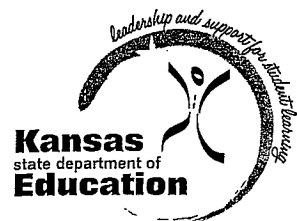




Kansas Guide to Learning: Literacy

A comprehensive cross-curricular literacy guide to advance learning from birth through grade 12.

Grades 6 - 12



Reading: Literature Tier 1 Core Instruction

Effective Instruction and Elements of Curricula Across All Content Areas

Environment

Establish an **environment** that includes:

- Authentic reading and writing, as opposed to drill and practice
- Extended periods of time for students to read
- Extended periods of time for students to write about and to discuss what they read
- Differentiated instruction based on assessment data, varied in
 - content/topic
 - process/activities
 - products
 - environment/learning styles
- Consideration of brain-based learning principles and multiple intelligences theory (Gardner, 1983))
- Scaffolded learning experiences with a gradual release of responsibility from teacher-led to student-initiated practice

Motivation and Engagement

Motivate students by:

- Establishing meaningful and engaging content goals
- Providing a positive learning environment
- Making instructional methods and strategies interactive
- Making literacy experiences relevant to students' interests, lives, and current events
- Building effective instructional conditions (e.g., goal setting, collaborative learning)
- Giving students reading choices in:
 - Texts
 - Collaborative groupings
 - Reading methods
- Moving from extrinsic to intrinsic motivation to read

Engage students by:

- Discussion and discussion protocols
- Student-led discussions
- Building background knowledge
- Pre-reading, during-reading, and after-reading activities
- Inquiry
- Metacognition and reflection

Critical Questions and Considerations for Teaching and Learning

Regardless of the program or framework utilized within a district, it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

Are students engaged in authentic reading and writing related to literature during the class period and throughout the school day?

How does the reciprocal nature of reading and writing enhance students' comprehension of literature?

When constructing discussion groups or literature circles, think about the language proficiencies and cultural backgrounds of students. Organize groups to provide for multiple perspectives and language abilities.

Students should have opportunities to read both individually and collaboratively.

Regardless of the program or framework utilized within a district, it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

How do we help students become intrinsically motivated to read?

How do students see themselves as readers?

How do we help students' take ownership of their own reading and progress?

Standards Connections

KCCS:
Language
Anchor
Standards
1, 3, 6

Speaking
and
Listening
Anchor
Standards
1, 2, 3, 6

KS 15%
Anchor
Standard
1

Effective Instruction and Elements of Curricula Across All Content Areas

Learning Objectives

Establish **content objectives** (what students will learn) based on content standards.

Establish reading objectives based on assessment data.

Establish **language objectives** (how students will demonstrate understanding and knowledge) based on English language- proficiency assessment data.

Post and share objectives with students before and after each lesson to help them connect to previous learning and to monitor their own learning (metacognition).

Check that students understand objectives throughout the lesson and make instructional adjustments during the lesson or reteach as needed.

Incorporate literature into lessons that promote thinking and problem-solving skills (e.g., critical thinking, systems thinking, problem identification, formulation, and solution, creativity, and intellectual curiosity).

Utilize whole-group and differentiated small-group instruction, based on student needs.

Utilize information and communication skills: media literacy, information literacy, and information and communications technology (ICT) literacy.

Determine the language and language structures that ELs need to access the content standard. Determine the appropriate language support:

- Vocabulary
- Sentence frame
- Grammar
- Strategic use of native language support and cognates
- Graphic organizers
- Explicit and interactive modeling of language

Critical Questions and Considerations for Teaching and Learning

What elements of a comprehensive assessment system would assist in gathering data relative to student learning and planning for future teaching and learning?

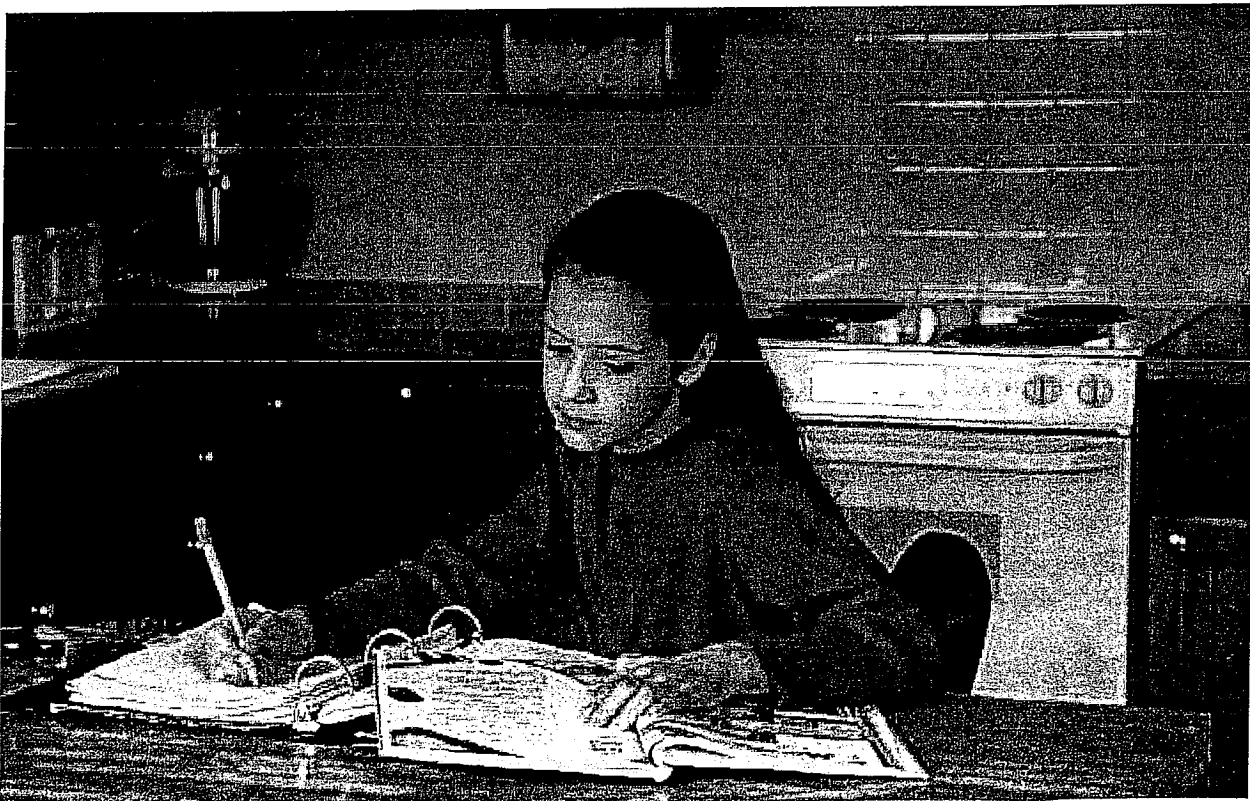
Regardless of the program or framework utilized within a district, it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

How do teachers use formative data to select learning objectives and to guide instruction?

For districts/schools with ELs, assessment data can help determine the Stage of Language Acquisition which should guide language objectives.

Standards Connections

KCCS:
Language
Anchor
Standards
1, 3, 6



Effective Instruction and Elements of Curricula
Across All Content Areas

Text Selection for Whole-Group Instruction

Use **high-quality, appropriately challenging** literature that supports the development of deep comprehension and appreciation.

Carefully select and analyze text for:

- Text complexity, based on:
 - Quantitative measures (e.g., lexile, ATOS book level)
 - Qualitative measures (e.g., levels of meaning, structure, language conventionality and clarity, and knowledge demands)
 - Reader and task considerations (e.g., cognitive abilities, reading skills, motivation and engagement with task and text, prior knowledge and experience, content and/or theme concerns, complexity of associated tasks)
- Cohesive, content-based units of study

Scaffold to help all students read complex text successfully. (See text complexity rubrics, qualitative measures.)

Text Selection for Small- Group or Individualized Instruction

Use **instructional-level or “stretch” text**, which students can read with:

- Explicit instruction that matches the needs of the reader determined by a diagnostic assessment
- 95% word-recognition
- 75% or higher comprehension rate

Carefully select and analyze text for its:

- Instructional level (quantitative, qualitative, and reader/task considerations)
- Opportunities to practice reading components (word recognition, fluency, and comprehension)
- Opportunities to practice strategy use

Text Selection for Independent Reading

- Students need opportunities to read literature of their own choosing.
- Independent reading is appropriate for at-home and pleasure reading.
- Provide coaching on appropriate text selection for independent reading, which could help motivate students to read.
- Provide opportunities for students to read **independently**, with attention to increasing the challenge of the text.

Critical Questions and Considerations
for Teaching and Learning

Regardless of the program or framework utilized within a district, it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

Are students exposed to multiple sources and types of text, including print and electronic?

Are text sources culturally and linguistically diverse?

Who are the stakeholders involved in selecting age- and ability-level texts?

Do reading tasks reflect of range of levels on Bloom's taxonomy?

Consider Vygotsky's Zone of Proximal Development when selecting texts.

Close reading and re-reading develop stamina and fluency.

How do we help students access increasingly complex text via productive struggle?

What elements of a comprehensive assessment system would assist in gathering data relative to student learning in these areas and in planning for future teaching and learning?

Regardless of the program or framework utilized within a district it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

Wide and extensive independent reading develops background knowledge and vocabulary.

How can we help students make connections between their independent reading choices and whole-group, small-group, and individual curricular choices?

Standards
Connections

KCCS:
Reading:
Literature
Anchor
Standard
10

Appendix B

KS 15%
Anchor
Standards
11, 12

Effective Instruction and Elements of Curricula
Across All Content Areas

Elements and Structures of Literary Text

Explicit instruction and scaffolding in understanding elements and structures of story and drama and how those elements interact with one another to form patterns and create meaning.
For example:

- Setting and its relationship to other story elements
- Character types (protagonist, antagonist, flat, round, static, dynamic) and their relationship to plot and theme
- Character development and its relationship to theme, plot, setting
- Plots, subplots, and parallel plots and their inter-relationships
 - Character goals
 - Conflict(s) (e.g., man vs. nature, man vs. society, man vs. man)
 - Rising action
 - Climax
 - Resolution
 - Pacing
- Theme: its development and its reflection in other story elements
- Foreshadowing and its effect on mood
- Irony and its connection to point of view
- Tone/Mood
- Point of view
- Flashback and its effects on pacing and mood
- Symbolism and its reflection on theme
- Connections to and transformation of source materials

Explicit instruction and scaffolding in understanding elements of poetry and how those elements form patterns and create meanings, such as:

- Rhythm and meter
- Stanza
- Rhyme and rhyme scheme
- Sound elements (e.g., alliteration, assonance, onomatopoeia)
- Simile
- Metaphor
- Theme
- Symbolism
- Imagery

Explicit instruction and scaffolding in analyzing how a particular text structure fits into the overall structure of a text and contributes to the development of ideas at the:

- sentence level
- paragraph level
- chapter level
- section level

Critical Questions and Considerations
for Teaching and Learning

What elements of a comprehensive assessment system would assist in gathering data relative to student learning in these areas and in planning for future teaching and learning?

Regardless of the program or framework utilized within a district it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

Formative Assessment:

Summarization as demonstrated through:

- Oral presentation
- Visual representation
- Rubrics

Are literary elements and text structures taught in an integrated manner that contributes to understanding of the text as a whole, as opposed to isolated skills instruction?

Link sentence-level structure analysis in reading to sentence variety and structure in writing and grammar.

Sentence combining helps students understand how sentence structure affects mood and tone.

Creative writing builds student understanding of literary elements and text structures.

Strategy instruction should move from teacher-modeling to group guided practice to individual practice to student-initiated use.

Do students strategically and independently use comprehension strategies to understand complex text?

Comprehension strategies:

- Summarization
- Integration and generalization of text
- Analysis
- Inference
- Pre-reading
- Activating prior knowledge
- Vocabulary needed to comprehend and discuss
 - Tier 1 words: basic, everyday words
 - Tier 2 words: high-frequency academic words
 - Tier 3 words: low-frequency, context-specific content words (Beck, McKeown, and Kucan, 2008)
- Questioning
- Predicting
- Visualization

Discussion protocols that enhance comprehension and higher-level thinking

- Concept-Oriented Reading Instruction CORI (Guthrie)
- Reciprocal Teaching
- Transactional Strategy Instruction
- Informed Strategies for Learning

Metacognitive reading:

- Monitoring understanding during and after reading
- Re-reading to clarify understanding
- Utilizing fix-up strategies (e.g., reread, read on, etc.) when needed

How can technology be effectively used to facilitate access to and understanding of text?

What is the difference between making reading assignments and teaching students how to read literature?

Strategy instruction should move from teacher-modeling to group guided practice to individual practice to student-initiated use.

Standards
Connections

KCCS:
**Reading:
Literature**
Anchor
Standard
5

KS 15%
Anchor
Standard
3

**Effective Instruction and Elements of Curricula
Across All Content Areas**

Critical Analysis of Literature

Explicit instruction and scaffolding in critical analysis of literature:

- Analyze a piece of literature by breaking it into parts
- Offer possible meanings for particular elements of literature to help explain meanings, compare/contrast, or apply a literary theory or other point of view
- Quote and paraphrase the literary work to support thinking
- Reference additional sources that support thinking
- Utilize style, tone, and voice to communicate thinking
- Organize an analysis and present it in a concise manner
- Trace influences from other literary works
- Identify personal, interpersonal, social, cultural, and political issues

Explicit instruction and scaffolding in practices that enhance students' reading:

- Responding to a text
- Summarizing a text
- Asking and answering questions about a text
- Analyzing story structure through use of an organizer (Hattie, 2009)
- Appreciating artistic expression

Explicit instruction and scaffolding in discussion protocols that enhance analysis and interpretation of literature

Vocabulary

Explicit instruction and scaffolding in how an author uses figurative language to convey meaning and tone:

- Metaphors
- Similes
- Personification
- Idioms
- Alliteration
- Onomatopoeia
- Hyperbole

Explicit instruction and scaffolding in how an author's word choice or patterns of word choice affect style, tone, and meaning:

- Denotation
- Connotation
- Word play
- Multiple meanings of words
- Cumulative impact of specific word choices

**Critical Questions and Considerations
for Teaching and Learning**

What elements of a comprehensive assessment system would assist in gathering data relative to student learning in these areas and in planning for future teaching and learning?

Regardless of the program or framework utilized within a district it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

Do teachers use formative data to guide lesson planning?

Do students use their formative data to set goals for themselves?

Are rubrics used to evaluate the critical analysis used in summative end-of-unit/course assessments?

Are discourse and writing being used to evaluate critical analysis of literature?

How can analysis of text differ according to point of view?

How does the historical context for the text impact the way that it was written?

What role does culture play in how readers understand the text?

How do teachers utilize higher-order thinking objectives, such as Bloom's Taxonomy analyzing, evaluating, and creating, during lessons?

What elements of a comprehensive assessment system would assist in gathering data relative to student learning in these areas and in planning for future teaching and learning?

Regardless of the program or framework utilized within a district it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.

Do teachers use formative assessment data to guide instruction?

Does the instruction of word and language choices occur in an integrated manner that contributes to students' understanding of the literary text, as opposed to isolated skills instruction?

**Standards
Connections**

**KCCS:
Reading:
Literature
Anchor
Standards
1, 2, 3, 4, 5,
6, 7, 8, 9**

**Appendix
B:
Exemplar
Texts**

**Writing
Anchor
Standards
1, 2, 4, 7, 8,
9,10**

**Speaking
and
Listening
Anchor
Standards
1, 2, 3, 4,
5, 6**

**Language
Anchor
Standards
1, 2, 3, 4,
5, 6**

**KS 15%
Anchor
Standards
1, 4, 5**

**KCCS:
Reading:
Literature
Anchor
Standard
4**

**Appendix A

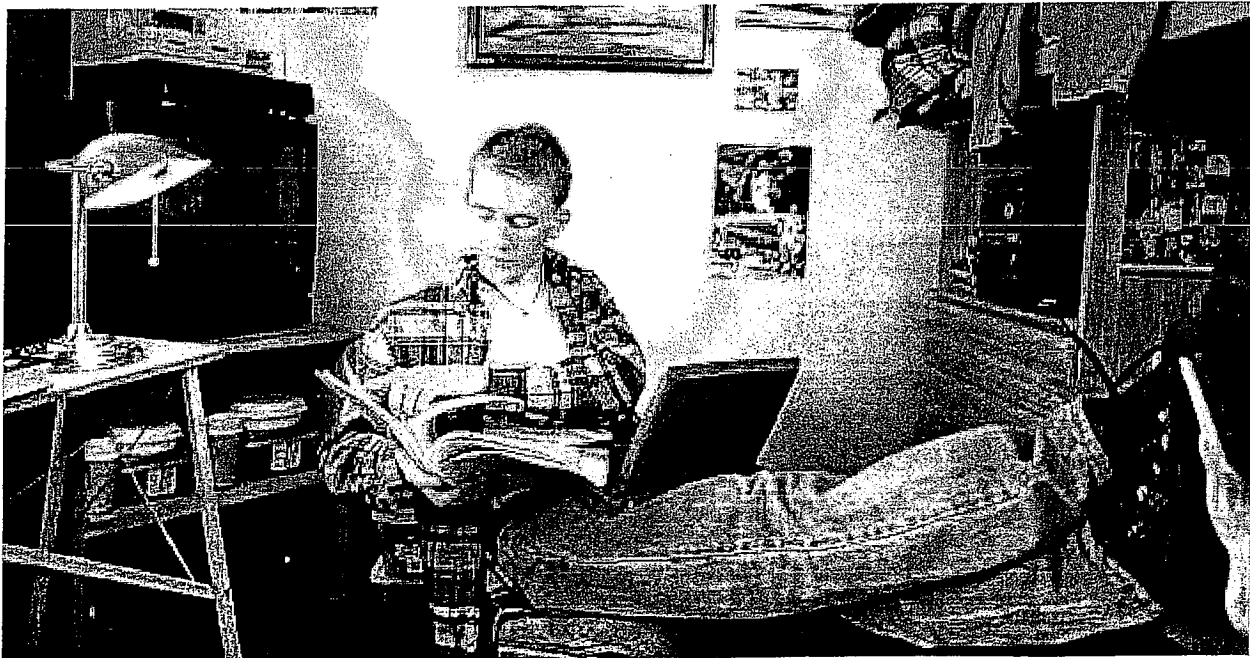
Language
Anchor
Standards
3, 4, 5, 6**

**Speaking
and
Listening
Anchor
Standard
6**

**KS 15%
Anchor
Standard
3**

Reading: Informational Text Tier 1 Core Instruction

Reading: Informational Text		
<p>Effective Instruction and Elements of Curricula Across All Content Areas</p> <p>Environment</p> <p>Establish an environment that includes:</p> <ul style="list-style-type: none"> • Authentic reading and writing tasks, rather than drill and practice • Extended periods of time for students to read, • Extended periods of time for students to discuss and write about their reading • Differentiated instruction based on assessment data 	<p>Critical Questions and Considerations for Teaching and Learning</p> <p>Regardless of the program or framework utilized within a district, it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.</p> <p>When constructing discussion groups or inquiry circles, consider language proficiencies and cultural backgrounds of students. Organize groups to provide for multiple perspectives and language abilities.</p> <p>Give students opportunities to read individually and in groups.</p> <p>How does the reciprocal nature of reading and writing enhance students' comprehension of informational text?</p> <p>Are students engaged in authentic reading and writing related to informational text throughout the school day?</p>	<p>Standards Connections</p> <p>KCCS: Language Anchor Standards 1, 3, 6</p> <p>Speaking and Listening Anchor Standards 1, 2, 3, 6</p> <p>KS 15% Anchor Standard 1</p>
<p>Motivation and Engagement</p> <p>Motivate students by:</p> <ul style="list-style-type: none"> • Establishing meaningful and engaging content goals. • Providing a positive learning environment. • Making instructional methods and strategies interactive. • Making literacy experiences relevant to students' interests, lives, and current events. • Building effective instructional conditions (e.g., goal setting, collaborative learning). • Giving students reading choices. • Moving from extrinsic motivation to intrinsic motivation. <p>Engage students by:</p> <ul style="list-style-type: none"> • Discussion and Discussion Protocols • Inquiry • Pre-reading activities • Building background knowledge • Helping students connect learning objectives to personal career or college goals • Before-reading, during-reading, and after-reading strategies 	<p>Regardless of the program or framework utilized within a district, it is essential the decision-making process consider the student population being served, therefore activities may need to be altered and accommodations used to match the learners' needs.</p>	



Welcome to CCSS Math!

Websites being Integrated into this Website...

1. Brightstorm *
2. CK12
3. Class Zone
4. Geogebra *
5. Glencoe
6. K-5 Math Teaching Resources **
7. Khan Academy *
8. Kuta Software *
9. Henrico County Mathematics
10. Illustrative Mathematics Project**
11. IXL **
12. Learn Zillion *
13. Mathematics Assessment Project **
14. Mixing in Math
15. NCTM Illuminations **
16. National Science Digital Library (NSDL)*
17. PBS Learning Media
18. Purple Math
19. Quia
20. Read Write Think **
21. Regents Prep
22. Science Net Links **
23. SECC.SEDL.org
24. Shodor
25. Smithsonian Education
26. Teach Engineering
27. Ten Marks
28. Texas Instruments**
29. Xpeditions by National Geographic **

Kansas Additions to the Common Core State Standards for Mathematics

Committee Members:

Jerry Braun, USD 489

*Pat Foster, USD 341

Melisa Hancock, KSU

Marjorie Hill, KU

Fred Hollingshead, USD 450

Laura Ortiz, USD 457

*Allen Sylvester, USD 501

Debbie Sylvester, USD 320

Debbie Thompson, USD 259

*Co-chairs

Overview:

The Kansas Mathematics Review Committee met regularly between February and July, 2010 to review drafts of the Common Core State Standards, provide feedback to the national writing group, and develop recommendations for additions to the Kansas version of the Common Core State Standards for Mathematics. In the early drafts, the committee found many areas that needed revision and provided extensive feedback/suggestions to the writing group. As each draft was released for review and comment, the Kansas group found that many of their recommendations had a direct impact on changes that were made in later drafts. In fact, though no one can be certain how many states might have provided similar feedback to Kansas, in some cases it seemed as if the authors had taken the Kansas recommendations and incorporated them virtually word for word. This is important to note in any explanation of the recommendations for additions to the Common Core State Standards, since many of the items identified early in the process for inclusion in the 15% additions for Kansas actually became part of the Final Draft document and therefore reduced greatly the volume of recommendations contained here.

The Kansas Additions to the Common Core State Standards for Mathematics focus on two major topics: Probability and Statistics as well as Algebraic Patterning. Connections to these topics can actually be found sporadically through the Common Core State Standards document, but they were not addressed with the same level of emphasis that had been historically given to them in Kansas standards. In recognition of the long history in Kansas of the ability for local school districts to make decisions for themselves; the review committee felt strongly that these topics should be set aside from the detail of the main document with enough information provided for each school and/or district to decide how to incorporate them for themselves.

The information in the following two pages is intended to help districts review these content areas and insure their coverage in their curriculum planning, but not to dictate at what grade level(s) it is most appropriate to emphasize them. Each begins with a short paragraph discussing the coverage of the topic on the Common Core State Standards and a rationale for additional emphasis. This is followed by a set of "Curricular Considerations" that can be used by districts to guide discussions about how to integrate these topics. Finally, each topic includes a sample list of references and outside resources that might aid in the discussions.

Mathematics | Grade 1

In Grade 1, instructional time should focus on four critical areas: (1) developing understanding of addition, subtraction, and strategies for addition and subtraction within 20; (2) developing understanding of whole number relationships and place value, including grouping in tens and ones; (3) developing understanding of linear measurement and measuring lengths as iterating length units; and (4) reasoning about attributes of, and composing and decomposing geometric shapes.

(1) Students develop strategies for adding and subtracting whole numbers based on their prior work with small numbers. They use a variety of models, including discrete objects and length-based models (e.g., cubes connected to form lengths), to model add-to, take-from, put-together, take-apart, and compare situations to develop meaning for the operations of addition and subtraction, and to develop strategies to solve arithmetic problems with these operations. Students understand connections between counting and addition and subtraction (e.g., adding two is the same as counting on two). They use properties of addition to add whole numbers and to create and use increasingly sophisticated strategies based on these properties (e.g., “making tens”) to solve addition and subtraction problems within 20. By comparing a variety of solution strategies, children build their understanding of the relationship between addition and subtraction.

(2) Students develop, discuss, and use efficient, accurate, and generalizable methods to add within 100 and subtract multiples of 10. They compare whole numbers (at least to 100) to develop understanding of and solve problems involving their relative sizes. They think of whole numbers between 10 and 100 in terms of tens and ones (especially recognizing the numbers 11 to 19 as composed of a ten and some ones). Through activities that build number sense, they understand the order of the counting numbers and their relative magnitudes.

(3) Students develop an understanding of the meaning and processes of measurement, including underlying concepts such as iterating (the mental activity of building up the length of an object with equal-sized units) and the transitivity principle for indirect measurement.⁴

(4) Students compose and decompose plane or solid figures (e.g., put two triangles together to make a quadrilateral) and build understanding of part-whole relationships as well as the properties of the original and composite shapes. As they combine shapes, they recognize them from different perspectives and orientations, describe their geometric attributes, and determine how they are alike and different, to develop the background for measurement and for initial understandings of properties such as congruence and symmetry.

Grade 1 Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Understand and apply properties of operations and the relationship between addition and subtraction.
- Add and subtract within 20.
- Work with addition and subtraction equations.

Number and Operations in Base Ten

- Extend the counting sequence.
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure lengths indirectly and by iterating length units.
- Tell and write time.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Mathematical Practices

⁴ Students should apply the principle of transitivity of measurement to make indirect comparisons, but they need not use this technical term.

Operations and Algebraic Thinking 1.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.⁵
2. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Understand and apply properties of operations and the relationship between addition and subtraction.

3. Apply properties of operations as strategies to add and subtract.⁶ *Examples: If $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known. (Commutative property of addition.) To add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$. (Associative property of addition.)*
4. Understand subtraction as an unknown-addend problem. *For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.*

Add and subtract within 20.

5. Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
6. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use mental strategies such as counting on; making ten (e.g., $8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$); decomposing a number leading to a ten (e.g., $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); using the relationship between addition and subtraction (e.g., knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$); and creating equivalent but easier or known sums (e.g., adding $6 + 7$ by creating the known equivalent $6 + 6 + 1 = 12 + 1 = 13$).

Work with addition and subtraction equations.

7. Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.*
8. Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.*

Number and Operations in Base Ten 1.NBT

Extend the counting sequence.

1. Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.

Understand place value.

2. Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:
 - a. 10 can be thought of as a bundle of ten ones—called a “ten.”
 - b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
 - c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
3. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

Use place value understanding and properties of operations to add and subtract.

4. Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
5. Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

⁵ See Glossary, Table 1.

⁶ Students need not use formal terms for these properties.

6. Subtract multiples of 10 in the range 10–90 from multiples of 10 in the range 10–90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Measurement and Data 1.MD

Measure lengths indirectly and by iterating length units.

1. Order three objects by length; compare the lengths of two objects indirectly by using a third object.
2. Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*

Tell and write time.

3. Tell and write time in hours and half-hours using analog and digital clocks.

Represent and interpret data.

4. Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Geometry 1.G

Reason with shapes and their attributes.

1. Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes that possess defining attributes.
2. Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.⁷
3. Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

⁷ Students do not need to learn formal names such as “right rectangular prism.”

Mathematics | Grade 2

In Grade 2, instructional time should focus on four critical areas: (1) extending understanding of base-ten notation; (2) building fluency with addition and subtraction; (3) using standard units of measure; and (4) describing and analyzing shapes.

(1) Students extend their understanding of the base-ten system. This includes ideas of counting in fives, tens, and multiples of hundreds, tens, and ones, as well as number relationships involving these units, including comparing. Students understand multi-digit numbers (up to 1000) written in base-ten notation, recognizing that the digits in each place represent amounts of thousands, hundreds, tens, or ones (e.g., 853 is 8 hundreds + 5 tens + 3 ones).

(2) Students use their understanding of addition to develop fluency with addition and subtraction within 100. They solve problems within 1000 by applying their understanding of models for addition and subtraction, and they develop, discuss, and use efficient, accurate, and generalizable methods to compute sums and differences of whole numbers in base-ten notation, using their understanding of place value and the properties of operations. They select and accurately apply methods that are appropriate for the context and the numbers involved to mentally calculate sums and differences for numbers with only tens or only hundreds.

(3) Students recognize the need for standard units of measure (centimeter and inch) and they use rulers and other measurement tools with the understanding that linear measure involves an iteration of units. They recognize that the smaller the unit, the more iterations they need to cover a given length.

(4) Students describe and analyze shapes by examining their sides and angles. Students investigate, describe, and reason about decomposing and combining shapes to make other shapes. Through building, drawing, and analyzing two- and three-dimensional shapes, students develop a foundation for understanding area, volume, congruence, similarity, and symmetry in later grades.

Grade 2 Overview

Operations and Algebraic Thinking

- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten

- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data

- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry

- Reason with shapes and their attributes.

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

Mathematical Practices

Operations and Algebraic Thinking 2.OA

Represent and solve problems involving addition and subtraction.

1. Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.⁸

Add and subtract within 20.

2. Fluently add and subtract within 20 using mental strategies.⁹ By end of Grade 2, know from memory all sums of two one-digit numbers.

Work with equal groups of objects to gain foundations for multiplication.

3. Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
4. Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

Number and Operations in Base Ten 2.NBT

Understand place value.

1. Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
 - a. 100 can be thought of as a bundle of ten tens—called a “hundred.”
 - b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).
2. Count within 1000; skip-count by 5s, 10s, and 100s.
3. Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
4. Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Use place value understanding and properties of operations to add and subtract.

5. Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
6. Add up to four two-digit numbers using strategies based on place value and properties of operations.
7. Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
8. Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
9. Explain why addition and subtraction strategies work, using place value and the properties of operations.¹⁰

Measurement and Data 2.MD

Measure and estimate lengths in standard units.

1. Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2. Measure the length of an object twice, using length units of different lengths for the two measurements; describe how the two measurements relate to the size of the unit chosen.
3. Estimate lengths using units of inches, feet, centimeters, and meters.
4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Relate addition and subtraction to length.

⁸ See Glossary, Table 1.

⁹ See standard 1.OA.6 for a list of mental strategies.

¹⁰ Explanations may be supported by drawings or objects.

5. Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
6. Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.

Work with time and money.

7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.
8. Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. *Example: If you have 2 dimes and 3 pennies, how many cents do you have?*

Represent and interpret data.

9. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.
10. Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems¹¹ using information presented in a bar graph.

Geometry 2.6

Reason with shapes and their attributes.

1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces.¹² Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.
2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.
3. Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves*, *thirds*, *half of*, *a third of*, etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.

¹¹ See Glossary, Table 1.

¹² Sizes of lengths and angles are compared directly or visually, not compared by measuring.