



Gateway School District
Curriculum Map

Elementary Schools (K-4)

Cleveland Steward Elementary
5000 Gateway Campus Blvd.
Monroeville, PA 15146
412-373-5874

Ramsey Elementary
2200 Ramsey Road
Monroeville, PA 15146
412-373-5856

Evergreen Elementary
3831 Evergreen Drive
Monroeville, PA 15146
412-373-5842

University Park Elementary
320 Noel Drive
Monroeville, PA 15146
412-327-4113

Curriculum Map: Elementary – Gr. 1 Mathematics

Course: Math Grade 1



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Unit 1: Addition and Subtraction of Numbers to 10 and Fluency

Subject: Mathematics

Brief Summary of Unit

Students work to build fluency with addition and subtraction facts—a major gateway to later grades. They begin right away with the intention of energetically practicing the entire year. The next major stepping-stone in understanding place value is learning to group “10 ones” as a single unit: 1 ten.

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

1. Use addition and subtraction within 10 to model and solve word problems using objects, drawings, and equations.
2. Solve word problems with unknowns in different positions.
3. Add and subtract within 20, demonstrating fluency for addition and subtraction within 10.
4. Use addition and subtraction within 20 to solve word problems by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
5. Add and subtract within 20. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.
6. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

1. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.
2. Numerical quantities, calculations, and measurements can be estimated or

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

1. How are relationships represented mathematically?
2. How can expressions, equations, and inequalities be used to quantify, solve,

analyzed by using appropriate strategies and tools.

3. Data can be modeled and used to make inferences.
4. Geometric relationships can be described, analyzed, and classified based on spatial reasoning and/or visualization.
5. Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer questions.
6. Mathematical relationships among numbers can be represented, compared, and communicated.
7. Measurement attributes can be quantified and estimated using customary and non-customary units of measure.
8. Patterns exhibit relationships that can be extended, described, and generalized.

model and/or analyze mathematical situations?

3. What does it mean to estimate or analyze numerical quantities?
4. When is it appropriate to estimate versus calculate?
5. What makes a tool and/or strategy appropriate for a given task?
6. How does the type of data influence the choice of display?
7. How can probability and data analysis be used to make predictions?
8. How are spatial relationships, including shape and dimension, used to draw, construct, model, and represent real situations or solve problems?
9. How can the application of the attributes of geometric shapes support mathematical reasoning and problem solving?
10. How can geometric properties and theorems be used to describe, model, and analyze situations?
11. How can data be organized and represented to provide insight into the relationship between quantities?
12. How is mathematics used to quantify, compare, represent, and model numbers?
13. How can mathematics support effective communication?
14. Why does "what" we measure influence "how" we measure?
15. In what ways are the mathematical attributes of objects or processes measured, calculated, and/or interpreted?
16. How precise do measurements and calculations need to be?
17. How can patterns be used to describe relationships in mathematical situations?
18. How can recognizing repetition or regularity assist in solving problems more efficiently?

Stage Two - Assessment Evidence

Performance Tasks: What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

Other Evidence: (quizzes, tests and so on)

Stage Three - Learning Plan

Unit 2: Place Value, Comparison, Addition and Subtraction of Numbers to 20

Subject: Mathematics

Brief Summary of Unit

Students practice grouping into tens and ones by adding and subtracting numbers to 20. Work begins slowly by modeling “adding and subtracting across a ten” in word problems, with equations, and as part of fluency. Solutions like that shown to the right for $8 + 5$ reinforce the need to “make 10.” Learning to “complete a unit” empowers students in later grades to understand “renaming” in the addition algorithm, to add 298 and 35 mentally (i.e., $298 + 2 + 33$), and to add measurements like 4 m, 80 cm, and 50 cm. [Grd 1 mod 2 pic.png](#)

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

1. Use addition and subtraction within 20 to solve word problems.
2. Use the concept of tens and ones to represent and compare two-digit numbers.
3. Count by ones and tens beginning with numbers other than 1.
4. Solve word problems that call for the addition of three whole numbers whose sum is less than or equal to 20.
5. Count to 120, starting at any number less than 120.
6. Read and write numerals up to 120 and represent a number of objects with a written numeral.
7. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
8. 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. Relate the strategy to a written method and explain the reasoning used.
9. Subtract multiples of 10 in the range 10-90, using concrete models or drawings. Relate the strategy to a written method and explain the reasoning used.
10. Add and subtract within 20. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.
11. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.
12. Apply properties of operations as strategies to add and subtract (commutative property of addition; associative property of addition).
13. Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

Stage Two - Assessment Evidence

Performance Tasks:What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

Other Evidence:(quizzes, tests and so on)

Stage Three - Learning Plan

Unit 3: Ordering/Expressing Length Measurements as Numbers and Telling Time

Subject: Mathematics

Brief Summary of Unit

Students measure lengths indirectly and iterate length units, giving them time and opportunities to practice and internalize “making a 10” during daily fluency activities. Students are introduced to the clock and will tell time to the nearest hour and half hour. Introducing measurement in the first half of the academic year also allows for an increased variety of word problems that can be given throughout the year.

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

- 1.Measure length with nonstandard units.
- 2.Measure the length of an object by comparing it to another object.
- 3.Order objects according to their length.
- 4.Tell time to the nearest hour and half hour using analog and digital clocks.
- 5.Use the make a 10 strategy to increase fluency.
- 6.Add and subtract within 20. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.
- 7.Order three objects by length; compare the lengths of two objects indirectly by using a third object.
- 8.Use standard and non-standard units of measure to express the length of an objects a whole number of length units.
- 9.Tell and write time in hours and half hours using analog and digital clocks.

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

Stage Two - Assessment Evidence

Performance Tasks:What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

Other Evidence:(quizzes, tests and so on)

Stage Three - Learning Plan

Unit 4: Place Value, Comparison, Addition and Subtraction of Numbers to 40

Subject: Mathematics

Brief Summary of Unit

Students understand place value. Addition and subtraction to 40 rests on firmly establishing a "ten" as a unit that can be counted. In earlier modules, students loosely grouped 10 objects to make a ten. Students now transition to conceptualizing that ten as a single unit (using 10 linker cubes stuck together, for example). Students begin to see a problem like $23 + 6$ as an opportunity to push the "2 tens" in 23 over to the side and concentrate on the familiar addition problem $3 + 6$.

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

1. Decompose numbers into tens and ones.
2. Represent and solve addition and subtraction problems to 40 using concrete objects, drawings, and equations.
3. Gather and represent data in tables/charts.
4. Use data in tables/charts to solve problems.
5. Represent and solve different types of addition and subtraction word problems.
6. Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
7. 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. Relate the strategy to a written method and explain the reasoning used.
8. Subtract multiples of 10 in the range 10-90, using concrete models or drawings. Relate the strategy to a written method and explain the reasoning used.
9. Use addition and subtraction within 20 to solve word problems by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
10. Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.
11. Add and subtract within 20. Use strategies such as counting on; making ten; decomposing a number leading to a ten; using the relationship between addition and subtraction; and creating equivalent but easier or known sums.
12. Organize, represent, and interpret data with up to three categories. Ask and answer questions about the data.

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

Stage Two - Assessment Evidence

Performance Tasks:What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards

met?

Other Evidence:(quizzes, tests and so on)

Stage Three - Learning Plan

Unit 5: Identify, Compose, and Partition Shapes

Subject: Mathematics

Brief Summary of Unit

Students think about attributes of shapes and practice composing and decomposing geometric shapes. They also practice fluency with addition and subtraction within 40 (from Module 4). Thus, this module provides important "internalization time" for students between two intense number-based modules. The module placement also gives more spatially-oriented students the opportunity to build their confidence before they return to arithmetic.

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

1. Identify two- and three-dimensional shapes.
2. Compose geometric shapes from two or more smaller shapes.
3. Decompose geometric shapes into halves and quarters.
4. Identify attributes of geometric shapes.
5. Increase fluency with addition and subtraction.
6. Compose two and three-dimensional shapes and distinguish between attributes.
7. Build and draw shapes to possess attributes.
8. Partition circles and rectangles into two and four equal shares. Understand that decomposing into more equal shares creates smaller shares.

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

Stage Two - Assessment Evidence

Performance Tasks:What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

Other Evidence:(quizzes, tests and so on)

Stage Three - Learning Plan

Unit 6: Place Value, Comparison, Addition and Subtraction of Numbers to 100

Subject: Mathematics

Brief Summary of Unit

Students focus on "adding and subtracting within 100". Here, the new level of complexity is to introduce the addition and subtraction algorithms, building off the place value understanding and mental math strategies that were introduced in earlier modules. Students explore the algorithms by using simple examples and the familiar units of 10 made out of linker cubes.

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

- 1.Represent and solve addition and subtraction problems within 100, including different types of word problems.
- 2.Use place value concepts and properties of operations to find sums and differences within 100.
- 3.Increase fluency within 20.
- 4.Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.
- 5.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. Relate the strategy to a written method and explain the reasoning used.
- 6.Subtract multiples of 10 in the range 10-90, using concrete models or drawings. Relate the strategy to a written method and explain the reasoning used.
- 7.Apply properties of operations as strategies to add and subtract (commutative property of addition; associative property of addition).
- 8.Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that makes 10 when added to 8.

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

Stage Two - Assessment Evidence

Performance Tasks:What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

Other Evidence:(quizzes, tests and so on)

Stage Three - Learning Plan

Unit Summary: Gr. 1 - Standards for Mathematical Practice

Subject: Mathematics

Brief Summary of Unit

Standards for Mathematical Practice

[Mathematical Practices](#) resource page on SAS

Unit 1:

- 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# 5. Use appropriate tools strategically
- MP# 6. Attend to precision

Unit 2:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 5. Use appropriate tools strategically
- MP# 6. Attend to precision

Unit 3:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 5. Use appropriate tools strategically
- MP# 6. Attend to precision

Unit 4:

- 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# 5. Use appropriate tools strategically
- MP# 6. Attend to precision
- MP# 7. Look for and make use of structure

Unit 5:

- MP# 1. Make sense of problems and persevere in solving them
- MP# 3. Construct viable arguments and critique the reasoning of others
- MP# 5. Use appropriate tools strategically
- MP# 6. Attend to precision

Unit 6:

- 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# 8. Look for and express regularity in repeated reasoning

Stage One - Desired Results

Established Goals:(Standards of Learning, content standards)

Understandings:What will students understand (about what big ideas) as a result of the unit? "Students will understand that..."

Essential Questions:What arguable, recurring, and thought-provoking questions will guide inquiry and point toward the big ideas of the unit?

Stage Two - Assessment Evidence

Performance Tasks:What evidence will be collected to determine whether or not the understandings have been developed, the knowledge and skill attained, and the state standards met?

Other Evidence:(quizzes, tests and so on)

Stage Three - Learning Plan