



2nd GRADE

MATHEMATICS

CURRICULUM

Aligned to:
Kentucky Academic Standards
iReady Classroom Mathematics

UPDATED FALL 2023

KASC ACADEMIC STANDARDS CHECKLIST

MATHEMATICS

User's Name: _____



Use the columns as a checkoff or a place to take notes to track any curriculum issue. For instance, you might list the unit or marking period in which a standard was mastered, the areas where teachers want additional professional development opportunities, or any issue you need to analyze as you work to enhance your students' performance. See the folder labeled Ideas for Usage for further suggestions on ways to use the checklists and cards.

SECOND GRADE

Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction

2.OA.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, by using drawings and equations with a symbol for the unknown number to represent the problem.	
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Add and subtract within 20

2.OA.2	Fluently add and subtract within 20 using mental strategies.	
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Work with equal groups of objects to gain foundation for multiplication

2.OA.3	Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.	
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2.OA.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.	
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Numbers and Operations in Base Ten

Understand place value

2.NBT.1	<p>Understand that the three digits of a three-digit number represent amounts of hundreds, tens and 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).</p>
2.NBT.2	<p>Count forwards and backwards within 1000; skip-count by 5s, 10s and 100s.</p>
2.NBT.3	<p>Read and write numbers to 1000 using base-ten numerals, number names and expanded form.</p>
2.NBT.4	<p>Compare two three-digit numbers based on meanings of the hundreds, tens and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.</p>

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

2.NBT.5	<p>Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.</p>
2.NBT.6	<p>Add up to four two-digit numbers using strategies based on place value and properties of operations.</p>
2.NBT.7	<p>Add and subtract within 1000. a. Represent and solve addition and subtraction problems using... <ul style="list-style-type: none"> • concrete models or drawings; • strategies based on place value; • properties of operations; • the relationship between addition and subtraction and; • relate drawings and strategies to expressions or equations. b. 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.</p>
2.NBT.8	<p>Mentally add 10 or 100 to a given number 100–900 and mentally subtract 10 or 100 from a given number 100–900.</p>
2.NBT.9	<p>Explain why addition and subtraction strategies work, using place value and the properties of operations.</p>

Measurement and Data		
Measure and estimate lengths in standard unit		
2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.	
2.MD.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.	
2.MD.3	Estimate lengths using units of inches, feet, yards, centimeters and meters.	
2.MD.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of either a customary or metric standard length unit.	
Relate addition and subtraction to length		
2.MD.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown number to represent the problem.	
2.MD.6	Represent whole numbers as lengths from 0 on a number line with equally spaced points corresponding to the numbers 0, 1, 2, ... and represent whole-number sums and differences within 100 on a number line.	
Work with time and money		
2.MD.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	
2.MD.8	Solve word problems with adding and subtracting within 100, (not using dollars and cents simultaneously) using the \$ and ¢ symbols appropriately (not including decimal notation).	
Understand and apply the statistics process		
2.MD.9	Investigate questions involving measurements. a. Identify a statistical question focused on measurements. b. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. c. Show the measurements by making a dot plot, where the horizontal scale is marked off in whole-number units.	
2.MD.10	Create a pictograph 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 problems using information presented in a bar graph.	

Geometry		
Reason with shapes and their attributes		
2.G.1	Recognize and draw shapes having specified attributes, such as a given number of angles or sides. Identify triangles, quadrilaterals, pentagons, hexagons and cubes (identify number of faces).	
2.G.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	
2.G.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.	

Embrace the Pace



Grade 2

Use this Instructional Day Tracker to monitor the days as you teach each unit in *i-Ready Classroom Mathematics*. Each space on the tracker represents one 45- to 60-minute session of teaching in the program.

The number of instructional days are approximate because we know your students may need more or less time depending on the content, and you will adjust your instruction to best meet their needs.

You will see which Priority Topics are addressed in each of the units.

The Priority Topics for Grade 2 are:

- 1 Extend understanding of base-ten notation up to 1,000.
- 2 Build fluency with addition and subtraction to 100, and develop strategies to add and subtract within 1,000.
- 3 Measure using standard units.

Unit 1

Numbers within 20: Addition, Subtraction, and Data

Priority Topics 1 and 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34											

Unit 2

Numbers within 100: Addition, Subtraction, Time, and Money

Priority Topics 1 and 2

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33												

Unit 3

Numbers within 1,000: Place Value, Addition, and Subtraction

Priority Topics 1 and 3

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40	41				

Unit 4

Length: Measurement, Addition and Subtraction, and Line Plots

Priority Topic 3

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40					

Unit 5

Shapes and Arrays: Partitioning and Tiling Shapes, Arrays, Evens and Odds

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16	17	18	19	20	21	22	23							

Additional Days Bank

You can use these additional instructional days to support your students as you see fit. To determine how many additional days you have available, please check with your school or district administrator.



Ready[®] Classroom
Mathematics

to the Kentucky Academic Standards
for Mathematics

Grades K-5

2nd

Curriculum Associates

Kentucky Academic Standards for Mathematics
Grades K-5

Ready Classroom Mathematics Lessons
Grades K-5

GRADE 2

KY.2.OA Operations and Algebraic Thinking

Represent and solve problems involving addition and subtraction.

<p>KY.2.OA.1</p>	<p>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, by using drawings and equations with a symbol for the unknown number to represent the problem.</p>	<p>Lesson 3: Solve One-Step Word Problems Lesson 5: Solve Two-Step Word Problems Lesson 9: Solve Word Problems with Two-Digit Numbers Lesson 10: Solve Word Problems Involving Money</p> <p><u>Additional Content:</u> Lesson 1: Mental Math Strategies for Addition; Lesson 2: Mental Math Strategies for Subtraction; Lesson 4: Draw and Use Bar Graphs and Picture Graphs; Lesson 25: Add and Subtract Lengths; Lesson 26: Add and Subtract on the Number Line</p>
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Add and subtract within 20.

<p>KY.2.OA.2</p>	<p>Fluently add and subtract within 20 using mental strategies.</p>	<p>Lesson 1: Mental Math Strategies for Addition Lesson 2: Mental Math Strategies for Subtraction</p> <p><u>Additional Content:</u> Lesson 3: Solve One-Step Word Problems</p>
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Work with equal groups of objects to gain foundation for multiplication.

<p>KY.2.OA.3</p>	<p>Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.</p>	<p>Lesson 32: Even and Odd Numbers</p>
<p>KY.2.OA.4</p>	<p>Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and 5 columns. Write an equation to express the total as a sum of equal addends.</p>	<p>Lesson 31: Add Using Arrays</p>

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
KY.2.NBT Number and Operations in Base Ten		
Understand place value.		
KY.2.NBT.1	Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones. Understand the following as special cases:	Lesson 12: <i>Understand Three-Digit Numbers</i> Lesson 13: Read and Write Three-Digit Numbers
KY.2.NBT.1.a	100 can be thought of as a bundle of ten tens - called a "hundred."	Lesson 12: <i>Understand Three-Digit Numbers</i> Additional Content: Lesson 13: Read and Write Three-Digit Numbers
KY.2.NBT.1.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).	Lesson 12: <i>Understand Three-Digit Numbers</i> Lesson 13: Read and Write Three-Digit Numbers
KY.2.NBT.2	Count forwards and backwards within 1000; skip-count by 5s, 10s and 100s.	Lesson 15: Mental Addition and Subtraction Additional Content: Lesson 10: Solve Word Problems Involving Money; Lesson 11: Tell and Write Time; Lesson 31: Add Using Arrays

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
KY.2.NBT.3	Read and write numbers up to 1000 using base-ten numerals, number names and expanded form.	Lesson 13: Read and Write Three-Digit Numbers <u>Additional Content:</u> Lesson 14: Compare Three-Digit Numbers; Lesson 16: Add Three-Digit Numbers; Lesson 17: Subtract Three-Digit Numbers
KY.2.NBT.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.	Lesson 14: Compare Three-Digit Numbers
Use place value understanding and properties of operations to add and subtract.		
KY.2.NBT.5	Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.	Lesson 6: Add Two-Digit Numbers Lesson 7: Subtract Two-Digit Numbers Lesson 8: Use Addition and Subtraction Strategies with Two-Digit Numbers <u>Additional Content:</u> Lesson 9: Solve Word Problems with Two-Digit Numbers; Lesson 10: Solve Word Problems Involving Money; Lesson 19: Add Several Two-Digit Numbers; Lesson 25: Add and Subtract Lengths
KY.2.NBT.6	Add up to four two-digit numbers using strategies based on place value and properties of operations.	Lesson 19: Add Several Two-Digit Numbers
KY.2.NBT.7	Add and subtract within 1000.	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
KY.2.NBT.7.a	Represent and solve addition and subtraction problems using...	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers
KY.2.NBT.7.a.1	Represent and solve addition and subtraction problems using concrete models or drawings;	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers
KY.2.NBT.7.a.2	Represent and solve addition and subtraction problems using strategies based on place value;	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers
KY.2.NBT.7.a.3	Represent and solve addition and subtraction problems using properties of operations;	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers
KY.2.NBT.7.a.4	Represent and solve addition and subtraction problems using the relationship between addition and subtraction and;	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
KY.2.NBT.7.a.5	Represent and solve addition and subtraction problems using relate drawings and strategies to expressions or equations.	Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers
KY.2.NBT.7.b	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.	Lesson 15: Mental Addition and Subtraction Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers
KY.2.NBT.8	Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900.	Lesson 15: Mental Addition and Subtraction Additional Content: Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers
KY.2.NBT.9	Explain why addition and subtraction strategies work, using place value and the properties of operations.	Lesson 6: Add Two-Digit Numbers Lesson 7: Subtract Two-Digit Numbers Lesson 8: Use Addition and Subtraction Strategies with Two-Digit Numbers Lesson 16: Add Three-Digit Numbers Lesson 17: Subtract Three-Digit Numbers Lesson 18: Use Addition and Subtraction Strategies with Three-Digit Numbers Lesson 19: Add Several Two-Digit Numbers
KY.2.MD	Measurement and Data	
Measure and estimate lengths in standard unit.		
KY.2.MD.1	Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.	Lesson 20: Measure in Inches and Centimeters Lesson 21: Measure in Feet and Meters Additional Content: Lesson 23: Estimate and Measure Length; Lesson 24: Compare Lengths

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
KY.2.MD.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.	Lesson 22: <i>Understand Measurement with Different Units</i>
KY.2.MD.3	Estimate lengths using units of inches, feet, yards, centimeters and meters.	Lesson 23: Estimate and Measure Length
KY.2.MD.4	Measure to determine how much longer one object is than another, expressing the length difference in terms of either a customary or metric standard length unit.	Lesson 24: Compare Lengths
Relate addition and subtraction to length.		
KY.2.MD.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown number to represent the problem.	Lesson 25: Add and Subtract Lengths
KY.2.MD.6	Represent whole numbers as lengths from 0 on a number line with equally spaced points corresponding to the numbers 0, 1, 2, ... and represent whole-number sums and differences within 100 on a number line.	Lesson 26: Add and Subtract on the Number Line Additional Content: Lesson 27: Read and Make Line Plots
Work with time and money.		
KY.2.MD.7	Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.	Lesson 11: Tell and Write Time
KY.2.MD.8	Solve word problems with adding and subtracting within 100 (not using dollars and cents simultaneously) using the \$ and ¢ symbols appropriately (not including decimal notation).	Lesson 10: Solve Word Problems Involving Money Additional Content: Lesson 19: Add Several Two-Digit Numbers

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
Understand and apply the statistics process.		
KY.2.MD.9	Investigate questions involving measurements.	Lesson 27: Read and Make Line Plots
KY.2.MD.9.a	Identify a statistical question focused on measurements.	Lesson 27: Read and Make Line Plots
KY.2.MD.9.b	Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object.	Lesson 27: Read and Make Line Plots
KY.2.MD.9.c	Show the measurements by making a dot plot, where the horizontal scale is marked off in whole-number units.	Lesson 4: Draw and Use Bar Graphs and Picture Graphs Lesson 27: Read and Make Line Plots
KY.2.MD.10	Create a pictograph 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 problems using information presented in a bar graph.	Lesson 4: Draw and Use Bar Graphs and Picture Graphs

Kentucky Academic Standards for Mathematics Grades K-5		Ready Classroom Mathematics Lessons Grades K-5
KY.2.G Geometry		
Reason with shapes and their attributes.		
KY.2.G.1	Recognize and draw shapes having specified attributes, such as a given number of angles or sides. Identify triangles, quadrilaterals, pentagons, hexagons and cubes.	Lesson 28: Recognize and Draw Shapes
KY.2.G.2	Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	Lesson 30: Partition Rectangles
KY.2.G.3	Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words <i>halves</i> , <i>thirds</i> , <i>half of</i> , <i>a third of</i> , 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.	Lesson 29: <i>Understand</i> Partitioning Shapes into Halves, Thirds, and Fourths

Kentucky Academic Standards for Mathematics: Grade 2 Overview

Operations/Algebraic Thinking (OA)	Number and Operations in Base Ten (NBT)	Measurement and Data (MD)	Geometry (G)
<ul style="list-style-type: none"> • Represent and solve problems involving addition and subtraction. • Add and subtract within 20. • Work with equal groups of objects to gain foundations for multiplication. 	<ul style="list-style-type: none"> • Understand place value. • Use place value understanding and properties of operations to add and subtract. 	<ul style="list-style-type: none"> • Measure and estimate lengths in standard units. • Relate addition and subtraction to length. • Work with time and money. • Understand and apply the statistics process. 	<ul style="list-style-type: none"> • Reason with shapes and their attributes.

In grade 2, instructional time should focus on four critical areas:

1. In the Number and Operations in Base Ten domain, students will:

- 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; and
- 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. In the Operations and Algebraic Thinking and Numbers and Operations in Base Ten domains, students will:

- use their understanding of addition to develop fluency with addition and subtraction within 100;
- 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; and
- 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. In the Measurement and Data domain, students will:

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

4. In the Geometry domain, students will:

- describe and classify shapes as polygons or non-polygons;
- investigate, describe and reason about decomposing and combining shapes to make other shapes; and
- draw, partition and analyze two-dimensional shapes to develop a foundation for understanding area, congruence, similarity and fractions in later grades.

Operations and Algebraic Thinking

Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
[MP.2.](#) Reason abstractly and quantitatively.
[MP.3.](#) Construct viable arguments and critique the reasoning of others.
[MP.4.](#) Model with mathematics.

- [MP.5.](#) Use appropriate tools strategically.
[MP.6.](#) Attend to precision.
[MP.7.](#) Look for and make use of structure.
[MP.8.](#) Look for and express regularity in repeated reasoning.

Cluster: Represent and solve problems involving addition and subtraction.

Standards

KY.2.OA.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, by using drawings and equations with a symbol for the unknown number to represent the problem.

MP.1, MP.2 and MP.4

Clarifications

Students flexibly model or represent addition and subtraction situations or context problems (involving sums and differences within 100).

Note: Drawings need not show detail, but accurately represent the quantities involved in the task. [See Table 1 in Appendix A.](#)

Students master all word problem subtypes including the four difficult ones:

- add to-start unknown
- take from-start unknown
- put together/take apart-addend unknown
- compare-bigger unknown/smaller unknown

Coherence [KY.1.OA.1](#) → [KY.2.OA.1](#) → [KY.3.OA.8](#)

Attending to the Standards for Mathematical Practice

When reading/interpreting word problems, students recognize a number (eight or 8) represents a quantity (eight buttons) and consider what is happening to these quantities in the context of the problem (**MP.2**). Students experiment in different ways to solve the problem (**MP.4**). Students think of questions to ask themselves, such as “Which diagram could help me?” Students work in groups to make addition and subtraction stories using concrete objects/pictures to demonstrate different situations and write an addition or subtraction equation to match their stories (**MP.1**).

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Operations and Algebraic Thinking
Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
- [MP.2.](#) Reason abstractly and quantitatively.
- [MP.3.](#) Construct viable arguments and critique the reasoning of others.
- [MP.4.](#) Model with mathematics.

Cluster: Add and subtract within 20.

Standards

- KY.2.OA.2 Fluently add and subtract within 20 using mental strategies.
- MP.2, MP.7, MP.8**

Clarifications

Students determine addition and subtraction strategies efficiently, accurately, flexibly and appropriately. Being fluent means students choose flexibly among methods and strategies to solve contextual and mathematical problems, they understand and explain their approaches and they produce accurate answers efficiently and appropriately use mental strategies that include:

- counting on
- making ten
- decomposing a number leading to a ten
- using the relationship between addition and subtraction
- creating equivalent but easier or known sums.

Note: Reaching fluency is an ongoing process that will take much of the year.

[KY.2.NBT.5](#)
Coherence [KY.1.OA.6](#) → [KY.2.OA.2](#)

Attending to the Standards for Mathematical Practice

Students select and use reasoning strategies to solve addition and subtraction problems efficiently. For example, for $8 + 7$, a student decides to use a make 10 strategy, while another student notices the answer is one more than $7 + 7$ (a known double fact). Students notice these patterns and through experiences such as games, become more efficient at applying the strategies eventually reaching automaticity (**MP.8**). Students use 10 as a benchmark in solving problems and recognize the relationship between addition and subtraction, recognizing these relationships lead to more efficient ways to add and subtract than counting. For example, to solve $16 - 9$, a student counts up to 10 (1) and up to 16 (6) to get the answer of 7 (**MP.7**).

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Operations and Algebraic Thinking

Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
- [MP.2.](#) Reason abstractly and quantitatively.
- [MP.3.](#) Construct viable arguments and critique the reasoning of others.
- [MP.4.](#) Model with mathematics.

- [MP.5.](#) Use appropriate tools strategically.
- [MP.6.](#) Attend to precision.
- [MP.7.](#) Look for and make use of structure.
- [MP.8.](#) Look for and express regularity in repeated reasoning.

Cluster: Work with equal groups of objects to gain foundation for multiplication.

Standards

KY.2.OA.3 Determine whether a group of objects (up to 20) has an odd or even number of members; write an equation to express an even number as a sum of two equal addends.

MP.2, MP.7

Clarifications

Students understand a number can be broken apart by pairing objects to see if there are leftovers (odd) or not (even).



Coherence [KY.1.OA.7](#) → [KY.2.OA.3](#) → [KY.3.OA.9](#)

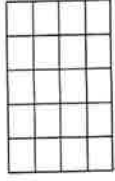
KY.2.OA.4 Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.

MP.2, MP.4

Students model using rectangular arrays to determine the number of objects and discuss their reasoning. For example the array shows

$$4 + 4 + 4 + 4 = 20 \text{ or}$$

$$5 + 5 + 5 + 5 = 20$$



Coherence [KY.1.OA.7](#) → [KY.2.OA.4](#) → [KY.3.OA.1](#)

Attending to the Standards for Mathematical Practice

Students use contexts and visuals to reason about whether numbers are even or odd (**MP.2**). They notice if a number can be decomposed (broken apart) into two equal addends ($16 = 8+8$), then it is even, or if they group the number in twos it is even (**MP.7**). They build on the idea of two equal sized groups to adding more equal sized groups. Students use concrete objects (counters) and pictorial representations (arrays) to explore repeated addition of equal sized groups (**MP.5**). Students recognize in a rectangular array there are two ways to have same sized groups (rows or columns) and they can choose either way to find the total (**MP.2**).

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

**Numbers and Operations in Base Ten
Standards for Mathematical Practice**

- MP.1. Make sense of problems and persevere in solving them.
MP.2. Reason abstractly and quantitatively.
MP.3. Construct viable arguments and critique the reasoning of others.
MP.4. Model with mathematics.

- MP.5. Use appropriate tools strategically.
MP.6. Attend to precision.
MP.7. Look for and make use of structure.
MP.8. Look for and express regularity in repeated reasoning.

Cluster: Understand place value.

Standards

- KY.2.NBT.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens and ones.
 Understand the following as special cases:
- 100 can be thought of as a bundle of ten tens — called a “hundred.”
 - 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).

MP.2, MP.7

KY.2.NBT.2 Count forwards and backwards within 1000; skip-count by 5s, 10s and 100s.

MP.8, MP.1, MP.6

KY.2.NBT.3 Read and write numbers to 1000 using base-ten numerals, number names and expanded form.

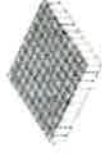
MP.7

KY.2.NBT.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.

MP.2, MP.6

Clarifications

Students unitize or understand 10 tens as a group or unit called 1 hundred.



is the same as



6 hundreds are the same as 600

Coherence [KY.1.NBT.2](#) → [KY.2.NBT.1](#) → [KY.3.NBT.1](#)

Students start at various numbers to skip-count. Some use tools such as base ten blocks, hundreds charts, number lines and money.

Coherence [KY.1.NBT.1](#) → [KY.2.NBT.2](#)

739, seven hundred thirty-nine, $700 + 30 + 9$

Coherence [KY.1.NBT.1](#) → [KY.2.NBT.3](#)

Students use base ten blocks, hundred charts and/or number lines when comparing two three-digit numbers using the symbols $<$, $>$, and $=$.

Coherence [KY.1.NBT.3](#) → [KY.2.NBT.4](#)

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Attending to the Standards for Mathematical Practice

Students use concrete, groupable objects (counters in cups, unifix cubes in stacks) to show that 10 tens make one hundred and 10 hundreds make one thousand (**MP.5**, **MP.7**). Using place value structure, students build a physical model of a number and then practice saying it, eventually moving to written form (**MP.7**). When comparing 2 three-digit numbers, students interpret the inherent value of each digit (234 is two hundreds, three tens and 4 ones) and determine which number is larger (**MP.7**). In building numbers, students see the equivalence of numbers written in standard form and expanded form (**MP.7**). In addition, they reason about which number is greater using their place value understanding (**MP.2**).

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Numbers and Operations in Base Ten
Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
- [MP.2.](#) Reason abstractly and quantitatively.
- [MP.3.](#) Construct viable arguments and critique the reasoning of others.
- [MP.4.](#) Model with mathematics.

- [MP.5.](#) Use appropriate tools strategically.
- [MP.6.](#) Attend to precision.
- [MP.7.](#) Look for and make use of structure.
- [MP.8.](#) Look for and express regularity in repeated reasoning.

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

Standards

KY.2.NBT.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations and/or the relationship between addition and subtraction.

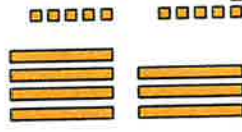
MP.2, MP.8

Clarifications

Students solve addition and subtraction tasks (with sums and differences within 100) efficiently, accurately, flexibly and appropriately. Being fluent means students choose flexibly among methods and strategies to solve contextual and mathematical problems, they understand and explain their approaches and they produce accurate answers efficiently.

Note: Reaching fluency is an ongoing process that will take much of the year. Students are not expected to use an algorithm for addition and subtraction until grade 4.

$45 + 36 =$



Students can solve this problem many ways.

Student one counted the tens first, so 10, 20, 30, 40, 50, 60, 70. Then they counted the ones, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81. So $45+36=81$

Student two broke 36 into $30+1+5$. Then gave 5 from 36 to the 45 to make 50 because 50 is a friendly number. Then added $30+50$ to make 80. Finally added 1 to 80 to get 81. So $45+36=81$.

Coherence [KY.1.NBT.4](#) → [KY.2.NBT.5](#) → [KY.3.NBT.2](#)

Standards	Clarifications
<p>KY.2.NBT.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.</p> <p>MP.2, MP.7</p>	<p>Note: Students are not expected to know a standard algorithm until grade 4.</p> <p>Coherence KY.1.OA.2 → KY.2.NBT.6</p>
<p>KY.2.NBT.7 Add and subtract within 1000.</p> <p>a. Represent and solve addition and subtraction problems using...</p> <ul style="list-style-type: none"> • concrete models or drawings; • strategies based on place value; • properties of operations; • the relationship between addition and subtraction and; • relate drawings and strategies to expressions or equations. <p>b. 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.</p> <p>MP.1, MP.5</p>	<p>Students model with concrete tools to build on previous place value understandings. For example, students can see the relationship of addition and subtraction by counting up from 87 to get to 243 and realize that there is a difference of 156.</p> <p>Coherence KY.1.NBT.4 → KY.2.NBT.7 → KY.3.NBT.2</p>
<p>KY.2.NBT.8 Mentally add 10 or 100 to a given number 100–900 and mentally subtract 10 or 100 from a given number 100–900.</p> <p>MP.7, MP.8</p>	<p>Students use a variety of tools and strategies to add or subtract 10 or 100 from a three-digit number in the range of 100–900.</p> <p>KY.1.NBT.6</p> <p>Coherence KY.1.NBT.5 → KY.2.NBT.8 → KY.3.NBT.2</p>
<p>KY.2.NBT.9 Explain why addition and subtraction strategies work, using place value and the properties of operations.</p> <p>MP.3, MP.7</p>	<p>Students support explanations with drawings and/or objects built on place value and properties of operations.</p> <p>KY.1.OA.4</p> <p>Coherence KY.1.OA.3 → KY.2.NBT.9</p>
<p>Attending to the Standards for Mathematical Practice</p> <p>Students notice their knowledge of tens and ones can be used to solve addition problems. For example, decomposing $24 + 42$ into tens and ones: $20 + 40 + 4 + 2$ (MP.8). For other problems, students choose to use a counting up/back strategy. For $57 - 18$, students use an open number line and jump back 20 (to 37) and then up 2 (to 39). Students select among their repertoire of strategies based on the numbers in the problem (MP.1, MP.2). These strategies are extended to adding strings of numbers as well as larger numbers. Students explain their strategies, critique the strategies shared by others and reflect on which strategies are efficient for the problem posed (MP.3). Students notice when numbers are added or subtracted in the base-ten system, like units are added or subtracted (ones are added to ones, tens to tens, hundreds to hundreds) and use this pattern to solve problems mentally (MP.8).</p> <p><i>The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.</i></p>	

Measurement and Data

Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
- [MP.2.](#) Reason abstractly and quantitatively.
- [MP.3.](#) Construct viable arguments and critique the reasoning of others.
- [MP.4.](#) Model with mathematics.

- [MP.5.](#) Use appropriate tools strategically.
- [MP.6.](#) Attend to precision.
- [MP.7.](#) Look for and make use of structure.
- [MP.8.](#) Look for and express regularity in repeated reasoning.

Cluster: Measure and estimate lengths in standard unit.

Standards

- [KY.2.MD.1](#) Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks and measuring tapes.
MP.5, MP.6
- [KY.2.MD.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.
MP.3, MP.5

Clarifications

Students are exposed to different situations where they choose the appropriate tool(s) to measure.

Coherence [KY.1.MD.2](#) → [KY.2.MD.1](#) → [KY.3.MD.5](#)

Students measure an object using two different units and describe how the two measurements relate to the size of the unit chosen. (Students measure a door in inches and then in feet. Students relate the size and amount of each unit to discover more inches than feet are needed to measure the door.)

Coherence [KY.1.MD.2](#) → [KY.2.MD.2](#)

Students understand estimates are not exact answers or unreasonable guesses. Estimates are based on prior knowledge and the ability to reason about the appropriateness of their estimates.

Coherence [KY.1.MD.2](#) → [KY.2.MD.3](#)

Students measure using appropriate tools and standard unit lengths to find the difference between the lengths.

Coherence [KY.2.MD.3](#) → [KY.2.MD.4](#) → [KY.2.MD.5](#)

- [KY.2.MD.3](#) Estimate lengths using units of inches, feet, yards, centimeters and meters.
MP.2, MP.6
- [KY.2.MD.4](#) Measure to determine how much longer one object is than another, expressing the length difference in terms of either a customary or metric standard length unit.
MP.5, MP.6

Attending to the Standards for Mathematical Practice

Students choose appropriate units and the related tools they need in order to measure (**MP.5**). For example, if asked to measure the length of the hallway, students select a meter or yard as an appropriate unit and seek out a meter stick, yardstick or trundle wheel. In addition, students measure objects using different units within the same system, such as meters and centimeters, record the measurements in a table and notice relationships (**MP.8**). Students notice it takes more of a smaller unit. For example, explaining a desk measured 2 feet because a foot is a longer unit, but measures

24 inches because an inch is smaller unit **(MP.3)**. Students accurately estimate lengths and use these estimates to determine if a measurement is reasonable, as well as to compare the lengths of objects **(MP.2)**.

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Measurement and Data

Standards for Mathematical Practice

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.

- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

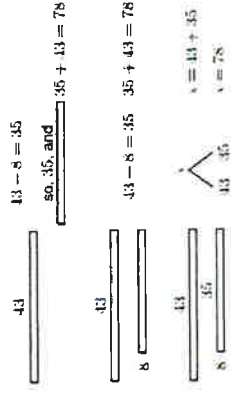
Cluster: Relate addition and subtraction to length.

Standards

KY.2.MD.5 Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units by using drawings and equations with a symbol for the unknown number to represent the problem.
MP.1, MP.4

Clarifications

Students use concrete models and/or representations such as drawings of rulers to make sense of adding and subtracting word problems involving length. For example, a girl had a 43 cm section of a necklace and another section that was 8 cm shorter than the first. How long would the necklace be if she combined the two sections?

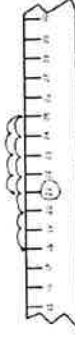


Coherence KY.2.MD.5 → KY.3.MD.2

KY.2.MD.6 Represent whole numbers as lengths from 0 on a number line with equally spaced points corresponding to the numbers 0, 1, 2, ... and represent whole-number sums and differences within 100 on a number line.
MP.3, MP.4

Students show their thinking of adding and subtracting quantities using a number line. For example, a grasshopper jumped 7 cm forward and 4 cm back and then stopped. If the grasshopper started at 18 cm, where did the grasshopper stop?

$18 + 7 = 25$ $25 - 4 = 21$ The grasshopper stopped at 21 cm.



Coherence KY.2.MD.6 → KY.3.NF.2

Attending to the Standards for Mathematical Practice

Students make sense of linear-focused story problems, using number lines and bar diagrams to make sense of the situation (**MP.1, MP.4**). Students use the number line as a reasoning strategy to add or subtract and explain their reasoning. In addition, they listen to other students' ways to use the number line to solve problems and compare strategies with a focus on which strategies are efficient for the given problem (**MP.3**).

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Measurement and Data

Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
[MP.2.](#) Reason abstractly and quantitatively.
[MP.3.](#) Construct viable arguments and critique the reasoning of others.
[MP.4.](#) Model with mathematics.

- [MP.5.](#) Use appropriate tools strategically.
[MP.6.](#) Attend to precision.
[MP.7.](#) Look for and make use of structure.
[MP.8.](#) Look for and express regularity in repeated reasoning.

Cluster: Work with time and money.

Standards

KY.2.MD.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.

MP.5, MP.6

KY.2.MD.8 Solve word problems with adding and subtracting within 100, (not using dollars and cents simultaneously) using the \$ and ¢ symbols appropriately (not including decimal notation).

MP.1, MP.5

Clarifications

Students orally tell and write the time from both types of clocks to the nearest five minutes. Realizing that a clock can be seen as a number line.

[KY.2.NBT.2](#)

Coherence [KY.1.MD.3](#) → [KY.2.MD.7](#) → [KY.3.MD.1](#)

Students add or subtract two coin values or dollar values, but not both in the same problem.

- For example, if you have 6 dimes and 3 pennies, how many cents do you have? Students would understand 6 dimes is equal to 60 cents and 3 pennies is equal to 3 cents. Together, they would total 63 cents.
- If Mary had \$31 and Tommy gave her \$22 for her birthday, how much money does Mary have now? $\$31 + \$22 = \$53$

Note: Students are not introduced to decimals until grade 4.

[KY.2.OA.1](#)

Coherence [KY.1.MD.3](#) → [KY.2.MD.8](#)

Attending to the Standards for Mathematical Practice

Students connect skip-counting by fives and five minute intervals on the clock (**MP.8**). Students attend to precision as they notice how minutes and hours are determined on analog and digital clocks, as well as whether to label the time as a.m. or p.m. (**MP.6**). Students makes sense of authentic problems involving money, using actual coins or representations of coins and use these coins to solve the problem (**MP.1**). As students solve such problems, they write equations to represent the situation, using units (\$) or (¢) to correctly communicate the quantities (**MP.4**).

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Measurement and Data

Standards for Mathematical Practice

- [MP.1.](#) Make sense of problems and persevere in solving them.
- [MP.2.](#) Reason abstractly and quantitatively.
- [MP.3.](#) Construct viable arguments and critique the reasoning of others.
- [MP.4.](#) Model with mathematics.

- [MP.5.](#) Use appropriate tools strategically.
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- [MP.7.](#) Look for and make use of structure.
- [MP.8.](#) Look for and express regularity in repeated reasoning.

Cluster: Understand and apply the statistics process.

Standards

- KY.2.MD.9 Investigate questions involving measurements.
- a. Identify a statistical question focused on measurements.
 - b. Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object.
 - c. Show the measurements by making a dot plot, where the horizontal scale is marked off in whole-number units.

MP.1, MP.6

Clarifications

Students gather information from a statistical question, generate measurements of objects from the nearest whole-number unit and create a dot plot like the one below. For example, as a class, how long are our feet with our shoes on?



5 in. 6 in. 7 in. 8 in. 9 in. 10 in.

Coherence [KY.2.MD.9](#) → [KY.3.MD.4](#)

KY.2.MD.10 Create a pictograph 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 problems using information presented in a bar graph.

MP.2, MP.6

Attending to the Standards for Mathematical Practice

Students understand the purpose of creating a graph is to make sense of data related to a question (**MP.1**). They look at the data they have collected and decide how to set up a graph, labeling it so anyone can understand what the data represents (**MP.6**). Students select a graph that makes sense, recognizing a dot plot is for numeric data while bar and pictographs are for categorical data (**MP.1**). Students analyze the data in their graphs, noticing relationships such as how many more fall in one category than another and relating those observations back to the original question they posed (**MP.2**).

See [Table 1 in Appendix A](#).

Coherence [KY.1.MD.4](#) → [KY.2.MD.10](#) → [KY.3.MD.3](#)

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Geometry

Standards for Mathematical Practice

- MP.1. Make sense of problems and persevere in solving them.
- MP.2. Reason abstractly and quantitatively.
- MP.3. Construct viable arguments and critique the reasoning of others.
- MP.4. Model with mathematics.

- MP.5. Use appropriate tools strategically.
- MP.6. Attend to precision.
- MP.7. Look for and make use of structure.
- MP.8. Look for and express regularity in repeated reasoning.

Cluster: Reason with shapes and their attributes.

Standards

KY.2.G.1 Recognize and draw shapes having specified attributes, such as a given number of angles or sides. Identify triangles, quadrilaterals, pentagons, hexagons and cubes (identify number of faces).

MP.4, MP.7

KY.2.G.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

MP.6, MP.8

KY.2.G.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.

MP.2, MP.3

Clarifications

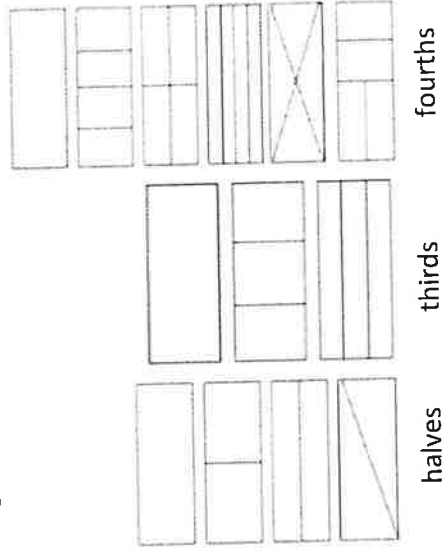
Sizes are compared directly or visually, not compared by measuring.

Coherence [KY.1.G.1](#) → [KY.2.G.1](#) → [KY.3.G.1](#)

The rectangle should not be divided up into anything larger than 5 rows and 5 columns to correlate with KY.2.OA.4.

Coherence [KY.2.G.2](#) → [KY.3.MD.6](#)

Students explore rectangles and circles being partitioned in multiple ways to recognize that equal shares may be different shapes within the same whole.



Coherence [KY.1.G.3](#) → [KY.2.G.3](#) → [KY.3.NF.1](#)

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.

Attending to the Standards for Mathematical Practice

Students describe attributes they notice for a group of shapes, such as sides and angles for 2-dimensional shapes and number of faces for 3-dimensional shapes (**MP.6**). They explain what characteristics are true for all shapes following in the same category (for example, attributes that are true for all triangles), as well as attributes true for some triangles, but not all triangles. Students use tiles to equally cover the rectangle and use repeated addition to determine the number of unit squares in the rectangle, noticing the pattern of equal rows (groups) (**MP.8**). Students partition circles and rectangles into up to 4 equal parts. Students use a variety of tools to show halves, fourths and thirds (**MP.5**). They partition rectangles into thirds and fourths in different ways, showing and explaining the parts do not need to be the same shape, only the same size (**MP.2, MP.3**). Conversely, students identify shapes that are incorrectly partitioned, with the sections not being the same size.

The identified mathematical practices, coherence connections and clarifications are possible suggestions; however, they are not the only pathways.