observes and describes the properties of common household chemicals
- Performs physical and chemical tests
- Learns, through investigation, that chemicals undergo changes in form, color or texture when mixed together, separated or heated
- Separates mixtures of solids and liquids by evaporating and filtering
- Classifies acids, bases and neutral substances
- Identifies an unknown chemical based on its properties

Water Cycle:
- Describes how water can be changed from one state to another by adding or taking away heat
- Models the water cycle and identifies its parts (evaporation, condensation, precipitation, accumulation)
- Recognizes that plants and animals take in and give off water as part of their life process
- Names forms of precipitation and relates the type of precipitation to the air temperature
- Describes the role of wetlands in purifying water and controlling its flow
- Explains how the actions of people can change the quality of water

Grade 4

Inquiry Skills:
- Uses appropriate science process skills: observing, classifying, measuring, predicting, inferring, recognizing patterns, recording and analyzing data
- Plans and conducts simple investigations
- Communicates science-related ideas through writing, drawing and discussion

Animal Adaptations:
- Observes and describes the behavior and physical characteristics of an animal such as a crayfish or a mealworm
- Names the group to which the animal belongs; compares and contrasts it with other animals
- Describes the way in which the animal interacts with its environment through its senses; compares the animal's senses to human senses
- With teacher assistance, plans and carries out controlled experiments to investigate animal behavior
- Relates the structure of an animal to its behavior (i.e., food-getting, movement, etc.)
- Explains how an animal's body structures and behaviors are adaptations that help it to survive in its habitat

Stories in Stone: Rocks and Minerals:
- Tests minerals and classifies them according to their properties
- Recognizes that rocks are made up of minerals
- Groups rocks by their properties
- Describes the origin of igneous, sedimentary and metamorphic rocks
- Recognizes that evidence in rocks is used to tell about earth changes in the past
- Explores processes that build up and tear down the earth's surface
- Discovers that the earth is constantly changing

Sun, Moon and Planets:

- Measures time by observing patterns in position of the sun and phases of the moon
- Recognizes that the same data (i.e., changes in shadow position) can be explained in more than one way
- Explains the cause of night and day
- Recognizes that the sun is a star and the center of the solar system.
- Describes the solar system including the arrangement of and motion of planets and moons.

Grade 5

Inquiry Skills:

- Uses appropriate science process skills: asking questions, observing, classifying, measuring, predicting, inferring, recognizing patterns, recording and analyzing data
- Plans and conducts simple investigations that include "fair tests" (with controlled variables) where appropriate
- Clearly communicates science-related ideas through writing, drawing and discussion.

Human Body:

- Understands the function of the skeletal and muscular systems and how they interact
- Recognizes that the form of a bone or joint is related to its function
- Compares and contrasts different types of bones, and joints
- Builds mechanical models to demonstrate how muscles are responsible for movement
- Relates the form and function of bones in a variety of animals

Electric Circuits and Magnetism:

- Classifies materials into electrical conductors and non-conductors (insulators) by performing tests
- Demonstrates that a complete circuit can be constructed in more than one way using the same materials
- Builds a simple switch
- Discovers that electricity can produce light, heat, sound, motion and magnetism.
- Recognizes that magnets have poles and that sometimes the poles attract each other and sometimes repel
- Makes an electromagnet and demonstrates how to change its force
- Constructs a model that utilizes electric circuits; explains the type of circuits involved and how they work in the model
- Relates the amount of electricity used and pollutants resulting from its generation

Investigating and Inventing:

- Describes scientists and engineers in a way that reflects a diversity in race, gender and scientific interests
- Understands that scientists design different kinds of investigations depending on the questions they are trying to answer and that engineers design different kinds of inventions depending on the problems for which they seek solutions
- Raises questions about the world and is willing to seek answers by making careful observations and trying things out
- Recognizes when comparisons might not be fair because some conditions are not kept the same
- Offers a reasonable explanation for the results of their investigation and considers explanations suggested by others
- Plans and designs a prototype to solve a practical problem; tests prototype and revises design to improve it
- Supports a point of view with scientific evidence and/or test results

Investigating and Inventing Mini-Units

Meteorologist
- Identifies the components of weather: air: temperature and wind, water: clouds and precipitation
- Measures properties of weather using various weather instruments
- Explains that climate is average weather over a period of decades

Mechanical Engineer
- Identifies 6 simple machines
- Recognizes that simple machines make it easier to do work
- Designs and constructs a compound machine consisting of two or more simple machines and shows that it can be used to solve a problem

3/10

K-5 Social Studies Curriculum Overview

Kindergarten

Family and Community

- Identifies three things about him/herself
- Identifies two ways in which his/her family is the same as and two ways different from other families
- Participates in the voting process from selecting an issue to discussing the results in the classroom
- Names three classroom rules
- Locates the commonly used areas in the classroom and school building
- Names two events that happened in the past (before today) and two current events in his/her life
- Names three people, other than the teacher, who work in the school and identifies the work they do
- Recognizes globes and maps as representations of real places
- Names three occupations in the community and identifies the work associated with each

Grade 1

Shelters and Celebrations

- Names three of his/her country's celebrations
- Identifies two ways his/her family is the same and two ways his/her family is different from families in other countries
- Creates maps as representations of places
- Identifies and uses the cardinal directions on a map (N, S, E, W)
- Distinguishes between near and far places on a map
- Identifies three types of shelter
- Places three events in sequence (in a day, in a week, in a year, etc.)
- Identifies three responsibilities children have as students

Grade 2

People of North America

- Identifies and describes three time periods in United States history
- Identifies three differences and similarities between the life of Native Americans of long ago and their contemporary life
- Identifies the regions of the United States by direction (N, S, E, W)
- Identifies US regions associated with different Native American culture groups
- Interprets map symbols using the legend
- Identifies and describes three sources from which information can be acquired
- Identifies and describes three responsibilities children have as students
- Gives examples of traditions and customs from other countries that can be found in the United States today

Grade 3

Local, Massachusetts and US History and Geography

- Identifies the impact geography had on the growth of Massachusetts
- Identifies differences among local, state, & federal government
- Articulates what life was like in Colonial Lexington
- Describes Massachusetts' role in the American Revolution
- Identifies people from Massachusetts and describes their influence on national and state history
- Explains the development of commerce and industry in Massachusetts and the United States from the Industrial Revolution to the present

Grade 4

Ancient Civilizations (China, and Maya)

- Explains the term archaeology and how historians learn about past through artifacts
- Explains the term civilization and traits of a civilization
- Describes significant contributions made by an ancient world civilization
- Describes the influence geography has on settlement patterns

North American Geography

Geography Terms and Mapping Skills

- Identifies parts of a map
- Use a map to interpret information about a region

North America

- Identifies the countries within North America (Canada, United States, Mexico, Central American Countries and the Caribbean Islands nations)
- Identifies relative (N, S, E, W) and absolute locations (longitude and latitude) of places in North America

United States

- Describes the climate, physical features, natural resources and products of the five regions of the United States
- Identifies the states, capitals and major cities in each region
- Identifies major national landmarks

Canada and Mexico

Canada

- Locates the provinces, territories and major cities
- Describes the physical features, climate, economy and people of contemporary Canada

Mexico

- Locates the major cities
- Describes the physical features, climate, economy and people of contemporary Mexico

Grade 5

United States History

- Describes encounter between Native Americans and Explorers as well as interaction between Native Americans and Settlers
- Explains the reasons for historical world exploration
- Identifies and describes the experiences of explorers
- Distinguishes the thirteen colonies by location and type
- Describes how and why each colony was founded
- Describes each colony geographically, economically, culturally, and politically
- Expresses the choices colonists made concerning settlement and economic opportunity

Colonists

- Identifies events leading up to the American Revolution
- Describes major events of the American Revolution and their impact
- Describes the formation of the United States Government
- Identifies major United States documents

K-5 Physical Education Curriculum Overview

Kindergarten

- Develops body, spatial and temporal awareness, learning about general and personal space
- Demonstrates common body positions
- Learns the concepts of directionality and laterality
- Moves to various rhythms
- Learns climbing, supporting and balancing skills on various apparatus
- Develops locomotor, manipulative, and non- locomotor skills
- Properly demonstrates walking, running, jogging, sliding and jumping
- Learns the locomotor skills of skipping, hopping, leaping, galloping, kicking, throwing, catching, and striking
- Combines locomotor, non-locomotor and manipulative skills in movement, dance, games and sports
- Learns exercises that increase the following health-related components of physical fitness: muscular strength, muscular endurance, cardiovascular endurance and flexibility
- Properly follows directions by applying listening and safety awareness skills
- Locates the major body parts such as the heart, lungs, and skeleton
- Develops self-confidence and interpersonal skills
- Demonstrates respect for classmates and their teachers
- Demonstrates cooperative skills to solve movement related problems

Grade 1

- Develops body, spatial and temporal awareness, particularly as they relate to personal and group space, sharing space, and the use of this space for various forms of movement
- Develops locomotor, manipulative, and non-locomotor skills, particularly as they relate to hopping, jumping, galloping, skipping, leaping, turning, kicking, throwing, catching, and striking
- Reviews non-locomotor skills
- Demonstrates the skills of swinging, pushing, and pulling
- Combines locomotor, non-locomotor, and manipulative skills in various forms
- Learns the benefits of regular physical activity
- Learns exercises that will increase personal cardiovascular endurance, muscular strength, muscular endurance and flexibility
- Develops listening skills
- Learns safety awareness, rules for activities and how to apply them
- Identifies the major parts of the body and the major systems of the body
- Understands, appreciates and applies rules, regulations, strategies, and appropriate etiquette for movement, dance, games, and sport
- Creates a sequence of locomotor movements
- Compares movements in terms of level and tempo
- Develops self-confidence and interpersonal skills
- Solves movement-related problems, accepts responsibility, and explores physical limits
- Demonstrates acceptance of individual differences by cooperating with classmates
- Demonstrates cooperative skill

Illness Prevention

- Relates staying clean to staying healthy
- Practices hand washing techniques and covering mouth and nose when sneezing
- Understands what germs are and where they live

The Human Body: How I Breathe

- Describes the functions of the lungs
- Values clean lungs and recognizes how pollution, smoking etc. can harm them
- Practices behaviors to protect the lungs

Nutrition
• Recognizes familiar nutritious foods
• Differentiates between "growing foods" and "extra foods"
• Identifies the five food groups

Safety
• Identifies safety rules for selected outdoor activities
• Values traffic safety rules and practices them
• Practices getting help in an emergency

Grade 2

• Develops body, spatial and temporal awareness, particularly as they relate to directionality, laterality, rhythms, rotational skills and balancing
• Develops locomotor, non-locomotor and manipulative skills, particularly as they apply to kicking, throwing and striking with either hand or foot
• Combines locomotor, non-locomotor and manipulative skills in movement, dance, games and sports
• Understands the benefits of regular physical activity
• Learns how to enhance personal fitness, particularly the health-related components of physical fitness, through various exercises and activities
• Learns general class safety rules
• Learns safety rules and directions for a variety of activities, particularly regarding the use of their personal space while utilizing an implement
• Understands the general function and structure of the body, particularly the major parts and systems
• Identifies the purpose of rules for an activity and follows the rules
• Demonstrates proper etiquette and regard for others
• Creates a sequence of movements utilizing locomotor, non-locomotor and manipulative skills and describes the shape and flow of the movements
• Develops self-confidence and interpersonal skills
• Accepts responsibility and constructive criticism
• Demonstrates cooperative skills

Grade 3

• Develops body, spatial and temporal awareness, particularly as it applies to distinguishing different rhythms, rotational skills, and inverted skills
• Demonstrates climbing, supporting, and balancing skills on various apparatus
• Learns activities that involve crossing the mid-line of the body
• Develops locomotor, non-locomotor and manipulative skills, particularly as they apply to varying force and effort as well as center of gravity
• Learns more advanced ball skills with the feet such as trapping, dribbling, and kicking with different parts of the foot
• Practices combining locomotor, non-locomotor and manipulative skills in movement, dance, games and lead-up sports activities
• Demonstrates knowledge of health-related components of physical fitness
• Explains ways to a healthy lifestyle
• Learns safety rules for physical education
• Applies rules, regulations, strategies, and appropriate etiquette for movement, dance, games, and sports including the concept of sportsmanship
• Develops an appreciation for the aesthetic and creative qualities of movement, particularly as they apply to level, tempo, shape, and flow
• Develops self-confidence and interpersonal skills including leadership skills
• Participates in cooperative problem solving activities
• Learns how to give constructive criticism and to encourage and support classmates

Grade 4

- Develops body, spatial, and temporal awareness, particularly as it applies to locating objects in space from a personal frame of reference and moving to various rhythms
- Creates a routine to music
- Demonstrates rotational skills, and inverted skills
- Develops locomotor, non-locomotor and manipulative skills particularly as they apply to efficient running technique as well as skipping, hopping, sliding, galloping and running along varying pathways, directions and levels
- Develops combination skills such as throwing and catching, catching and kicking, dribbling and passing
- Develops skills at combining locomotor, non-locomotor and manipulative skills in movement, dance, games, and sports, especially lead-up sports activities
- Develops understanding of the health-related components of physical fitness, demonstrates each, and explains how they enhance personal fitness
- Develops listening skills and safety awareness
- Moves efficiently to a sequence of auditory cues
- Develops an understanding and appreciation for rules, regulations, strategies, and appropriate etiquette for movement, dance, games and sports
- Develops an appreciation and understanding for ethnic backgrounds of certain activities, dances and games
- Develops self-confidence and interpersonal skills, particularly as they relate to taking on a leadership role in class as well as partnering role and working within a group for specific activities

Grade 5

- Develops body, spatial, and temporal awareness, particularly as they relate to various positions while in the air, moving to various rhythms, rotational and inverted skills
- Develops locomotor, non-locomotor, and manipulative skills, particularly as they relate to developing mechanically efficient patterns of throwing, catching, striking (with and without an implement), and kicking
- Learns how to combine locomotor, non-locomotor and manipulative skills in movement, dance, games, and sport, particularly modified forms of various sports
- Develops understanding of the benefits of regular physical activity
- Knows how to incorporate the health-related components of physical fitness to maximize these benefits learns how to responsibly work with various pieces of physical education equipment and understands the safety issues for each
- Understands general function and structure of the body including concepts of the effective use of levers
- Understands, appreciates and applies rules, regulations, strategies and appropriate etiquette for movement, dance, games and sports including basic rules and methods of officiating sports activities
- Develops an appreciation for the aesthetic and creative qualities of movement, both in an individual and group activity
- Develops self-confidence and interpersonal skills, particularly as they relate to group cooperative problem-solving activities

6/09

K-5 Music Curriculum Overview

Kindergarten

- Sings a varied repertoire of music, alone and with others
- Performs a varied repertoire of music on instruments, alone and with others
- Improvises melodies
- Composes music within given guidelines
- Reads and notates music
- Listens to, analyzes and describes music
- Evaluates music performances
- Understands music in relation to history and culture

Grade 1

• Sings a varied repertoire of music, alone and with others
• Performs a varied repertoire of music on instruments, alone and with others
• Improvises melodies
• Composes music within given guidelines
• Reads and notates music
• Listens to, analyzes and describes music
• Evaluates music performances
• Understands music in relation to history and culture

Grade 2

• Sings a varied repertoire of music, alone and with others
• Performs a varied repertoire of music on instruments, alone and with others
• Improvises melodies
• Composes music within given guidelines
• Reads and notates music
• Listens to, analyzes and describes music
• Evaluates music performances
• Understands music in relation to history and culture

Grade 3

• Sings a varied repertoire of music, alone and with others
• Performs a varied repertoire of music on instruments, alone and with others
• Improvises melodies
• Composes music within given guidelines
• Reads and notates music
• Listens to, analyzes and describes music
• Evaluates music performances
• Understands music in relation to history and culture
• All Students learn to play the recorder in a large group setting

Grade 4

- Sings a varied repertoire of music, alone and with others
- Performs a varied repertoire of music on instruments, alone and with others
- Improvises melodies
- Composes music within given guidelines
- Reads and notates music
- Listens to, analyzes and describes music

- Evaluates music performances
- Understands music in relation to history and culture
- Students are given the opportunity to learn to play the violin, viola or cello in a small group lesson setting

Grade 5

- Sings a varied repertoire of music, alone and with others
- Performs a varied repertoire of music on instruments, alone and with others
- Improvises melodies
- Composes music within given guidelines
- Reads and notates music
- Listens to, analyzes and describes music
- Evaluates music performances
- Understands music in relation to history and culture
- Students are given the opportunity to continue group lessons on a string instrument or to begin lessons on a woodwind, brass or percussion instrument
- All students participate in 5th grade chorus

6/09

K-5 Fine Arts Curriculum Overview

Kindergarten and Grade 1

1. Elements and principles of art

Line
• Students will use lines to create shapes, patterns and textures.
• Students will use line to create movement.
• Students will identify and create a variety of line types.

Shape and Form
• Students will recognize and create basic geometric shapes.

Color
• Students will recognize primary colors and mix them to make secondary colors.
• Students will understand the expressive quality of color.

Texture
• Students will identify and create textures such as rough, smooth, bumpy, etc.

Pattern
• Students will identify and create patterns using line and shape.

2. Media and techniques

Drawing
• Students will explore mark making and line quality.
• Students will draw from observation and imagination.

Painting
• Students will explore mark making and line quality.
• Students will learn color mixing.
• Students will learn about the handling and care of painting tools and materials.

Printmaking
• Students will learn how to make texture rubbings.
• Students will create prints using objects.

Collage
• Students will create collages by using such techniques such as cutting, tearing, curling, folding, weaving and gluing.

Sculpture
• Students will learn basic sculpting techniques such as hand forming and carving.

3. Observation, abstraction, invention and expression

• Students will create artwork from direct observation.
• Students will create expressive artwork that explores abstraction.
• Students will create artwork from memory or imagination to tell a story or embody an idea or fantasy.

4. Assessment strategies

See report card

• Student work will be displayed regularly
• One on one assessment during class period

Grades 2-3

1. Elements and principles of art

Line

• Students will use lines to create shapes, patterns and textures.
• Students will use line to create movement.
• Students will identify and create a variety of line types.
• Students will demonstrate a variety of lines through the use of observation and imagination.

Shape and Form

• Students will recognize and create basic geometric shapes.
• Students will understand positive and negative shapes (space).
• Students will know the meaning of symmetrical and asymmetrical.
• Students will understand the concept of overlapping shapes to create depth.
• Students will be introduced to free-form (organic) as well as geometric shapes.

Color

• Students will recognize primary colors and mix them to make secondary colors.
• Students will understand the expressive quality of color.
• Students will identify cool and warm colors.
• Students will make colors lighter or darker through the use of black and white paint.

Texture

• Students will identify and create textures such as rough, smooth, bumpy, etc.

Pattern

• Students will identify and create patterns using line and shape.
• Students will identify and create symmetrical patterns.

Composition

• Students will be introduced to the idea of composition using space, balance and emphasis.

2. Media and techniques

Drawing

• Students will explore mark making and line quality.
• Students will draw from observation and imagination.

Painting

• Students will explore mark making and line quality.
• Students will learn color mixing.
• Students will learn about the handling and care of painting tools and materials.
• Students will explore opaque and transparent qualities of paint.

Printmaking

• Students will learn how to make texture rubbings.
• Students will create prints using objects.
• Students will create relief prints.

Collage
• Students will create collages by using such techniques such as cutting, tearing, curling, folding, weaving and gluing.

Sculpture
• Students will learn basic sculpting techniques such as hand forming, carving and attaching.

Fiber
• Students will explore fiber arts such as weaving.

3. Observation, abstraction, invention and expression

• Students will create artwork from direct observation.
• Students will create expressive artwork that explores abstraction.
• Students will create artwork from memory or imagination to tell a story or embody an idea or fantasy.

4. Assessment strategies
See report card
• Student work will be displayed regularly
• One on one assessment during class period
• Short group critiques with student participation

Grades 3-5

1. Elements and principles of art

Line
• Students will use lines to create shapes, patterns and textures.
• Students will use line to create movement.
• Students will identify and create a variety of line types.
• Students will demonstrate a variety of lines through the use of observation and imagination.
• Students will understand contour and gesture drawing.
• Students will be introduced to the use of line in perspective drawing.

Shape and Form
• Students will recognize and create basic geometric shapes.
• Students will understand positive and negative shapes (space).
• Students will know the meaning of symmetrical and asymmetrical.
• Students will understand the concept of overlapping shapes to create depth.
• Students will be introduced to free-form (organic) as well as geometric shapes.
• Students will be introduced to the concept of proportion and scale.
• Students will have a clear understanding of the difference between a shape and a form.
• Students will create the illusion of space through a variety of techniques.

Color
• Students will recognize primary colors and mix them to make secondary colors.
• Students will understand the expressive quality of color.
• Students will identify cool and warm colors.
• Students will make colors lighter or darker through the use of black and white paint.
• Students will identify and mix intermediate colors.
• Students will be introduced to complimentary and analogous colors.
• Students will use value to create contrast.

Texture
• Students will identify and create textures such as rough, smooth, bumpy, etc.
• Students will use texture to create visual interest.

Pattern
• Students will identify and create patterns using line and shape.
• Students will identify and create symmetrical patterns.
• Students will use pattern to create visual interest.

Composition
• Students will apply their knowledge of composition using space, balance and emphasis.

2. Media and techniques

Drawing
• Students will explore mark making and line quality.

Painting
• Students will explore mark making and line quality.
• Students will learn color mixing.
• Students will learn about the handling and care of painting tools and materials.

Printmaking
• Students will learn how to make texture rubbings.
• Students will create prints using objects.

Collage
• Students will create collages by using such techniques such as cutting, tearing, curling, folding, weaving and gluing.

Sculpture
• Students will learn basic sculpting techniques such as hand forming, carving, attaching and slab.

Fiber
• Students will create fiber arts such as weaving.

3. Observation, abstraction, invention and expression

• Students will create representational artwork from direct observation.
• Students will create expressive artwork that explores abstraction.
• Students will create artwork from memory or imagination to tell a story or embody an idea or fantasy.
• Students will create symbolic artwork by substituting symbols for objects, relationships or ideas.

4. Assessment strategies
See report card
• Student work will be displayed regularly
• One on one assessment during class period
• Short group critiques with student participation
• Beginning of portfolio assessment (periodic review of accumulated work)

K-5 Art History connections

Students will demonstrate their understanding of the concepts of style, stylistic influence, and stylistic change by identifying when and where artworks were created and by analyzing characteristic features of artworks from various historical periods, cultures, and genres.

Art movements that may be referenced:

- Ancient civilizations
- Renaissance
- Impressionism
- Expressionism
- Contemporary

Artists that may be referenced:

- Vincent van Gogh
- Pablo Picasso
- Claude Monet
- Henri Matisse
- Alexander Calder
- Frida Kahlo
- Faith Ringgold
- Eric Carle
- Andy Warhol
- Georgia O'Keefe
- Piet Mondrian
- Leonardo da Vinci
- Rembrandt van Rijn

8/11

Libraries' Information Literacy Skills
(K-2)

There are several educational philosophies incorporated in the presentation and organization of these information literacy skills. First, regardless of the grade, it is important to remember that students learn information literacy skills best when introduced at the point of need, not in isolation…. Therefore, the presentation of information literacy skills is predicated on the assumption that they will be introduced at every grade level in authentic lessons and projects, and that they are integrated directly within the core classroom content as they become relevant to the students' learning. (Massachusetts School Library Association, 2008)

Benchmark: Inquire, think critically, and gain knowledge

Standard 1: Define Information Task

1.1 Rephrase classroom assignment.
1.2 Identify existing knowledge and list areas where more information is needed.
1.3 Brainstorm additional questions to answer.

Standard 2: Develop Information Seeking Strategies

2.1 Identify parts of a book.
2.2 Explain the difference between fiction and non-fiction.
2.3 Recognize various reference materials and their purposes.
2.4 Web or map a topic based on prior knowledge and preliminary background information.
2.5 Begin to develop a strategy to solve an information problem.
2.6 Identify the use of alphabetical and numerical order to gather information.

Standard 3: Locate and access information

3.1 Ask a question that requires information seeking.
3.2 Independently find the library.
3.3 Know the library teacher and independently approach him/her for assistance.
3.4 Independently locate fiction and non-fiction sections in the school library.
3.5 Independently locate computers in the school library.
3.6 Understand that there is a relationship between spine label and book content.
3.7 Understand the use of alphabetical and numerical order in relation to the organization of the library.

Benchmark: Draw conclusions, make informed decisions, apply knowledge to new situations and create new knowledge

Standard 4: Use Information

A. *Evaluate for appropriateness*
4.1 Distinguish fiction from nonfiction.
B. *Extraction of most relevant information*
4.2 Sort, classify and sequence pieces of information.
4.3 Take notes using guided research forms to extract relevant information.
C. *Ethical behavior in information use*
4.4 Find and record author and title of an information source.

Standard 5: Synthesize Information

5.1 Create and share pictures with others.
5.2 Use new words or sentences in describing the pictures.
5.3 Present a final product using an appropriate format (report, diorama, poster, software program or other medium of communication).

Benchmark: Share knowledge and participate productively

Standard 6: Participate in Collaborative Activities

6.1 Demonstrate appropriate group conduct.
6.2 Listen to the information and ideas of others.
6.3 Exhibit an understanding of the rights of other library users.
6.4 Cooperate with others and share resources and materials.
6.5 Work with other students to create and evaluate simple information products.
6.6 Assist other students with book selection.
6.7 Exhibit proper respect for and care of library materials, facilities, and equipment.
6.8 Understand the layout and organization of the library.
6.9 Understand and follow library rules and procedures.

Standard 7: Evaluate the Process and the Product

7.1 Using provided checklist or rubric, determine that project is complete and accurate.
7.2 Examine the process. Ask questions.

Benchmark: Expand Personal Enjoyment of Literature

Standard 8: Appreciate Literature

8.1 Understand the importance of the library as an information source.
8.2 Demonstrate active listening skills.
8.3 Listen to literature for pleasure and information.
8.4 Use illustrations to acquire greater understanding.
8.5 Demonstrate the proper care of library materials.
8.6 Use library collection for pleasure reading.
8.7 Understand the difference between an author and an illustrator.
8.8 Demonstrate the comprehension of a story heard, read or viewed.
8.9 Share books by favorite authors and illustrators.
8.10 Identify books that are special award winners.
8.11 Make connections among materials read, heard or viewed.
8.12 Make predictions in literature.
8.13 Demonstrate awareness of literature from various cultures and genres.

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Libraries' Information Literacy Skills

Grades 3-5

There are several educational philosophies incorporated in the presentation and organization of these information literacy skills. First, regardless of the grade, it is important to remember that students learn information literacy skills best when introduced at the point of need, not in isolation…. Therefore, the presentation of information literacy skills is predicated on the assumption that they will be introduced at every grade level in authentic lessons and projects, and that they are integrated directly within the core classroom content as they become relevant to the students' learning. (Massachusetts School Library Association, 2008)

Benchmark: Inquire, think critically, and gain knowledge

Standard 1: Define Information Task

1.1 List criteria for research assignment.
1.2 Demonstrate overall understanding of the final product.
1.3 Use teacher-selected essential question to develop topic focus.
1.4 Gather background information.
1.5 As a class, develop student-driven essential question.
1.6 As a class, develop subsidiary questions.
1.7 Identify existing knowledge.
1.8 Understand criteria for research assignment.

1.9 Explain what the final product will look like.
1.10 Select topic from range of possibilities.

Standard 2: Develop Information Seeking Strategies

2.1 Identify and use parts of a book to gather information.
2.2 Explain that there are different types of resources, both print and electronic, that can be used for different purposes.
2.3 Explain the differences and uses of basic reference materials as sources of information.
2.4 Identify key words to use in locating information.
2.5 With assistance, use the online catalog to find information sources in the library.
2.6 Web, map, or diagram a main topic with sub-topics.
2.7 Develop a strategy for finding relevant information, including a variety of resources.
2.8 Understand the Dewey Decimal system.

Standard 3: Locate and access information

3.1 Understand the organization of the library media center.
3.2 Identify shelving order – top to bottom, left to right.
3.3 Identify an information need.
3.4 Exhibit understanding and rudimentary use of the Dewey Decimal system.
3.5 Use the online library catalog to locate information sources.
3.6 With assistance, choose appropriate information source.
3.7 Understand differences between different types of materials.
3.8 With assistance, use print and electronic reference materials appropriately.
3.9 Identify and use table of contents, index, and glossary.
3.10 With assistance, find information from maps and charts.
3.11 Explore and develop understanding of how to gather information.
3.12 Locate appropriate articles in encyclopedias.

Benchmark: Draw conclusions, make informed decisions, apply knowledge to new situations and create new knowledge

Standard 4: Use Information

A. *Evaluate for appropriateness*

4.1 With assistance, develop criteria for relevant print and electronic information, including age of source.
4.2 Compare and contrast information from different sources.
4.3 With assistance, practice evaluating web sites.

B. *Extraction of most relevant information*

4.4 Use print and non-print material to gather information.
4.5 Choose appropriate order for information.
4.6 Use provided graphic organizers and outlines to organize information logically.
4.7 With assistance, organize information from multiple sources.
4.8 Independently take notes.
4.9 Summarize and paraphrase information.

C. Ethical behavior in information use

4.10 Define plagiarism.
4.11 Using a provided format, cite sources.

Standard 5: Synthesize Information

5.1 Consider the purpose and audience for the product and/or presentation.
5.2 Organize the information in a way which is appropriate for the assignment, project, or question.

5.3 Use word processing, editing, and spelling tools to produce an original product that clearly communicates research results.

5.4 Practice collaborative learning skills.

Benchmark: Share knowledge and participate productively

Standard 6: Participate in Collaborative Activities

6.1 Keep books and materials in order when browsing.

6.2 Discuss information and ideas with others, listen well and change own ideas when appropriate.

6.3 Using information sources, select information and ideas that will contribute directly to the success of group projects.

6.4 Respect others' ideas and backgrounds and acknowledge their contributions.

6.5 Encourage consideration of ideas and information from all group members.

6.6 Respond respectfully to the points of view and ideas of others.

6.7 Participate actively in group discussions to analyze information products and solutions.

Standard 7: Evaluate the Process and the Product

7.1 Examine the process. Ask questions.

7.2 Discuss progress with peers, classroom teachers, and library teacher during the process.

7.3 Use provided checklist or rubric, to conduct self and peer evaluations.

Benchmark: Expand Personal Enjoyment of Literature

Standard 8: Appreciate Literature

8.1 Recognize basic story elements: character, setting and plot.

8.2 Identify and read from a variety of genres.

8.3 Selects literature appropriate to his/her own reading/comprehension levels.

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