

4th Grade



Pocket PALS

Priority **A**ssessed **L**earning **S**tandards

Mathematics & Reading

2009-2010



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Kansas State Board of Education

120 S.E. 10th Avenue • Topeka, Kansas 66612-1182

Education Priorities of the Kansas State Board of Education

Ensure that all students meet or exceed high academic standards and are prepared for their next steps (e.g., the world of work and/or post secondary education). To accomplish the mission of the Kansas State Board of Education, the Board has identified four goals. They are as follows:

- Redesign the delivery system to meet our students' changing needs.
- Provide an effective educator in every classroom.
- Ensure a visionary and effective leader in every school.
- Improve collaboration with families and communities, constituent groups and policy partners.

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Adopted 5/2009



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As the Kansas Commissioner of Education, I am committed to the Kansas State Board of Education's mission "to ensure that all students meet or exceed high academic standards and are prepared for their next steps, e.g., the world of work and/or postsecondary education."



To that end, the Kansas Priority Assessed Learning Standards (PALS) booklet is to give you—as educators—a quick reference to the 2009-10 assessed standards in reading and mathematics. Please know that the standards, benchmarks and indicators included in this document are just a small part of what you teach. The complete list of standards for reading, mathematics, writing, science, and history/government as well as the non-assessed models standards (communication, dance and creative movement, driver education, environmental education, health education, library media and technology, music, physical education, school counseling, theatre, visual arts, and world languages) can be accessed at: <http://www.ksde.org/Default.aspx?tabid=1678>.

It is imperative that we focus on these essential skills, which is why we created "Pocket PALS." You are the most valuable asset of a school and your relentless and effective teaching of each and every student ensures that all children in Kansas will and do succeed. I am hopeful that "Pocket PALS" will assist you in the development of well-planned, thoughtful, research-based methods of instruction for your classes. It is important to build on what students already know and can do as you continue to expand student knowledge and skill mastery in all curricular areas.

What an awesome responsibility you have as educators! I hope this tool will assist you as you prepare your students for the future. There has never been a more important time to focus on the students of tomorrow, than today.

A handwritten signature in brown ink, appearing to read "Alexa Posny".

Dr. Alexa Posny
Kansas Commissioner of Education

Mathematics Overview

Mission Statement

The mission of Kansas mathematics education is for all Kansas students to learn mathematical content and skills that are used to solve a variety of problems.

Vision Statement

The vision of mathematics education in Kansas is to work toward the following:

- Kansas mathematics education will be recognized as one of the premier programs in the United States.
- Kansas mathematics education will be equally effective for all students, irrespective of gender, race, or socioeconomic background.
- Kansas families will broadly recognize the importance of and be encouraged to participate actively in their child(ren)'s mathematics learning.
- Technology will be a fundamental part of mathematics teaching and learning.

The Purpose of this Document*

The standards, benchmarks, and indicators in this document¹ have been created to assist Kansas educators in developing local curricula and assessments, as well as to serve as the basis for the development of the state assessments in mathematics. The committee² strove to recommend high, yet reasonable expectations for all students. High, yet reasonable expectations for all students are components of fairness in education. All students include: those who choose to attend college, those who choose technical preparation, those who will enter the workforce, those from various socioeconomic backgrounds, those who have been identified as gifted in the area of mathematics, those who have been identified with learning disabilities, those who have previously been successful with mathematics, and those who have struggled with mathematics sometime in the past.

Students may need additional support both within and outside the regular classroom to meet those expectations. Teachers should be given the professional development and

* From the Introduction to the Kansas Curricular Standards for Mathematics, July 2003

¹ Kansas Curricular Standards for Mathematics, July 2003

² Refers to the Kansas Curricular Standards for Mathematics Committee, Kansas Curricular Standards for Mathematics, July 2003

resources necessary to enable them to help all students strive to meet or exceed these expectations. This may seem a daunting task, but the alternative is not acceptable.

(Source: Kansas Curricular Standards for Mathematics, July 2003)

Math Standards Key

M.4.1.1.K1 = Math Grade 4, Standard 1, Benchmark 1, Knowledge indicator 1

N = Non-calculator portion of the assessment.

(\$) = Correlated with Personal Finance standards.

(2.4.K1a-b) = Indicator numbers in parentheses cross reference an indicator that can be used to model the concept referenced or, for a “model” indicator, reference indicators that can be explained using the model indicator.

Mathematics Standards & Benchmarks

Standard 1: Number and Computation – The student uses numerical and computational concepts and procedures in a variety of situations.

Benchmark 2: Number Systems and Their Properties – The student demonstrates an understanding of whole numbers with a special emphasis on place value; recognizes, uses, and explains the concepts of properties as they relate to whole numbers; and extends these properties to fractions (including mixed numbers), decimals, and money.

M.4.1.2.K1

Identifies, models, reads, and writes numbers using numerals, words, and expanded notation from hundredths place through one-hundred thousands place (2.4.K1a-b) **(S)**, e.g., four hundred sixty-two thousand, two hundred eighty-four and fifty hundredths = $462,284.50$ or $462,284.50 = (4 \times 100,000) + (6 \times 10,000) + (2 \times 1,000) + (2 \times 100) + (8 \times 10) + (4 \times 1) + (5 \times .1) + (0 \times .01) = 400,000 + 60,000 + 2,000 + 200 + 80 + 4 + .5 + .00$.

M.4.1.2.K5a-d

Uses the concepts of these properties with the whole number system and demonstrates their meaning including the use of concrete objects (2.4.K1a) **(S)**:

- Commutative properties of addition and multiplication, e.g., $12 + 18 = 18 + 12$ and $8 \times 9 = 9 \times 8$;
- Zero property of addition (additive identity) and property of one for multiplication (multiplicative identity), e.g., $24 + 0 = 24$ and $75 \times 1 = 75$;
- Associative properties of addition and multiplication, e.g., $4 + (2 + 3) = (4 + 2) + 3$ and $2 \times (3 \times 4) = (2 \times 3) \times 4$;
- Symmetric property of equality applied to addition and multiplication, e.g., $100 = 20 + 80$ is the same as $20 + 80 = 100$ and $21 = 7 \times 3$ is the same as $7 \times 3 = 21$.

Benchmark 4: Computation – The student models, performs, and explains computation with whole numbers, fractions, and money including the use of concrete objects in a variety of situations.

M.4.1.4.K6a-d

N Shows the relationship between these operations with the basic fact families (addition facts with sums from 0 through 20 and corresponding subtraction facts, multiplication facts from 1×1 through 12×12 and corresponding division facts) including the use of mathematical models (2.4.K1a) (**S**):

- Addition and subtraction,
- Addition and multiplication,
- Multiplication and division,
- Subtraction and division.

M.4.1.4.A1a-e

N Solves one- and two-step real-world problems with one or two operations using these computational procedures (**S**):

- Adds and subtracts whole numbers from 0 through 10,000 and when used as monetary amounts (2.4.A1a-b,d), e.g., Lee buys a bicycle for \$139, a helmet for \$29, and a reflector for \$6. He paid for it with a \$200 check from his grandparents. How much will he have left from the \$200 check?
- Multiplies through a two-digit whole number by a two-digit whole number (2.4.A1a-b), e.g., At school, there are 22 students in each classroom. If there are 24 classes, how many students are in the classrooms?
- Multiplies whole dollar monetary amounts (up through three-digit) by a one- or two-digit whole number (2.4.A1a-b,d), e.g., 112 Third and fourth graders are planning a field trip. The cost per student is \$9.00. How much will the trip cost?
- Multiplies monetary amounts less than \$100 by whole numbers less than ten (2.4.A1a-d), e.g., at the book fair, a student buys 8 books on animals for \$2.69 Each. How much did the student pay for the books?
- Figures correct change through \$20.00 (2.4.A1a-d), e.g., buying a 65¢ drink, paying for it with a \$1 bill, and then figuring the amount of change.



Standard 2: Algebra – The student uses algebraic concepts and procedures in a variety of situations.

Benchmark 2: Variables, Equations, and Inequalities – The student uses variables, symbols, and whole numbers to solve equations including the use of concrete objects in a variety of situations.

M.4.2.2.K2a-c

Solves one-step equations using whole numbers with one variable and a whole number solution that:

- a. Find the unknown in a multiplication or division equation based on the multiplication facts from 1×1 through 12×12 and corresponding division facts (2.4.K1a), e.g., $60 = 10 \times n$;
- b. Find the unknown in a money equation using multiplication and division based upon the facts and addition and subtraction with values through \$10 (2.4.K1d) (**\$**), e.g., $8 \text{ quarters} + 10 \text{ dimes} = y \text{ dollars}$;
- c. Find the unknown in a time equation involving whole minutes, hours, days, and weeks with values through 200 (2.4.K1a), e.g., $180 \text{ Minutes} = y \text{ hours}$.

Benchmark 3: Functions – The student recognizes and describes whole number relationships including the use of concrete objects in a variety of situations.

M.4.2.3.K2

Finds the values, determines the rule, and states the rule using symbolic notation with one operation of whole numbers from 0 through 200 using a horizontal or vertical function table (input/output machine, T-table) (2.4.K1e), e.g., using the function table, find the rule, the rule is $N \cdot 4$

N	?
1	4
5	20
2	8
3	?
4	?
?	24

M.4.2.3.A1

Represents and describes mathematical relationships between whole numbers from 0 through 1,000 using concrete objects, pictures, written descriptions, symbols, equations, tables, and graphs (2.4.A1a) (**\$**).



Standard 3: Geometry – The student uses geometric concepts and procedures in a variety of situations.

Benchmark 1: Geometric Figures and Their Properties – The student recognizes geometric shapes and investigates their properties including the use of concrete objects in a variety of situations.

M.4.3.1.A2

Identifies the plane figures (circles, squares, rectangles, triangles, ellipses, rhombi, octagons, hexagons, pentagons, trapezoids) used to form a composite figure (2.4.A1f).

Benchmark 2: Measurement and Estimation – The student estimates and measures using standard and nonstandard units of measure including the use of concrete objects in a variety of situations.

M.4.3.2.K2a-e

Selects, explains the selection of, and uses measurement tools, units of measure, and degree of accuracy appropriate for a given situation **to measure** (2.4.K1a) (**\$**):

- Length, width, and height to the nearest fourth of an inch or to the nearest centimeter;
- Volume to the nearest cup, pint, quart, or gallon; to the nearest liter; or to the nearest whole unit of a nonstandard unit;
- Weight to the nearest ounce or pound or to the nearest whole unit of a nonstandard unit of measure;
- Temperature to the nearest degree;
- Time including elapsed time.

M.4.3.2.A2

Estimates to check whether or not measurements and calculations for length, width, weight, volume, temperature, time, and perimeter in real-world problems are reasonable (2.4.A1a) (**\$**), e.g., which is the most reasonable weight for your scissors – 2 ounces, 2 pounds, 20 ounces, 20 pounds? or A teacher measures one side of a square desktop at 2 feet. Which of the following perimeters is reasonable for a desktop – 2 feet, 4 square feet, 6 square feet, 8 feet?

4th Grade Curricular Standards for Mathematics

Benchmark 3: Transformational Geometry – The student recognizes and performs one transformation on simple shapes or concrete objects in a variety of situations.

M.4.3.3.K2

Recognizes, performs, and describes one transformation (reflection/flip, rotation/turn, translation/slide) on a two-dimensional figure or concrete object (2.4.K1a).

Benchmark 4: Geometry From An Algebraic Perspective – The student relates geometric concepts to a number line and the first quadrant of a coordinate plane in a variety of situations.

M.4.3.4.K3

Identifies and plots points as whole number ordered pairs in the first quadrant of a coordinate plane (coordinate grid) (2.4.K1a).



Standard 4: Data – The student uses concepts and procedures of data analysis in a variety of situations.

Benchmark 2: Statistics – The student collects, organizes, displays, explains, and interprets numerical (whole numbers) and non-numerical data sets including the use of concrete objects in a variety of situations.

M.4.4.2.K1a-i

Organizes, displays, and reads numerical (quantitative) and non-numerical (qualitative) data in a clear, organized, and accurate manner including a title, labels, categories, and whole number intervals using these **data displays** (2.4.K1h) (**\$**):

- Graphs using concrete objects;
- Pictographs with a symbol or picture representing one, two, five, ten, twenty-five, or one-hundred including partial symbols when the symbol represents an even amount;
- Frequency tables (tally marks);
- Horizontal and vertical bar graphs;
- Venn diagrams or other pictorial displays, e.g., glyphs;
- Line plots;

- g. Charts and tables;
- h. Line graphs;
- i. Circle graphs.

M.4.4.2.A2a-e

Uses these statistical measures of a data set using whole numbers from 0 through 1,000 with less than ten whole number data points to make reasonable inferences and predictions, answer questions, and make decisions (2.4.A1a) (**\$**):

- a. Minimum and maximum values,
- b. Range,
- c. Mode,
- d. Median when the data set has an odd number of data points,
- e. Mean when the data set has a whole number mean.

Overview for Reading

Mission Statement:

Kansas reading education is for all Kansas students to be given an equal opportunity to become competent and strategic readers.

Purpose

The reading and literature standards, benchmarks, and indicators for the Kansas Curricular Standards for Communication Arts (1999) were revised in 2003. The Kansas Curricular Standards for Reading (2003) will assist Kansas teachers in planning local curricula and assessment for reading, and literature, and will serve as the basis for the development of state assessments in reading. However, the Kansas Curricular Standards for Reading (2003) is not intended to be a state-mandated curriculum. Local curricula should further refine and shape the way that students demonstrate their development in the communication arts. Kansas Curricular Standards for Reading (2003) was developed with an understanding that **all** students will be given an equal opportunity to become competent and strategic readers.

Following are the reading indicators selected for assessment. The full document can be found on the Kansas State Department of Education's website on the Reading Standards webpage at www.ksde.org/Default.aspx?tabid=142.

Reading Standards Key

R.4.1.1.1 = Reading Grade 4, Standard 1, Benchmark 1, Indicator 1

Reading Standards & Benchmarks

Standard 1: Reading: The student reads and comprehends text across the curriculum.

Benchmark 3: The student expands vocabulary.

R.4.1.3.1

Determines the meaning of words or phrases by using context clues (e.g., definitions, restatements, examples, descriptions) from sentences or paragraphs.

Instructional Example:

Read the passage and delete certain words. Read the passage with the blanks and ask the student to be thinking about which word would make sense in the sentences.

R.4.1.3.4

Determines meaning of words through knowledge of word structure (e.g., root words, prefixes, and suffixes).

Instructional Example:

Have the student create paper train cars, engine = prefixes; the regular car = root words; and the caboose = suffixes. The student manipulates the cars with various prefixes and suffixes, as well as roots to make a word while someone checks to make sure the word is a “real” word

Benchmark 4: The student comprehends a variety of texts (narrative, expository, technical, and persuasive).

R.4.1.4.2

Understands the purpose of text features (e.g., graphs/charts and maps, table of contents, pictures/illustrations, boldface type, and italics) and uses such features to locate information in and to gain meaning from appropriate-level texts.

Instructional Example:

Have the student do a scavenger hunt for finding text features in a textbook.

4th Grade Curricular Standards for Reading

R.4.1.4.5

Uses information from the text to make inferences and draw conclusions.

Instructional Example:

The student uses vocabulary/key words from text to make predictions and draw conclusions from the text. The student discusses his/her predication(s) before, during, and after reading text.

R.4.1.4.7

Compares and contrasts information (e.g., topics, characters' traits, themes, problem-solution, cause-effect relationships) in one or more appropriate-level text(s) and identifies compare/contrast signal words.

Instructional Example:

As the student reads, he/she puts a sticky note with a frowning face when he/she identifies a problem and a puts a sticky note with a smiley face when he/she identifies a solution. A sticky note with a baseball bat identifies a cause and one with a baseball identifies an effect.

R.4.1.4.8

Links causes and effects in appropriate-level narrative and expository texts.

Instructional Example:

Model for and then direct the student to highlight the cause in one color and the effect in another color on a portion of copied text.

R.4.1.4.9

Retells main ideas or events as well as supporting details in appropriate-level narrative, expository, and technical texts.

Instructional Example:

Have the student determine the main idea by using text in which the main idea is clear and follows a logical order and highlight significant details which support the main idea.

R.4.1.4.10

Identifies the topic, main idea(s), and supporting details in appropriate-level texts.

Instructional Example:

Encourage the student to recall important information by taking notes or making marginal notations, outlining, highlighting, or underlining the topic, main ideas, and supporting details.

R.4.1.4.11

Identifies the author's purpose (e.g., to entertain and to inform).

Instructional Example:

Use a questioning the author activity. Pretend to be the author and have the student role-play being a reporter through interviewing you, the author.

R.4.1.4.14

Distinguishes between fact and opinion in various types of appropriate-level texts.

Instructional Example:

To identify facts, model using a sticky note to mark pieces of evidence. To identify opinion, student locates cue words, such as evaluative words (e.g., I think, it seems, it appears that) and uses a sticky note to mark those pieces of opinion.



Standard 2: Literature: The student responds to a variety of text.

Benchmark 1: The student uses literary concepts to interpret and respond to text.

R.4.2.1.1

Identifies and describes characters' physical traits, personality traits, and feelings, and explains reasons for characters' actions and the consequences of those actions.

Instructional Example:

Develop a two-column chart. The first column is labeled "Character Actions" and the second is labeled "Consequences." The student discusses the various actions of the characters and the consequences of those actions.

4th Grade Curricular Standards for Reading

R.4.2.1.2

Identifies and describes the setting (e.g., environment, time of day or year, historical period, situation, place) of the story or literary text.

Instructional Example:

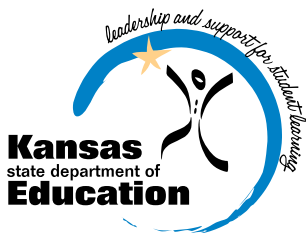
The student finds clues about the setting (actually visualizing the setting) and reads the story to learn more about setting and the mood of the story.

R.4.2.1.3

Identifies or describes the major conflict in a story and how it is resolved.

Instructional Example:

Have the student explain the conflict, the problem, or the goal of the main character(s) of a story. Explain to the student that to every conflict in literature there are attempts to solve the conflict as well as a resolution.



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