

1st Grade Math

Pacing Guide and Unpacked Standards



**GROVEPORT
MADISON
SCHOOLS**

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Groveport Madison Math Pacing Guide - Grade 1

1st	Operations & Algebraic Thinking	Number & Operations in Base Ten	Measurement & Data	Geometry	Standards for Mathematical Practice
1st 9wks	<p>1.OA.1 - Solve word problems using addition & subtraction within 20</p> <p>1.OA.3 - Apply addition & subtraction properties</p> <p>1.OA.4 - Apply addition & subtraction relationships with unknown addends</p> <p>1.OA.5 - Add & subtract within 20</p> <p>1.OA.6 - Add & subtract within 20 with fluency to 10 and using strategies</p> <p>1.OA.8 - Addition & subtraction equations with unknown whole number</p>				<p>MP.1 - Make sense of problems and persevere in solving them</p> <p>MP.2 - Reason abstractly and quantitatively</p> <p>MP.3 - Construct viable arguments and critique the reasoning of others</p> <p>MP.4 - Model with mathematics</p> <p>MP.5 - Use appropriate tools strategically</p> <p>MP.6 - Attend to precision</p>
2nd 9wks	<p>1.OA.1 - Solve word problems using addition & subtraction within 20</p> <p>1.OA.2 - Solve problems using addition & subtraction with sums of 20</p> <p>1.OA.6 - Add & subtract within 20 with fluency to 10 and using strategies</p> <p>1.OA.7 - Addition & subtraction equations and determining true or false</p> <p>1.OA.8 - Addition & subtraction equations with unknown whole number</p>	<p>1.NBT.2(a,b) - Understand place value to the tens place</p>	<p>1.MD.4 - Organize, represent and interpret data</p>		<p>MP.7 - Look for and make use of structure</p> <p>MP.8 - Look for and express regularity in repeated reasoning</p>

Groveport Madison Math Pacing Guide - Grade 1

1st	Operations & Algebraic Thinking	Number & Operations in Base Ten	Measurement & Data	Geometry	Standards for Mathematical Practice
3rd 9wks		<p>1.NBT.1 - Extend counting sequence to 120</p> <p>1.NBT.2(a,c) - Understand place value to the tens place</p> <p>1.NBT.3 - Comparing two-digit numbers based on place value</p> <p>1.NBT.4 - Use place value and properties to add & subtract within 100 and record with numerical method</p> <p>1.NBT.5 - Use place value and properties to mentally add/subtract 10</p> <p>1.NBT.6 - Use place value and properties to subtract multiples of 10</p>	<p>1.MD.3 - Tell and write time in hours and half-hours and identify pennies and dimes by name and value</p>		<p>MP.1 - Make sense of problems and persevere in solving them</p> <p>MP.2 - Reason abstractly and quantitatively</p> <p>MP.3 - Construct viable arguments and critique the reasoning of others</p> <p>MP.4 - Model with mathematics</p> <p>MP.5 - Use appropriate tools strategically</p> <p>MP.6 - Attend to precision</p> <p>MP.7 - Look for and make use of structure</p> <p>MP.8 - Look for and express regularity in repeated reasoning</p>
4th 9wks			<p>1.MD.1 - Order and compare three objects by length</p> <p>1.MD.2 - Measure length of object as a whole number using smaller objects</p>	<p>1.G.1 - Distinguish shapes by attributes</p> <p>1.G.2 - Compose 2D and 3D shapes to create a composite shape and new shapes</p> <p>1.G.3 - Divide shapes into two and four equal parts and describe in real-world contexts</p>	

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.1

Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

Common Misconceptions

Many children misunderstand the meaning of the equal sign. The equal sign means "is the same as" but most primary students believe the equal sign tells you that the "answer is coming up" to the right of the equal sign. This misconception is over-generalized by only seeing examples of number sentences with an operation to the left of the equal sign and the answer on the right. First graders need to see equations written multiple ways, for example $5 + 7 = 12$ and $12 = 5 + 7$.

Vocabulary

- | | |
|------------|--------------|
| ▪ Number | ▪ Take Away |
| ▪ Part | ▪ Subtract |
| ▪ Add | ▪ Difference |
| ▪ Whole | ▪ Minus - |
| ▪ Equals = | ▪ Solve |
| ▪ Sum | ▪ Compare |
| ▪ Plus + | ▪ Represent |
-
- Addition Number Sentence
 - Subtraction Number Sentence

Essential Questions

- How can I represent this addition or subtraction problem?
- What strategy will help me best to solve this problem?
- Why would another strategy not help me best solve this problem?

Essential Skills

- I can interpret situations to solve word problems with unknowns in all positions within 20 using addition and subtraction.
- I can determine appropriate representations for solving word problems involving different situations using addition and subtraction within 20.
- I can solve word problems within 20 using addition and subtraction

Question

Sam saw seven birds in a tree.
Two of the birds flew away.
Write an equation to find how many birds are left in the tree.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Collaborate in small groups to develop problem-solving strategies using a variety of models such as drawings, words, and equations with symbols for the unknown numbers to find the solutions. Additionally students need the opportunity to explain, write and reflect on their problem-solving strategies. The situations for the addition and subtraction story problems should involve sums and differences less than or equal to 20 using the numbers 0 to 20. They need to align with the 12 situations found in Table 1 of the Common Core State Standards (CCSS) for Mathematics.

Students need the opportunity of writing and solving story problems involving three addends with a sum that is less than or equal to 20. For example, each student writes or draws a problem in which three whole things are being combined. The students exchange their problems with other students, solving them individually and then discussing their models and solution strategies. Now both students work together to solve each problem using a different strategy.

K.OA.2 (Prior Grade Standard)

Solve addition and subtraction word problems (written or oral), and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

2.OA.1 (Future Grade Standard)

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

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.2

Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem. Drawings

need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

Common Misconceptions

Many students think that it is valid to assume that a key word or phrase in a problem suggests the same operation will be used every time.

Vocabulary

- Doubles
- Ten
- Solve
- Represent

Essential Questions

How can I represent this addition or subtraction problem?

What strategy will help me best to solve this problem?

Why would another strategy not help me best solve this problem?

Essential Skills

I know how to add three whole numbers whose sum is less than or equal to 20.

I can solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20.

Question

Pam has 3 balls, John has 2 balls and Sue 5 balls.
If they put them altogether, how many will there be?

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Students need the opportunity of writing and solving story problems involving three addends with a sum that is less than or equal to 20. For example, each student writes or draws a problem in which three whole things are being combined. The students exchange their problems with other students, solving them individually and then discussing their models and solution strategies. Now both students work together to solve each problem using a different strategy.

K.OA.2 (Prior Grade Standard)

Solve addition and subtraction word problems (written or oral), and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

2.OA.1 (Future Grade Standard)

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

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.3

Apply properties of operations as strategies to add and subtract. For example, if $8 + 3 = 11$ is known, then $3 + 8 = 11$ is also known (Commutative Property of Addition); to add $2 + 6 + 4$, the second two numbers can be added to make a ten, so $2 + 6 + 4 = 2 + 10 = 12$ (Associative Property of Addition). Students need not use

formal terms for these properties.

Common Misconceptions

A common misconception is that the commutative property applies to subtraction. After students have discovered and applied the commutative property for addition, ask them to investigate whether this property works for subtraction. Have students share and discuss their reasoning and guide them to conclude that the commutative property does not apply to subtraction.

Vocabulary

- Zero
- Add
- Apply

Essential Questions

- What is another way to show this addition problem?
- How can solving a problem a different way make it easier to do?

Essential Skills

- I can define properties of operation strategies.
- I can apply properties of operation as strategies to solve addition and subtraction problems.

Examples

If you know $3 + 8 = 11$, then we also know that $8 + 3 = 11$.
We can solve $2 + 6 + 4$ in two ways. By adding the $2 + 6$ first ($8 + 4$) or adding the $6 + 4$ first ($2 + 10$).

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

One focus in this cluster is for students to discover and apply the commutative and associative properties as strategies for solving addition problems. Students do not need to learn the names for these properties. It is important for students to share, discuss and compare their strategies as a class. The second focus is using the relationship between addition and subtraction as a strategy to solve unknown-addend problems. Students naturally connect counting on to solving subtraction problems. For the problem " $15 - 7 = ?$ " they think about the number they have to add to 7 to get to 15. First graders should be working with sums and differences less than or equal to 20 using the numbers 0 to 20.

Students will use manipulatives present among various workplaces (e.g., pencils, paper clips, rulers) to show the relationship between addition and subtraction.

K.OA.1 (Prior Grade Standard)

Represent addition and subtraction with objects, fingers, mental images, drawings, sounds such as claps, acting out situations, verbal explanations, expressions, or equations. Drawings need not show details, but should show the mathematics in the problem. (This applies wherever drawings are mentioned in the Standards.)

2.NBT.5 (Future Grade Standard)

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

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.4

Understand subtraction as an unknown-addend problem. For example, subtract $10 - 8$ by finding the number that make 10 when added to 8.

Common Misconceptions

Many students do not realize that you can count up to solve subtraction by finding the *difference* between two numbers.

Vocabulary

- Addends
- Missing Addends
- Apply
- Solve

Essential Questions

- What is another way to show this subtraction problem?
- How can addition help me to solve this subtraction problem?

Essential Skills

- I can identify the unknown in a subtraction problem.
- I can solve subtraction problems to find the missing addend.
- I can explain the relationship of addition and subtraction.

Example

To solve $10 - 8$, think $8 + ? = 10$.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Provide multiple opportunities for students to study the relationship between addition and subtraction in a variety of ways, including games, modeling and real-world situations. Students need to understand that addition and subtraction are related, and that subtraction can be used to solve problems where the addend is unknown.

Students will use manipulatives present among various workplaces (e.g., pencils, paper clips, rulers) to show the relationship between addition and subtraction. Host a career speaker in the classroom to discuss how addition and subtraction are essential to their work (e.g., logistics, accounting, health science).

K.OA.4 (Prior Grade Standard)

For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or, when appropriate, an equation.

2.OA.2 (Future Grade Standard)

Fluently add and subtract within 20 using mental strategies. (Note: See standard 1.OA.6 for a list of mental strategies). By end of Grade 2, know from memory all sums of two one-digit numbers

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.5

Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).

Common Misconceptions

Many students do not realize that you can count up to solve subtraction by finding the *difference* between two numbers.

Students may not be offered counting tools, number grids, number lines, which are a *necessary part* of understanding this relationship.

Vocabulary

- Count On
- Count Back
- Difference
- Number Line
- Explain

Essential Questions

Why does counting help me add and subtract?

Essential Skills

I know how to count on and count back.
I can explain how counting on and counting back relate to addition and subtraction.

Example

To solve $5 + 2$, think "I will start at 5 and count 6, 7 to get the answer."

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Provide multiple and varied experiences that will help students develop a strong sense of numbers based on comprehension – not rules and procedures. Number sense is a blend of comprehension of numbers and operations and fluency with numbers and operations. Students gain computational fluency (using efficient and accurate methods for computing) as they come to understand the role and meaning of arithmetic operations in number systems.

K.OA.2 (Prior Grade Standard)

Solve addition and subtraction word problems (written or oral), and add and subtract within 10 by using objects or drawings to represent the problem.

2.OA.2 (Future Grade Standard)

Fluently add and subtract within 20 using mental strategies. (Note: See standard 1.OA.6 for a list of mental strategies). By end of Grade 2, know from memory all sums of two one-digit numbers

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.6

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

Common Misconceptions
Students ignore combinations they know to solve more difficult problems

Vocabulary

- Equals =
- Sum
- Plus +
- In All
- Same
- Part
- Whole
- Minus -
- Subtract
- Difference
- Count On
- Number Line
- Doubles
- Compare
- Fact Family
- Doubles Plus 1
- Subtraction Number Sentence
- Doubles Minus 1

Essential Questions

How can math facts help me solve problems?

Which strategy will help me solve the problem the best?

Essential Skills

- I can add fluently within 20.
- I can subtract fluently within 20.
- I can apply strategies to add and subtract within 20.

Examples

$8 + 6 = 8 + 2 + 4 = 10 + 4 = 14$; $13 - 4 = 13 - 3 - 1 = 10 - 1 = 9$); knowing that $8 + 4 = 12$, one knows $12 - 8 = 4$.
Without any external assistance and without mentally counting, they can recite the addition and subtraction facts within 10.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Provide numerous opportunities for students to use the counting on strategy for solving addition and subtraction problems. For example, provide a ten frame showing 5 colored dots in one row. Students add 3 dots of a different color to the next row and write $5 + 3$. Ask students to count on from 5 to find the total number of dots. Then have them add an equal sign and the number eight to $5 + 3$ to form the equation $5 + 3 = 8$. Ask students to verbally explain how counting on helps to add one part to another part to find a sum. Discourage students from inventing a counting back strategy for subtraction because it is difficult and leads to errors.

K.OA.5 (Prior Grade Standard)

Fluently add and subtract within 5.

2.OA.2 (Future Grade Standard) 2nbt5I

Fluently add and subtract within 20 using mental strategies. (Note: See standard 1.OA.6 for a list of mental strategies). By end of Grade 2, know from memory all sums of two one-digit numbers.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.7

Understand the meaning of the equal sign, and determine if equations involving addition and

subtraction are true or false. For example, which of the following equations are true and which are false? $6 = 6$, $7 = 8 - 1$, $5 + 2 = 2 + 5$, $4 + 1 = 5 + 2$.

Essential Questions

How can numbers be equal?

Common Misconceptions

Many students think that the equals sign means that an operation must be performed on the numbers on the left and the result of this operation is written on the right. They think that the equal sign is like an arrow that means becomes and one number cannot be alone on the left. Students often ignore the equal sign in equations that are written in a nontraditional way. For instance, students find the incorrect value for the unknown in the equation $9 = \Delta - 5$ by thinking $9 - 5 = 4$. It is important to provide equations with a single number on the left as in $18 = 10 + 8$. Showing pairs of equations such as $11 = 7 + 4$ and $7 + 4 = 11$ gives students experiences with *the equal sign meaning "is the same as"*.

Vocabulary

- True
- False
- Addition Number Sentence
- Subtraction Number Sentence
- Solve
- Explain

Essential Skills

- I can explain the meaning of an equal sign (the quantity on each side of the equality symbol is the same).
- I can compare the values on each side of an equal sign.
- I can determine if an equation is true or false.

Examples

$6 = 6$; $7 = 8 - 1$; $5 + 2 = 2 + 5$; $4 + 1 = 5 + 2$.
 $7 = 8 - 1$ is true.
 $2 + 3 = 5 - 1$ is false.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Provide opportunities for students use objects of equal weight and a number balance to model equations for sums and differences less than or equal to 20 using the numbers 0 to 20. Give students equations in a variety of forms that are true and false. Include equations that show the identity property, commutative property of addition, and associative property of addition. Students need not use formal terms for these properties.

$13 = 13$ Identity Property

$8 + 5 = 5 + 8$ Commutative Property for Addition

$3 + 7 + 4 = 10 + 4$ Associative Property for Addition

Ask students to determine whether the equations are true or false and to record their work with drawings. Students then compare their answers as a class and discuss their reasoning.

K.CC.6 (Prior Grade Standard)

Orally identify (without using inequality symbols) whether the number of objects in one group is greater/more than, less/fewer than, or the same as the number of objects in another group, not to exceed 10 objects in each group.

2.NBT.4 (Future Grade Standard)

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.OA.8

Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. For example,

determine the unknown number that makes the equation true in each of the equations $8 + ? = 11$, $5 = \square - 3$, $6 + 6 = \square$.

Common Misconceptions

Many students think that the equals sign means that an operation must be performed on the numbers on the left and the result of this operation is written on the right. They think that the equal sign is like an arrow that means becomes and one number cannot be alone on the left. Students often ignore the equal sign in equations that are written in a nontraditional way. For instance, students find the incorrect value for the unknown in the equation $9 = \Delta - 5$ by thinking $9 - 5 = 4$. It is important to provide equations with a single number on the left as in $18 = 10 + 8$. Showing pairs of equations such as $11 = 7 + 4$ and $7 + 4 = 11$ gives students experiences with the meaning of the equal sign as is **the same as** and equations with one number to the left.

Vocabulary

- Part
- Whole
- Addends
- Missing Addend
- Solve
- Explain

Essential Questions

How are two numbers related?

How can fact families help me solve problems?

Essential Skills

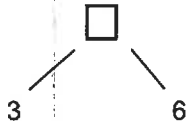
I can recognize part-part-whole relationships of addition and subtraction equations.

I can determine the unknown whole number in an addition or subtraction equation with three whole numbers.

Examples $5 = \square - 3$ $8 + ? = 11$

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

The Math Mountain shows a sum with diagonal lines going down to connect with the two addends, forming a triangular shape. It shows two known quantities and one unknown quantity. Use various symbols, such as a square, to represent an unknown sum or addend in a horizontal equation. For example, here is a Take from / Start Unknown problem situation such as: Some markers were in a box. Matt took 3 markers to use. There are now 6 markers in the box. How many markers were in the box before? The teacher draws a square to represent the unknown sum and diagonal lines to the numbers 3 and 6.



Have students practice using the Math Mountain to organize their solutions to problems involving sums and differences less than or equal to 20 with the numbers 0 to 20. Then ask them to share their reactions to using the Math Mountain.

K.OA.4 (Prior Grade Standard)

For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or, when appropriate, an equation.

2.OA.1 (Future Grade Standard)

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

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.NBT.1

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

Common Misconceptions

Students sometimes recognize counting as a pattern much like singing the alphabet. This pattern can be memorized but may not be understood. Students who have done this can have difficulty counting on from a number other than 1. These students may also have difficulty counting backwards. When counting backwards, ask students to start at 24 and count back to 15. Students think counting begins with zero. They should experience counting from different starting points.

Vocabulary

- Ten
- One
- Hundred
- Count
- Write

Essential Questions

What does a numeral represent?
 How can I write how many objects are in a set?
 What number can I start counting from?

Essential Skills

I can recall numbers and numerals up to 120.
 I can represent a number of objects up to 120 with a written numeral.
 I can count to 120, starting at any number less than 120
 I can read and write numerals up to 120.

Examples

1, 2, 3, 4, . . . 118, 119, 120.

23, 24, 25, . . . 118, 119, 120.

Write any number from 1 to 120 when prompted.

Given a random group of objects, count and name the number of the group of objects.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

In this grade, students build on their counting to 100 by ones and tens beginning with numbers other than 1 as they learned in Kindergarten. Students can start counting at any number less than 120 and continue to 120. It is important for students to connect different representations for the same quantity or number. Students use materials to count by ones and tens to build models that represent a number, then they connect this model to the number word and its representation as a written numeral.

K.CC.2 (Prior Grade Standard)

Count forward within 100 beginning from any given number other than 1.

2.NBT.2 (Future Grade Standard)

Count forward and backward within 1000 by ones, tens, and hundreds starting at any number; skip-count by 5s starting at any multiple of 5.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.NBT.2

Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases:

- a. 10 can be thought of as a bundle of ten ones called a “ten.”
- b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.
- c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).

Essential Questions

How can I group objects to help tell how many?
 Why does grouping objects by ten help me tell how many?
 What does each digit mean in a two-digit number?

Common Misconceptions

- Students struggle with inadequate part-part-total knowledge for the numbers 0 to 10 and/or an inability to trust the count
- Little or no sense of numbers beyond 10 (e.g., fourteen is 10 and 4 more)
- Students have a failure to recognize the structural basis for recording 2 digit numbers (e.g., sees and reads 64 as “sixty-four”, but thinks of this as 60 and 4 without recognizing the significance of the 6 as a count of tens, even though they may be able to say how many tens in the tens place)

Vocabulary

- Tens
- Ones
- Regroup
- Represent
- Explain

Essential Skills

I can explain what each digit of a two-digit number represents.
 I can define a bundle of 10 ones as a “ten”

Example

Ten ones can be grouped together to make one ten - or 10.
 13 is one ten and 3 ones.
 The ten numbers (10, 20, 30, . . .) are all made from bundles of tens. They have no additional ones.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

The beginning concepts of place value are developed in Grade 1 with the understanding of ones and tens. The major concept is that putting ten ones together makes a ten and that there is a way to write that down so the same number is always understood. Students move from counting by ones, to creating groups and ones, to tens and ones. It is essential at this grade for students to see and use multiple representations of making tens using base-ten blocks, bundles of tens and ones, and ten-frames. Making the connections among the representations, the numerals and the words are very important. Students need to connect these different representations for the numbers 0 to 99.

K.NBT.1 (Prior Grade Standard)

Compose and decompose numbers from 11 to 19 into a group of ten ones and some further ones by using objects and, when appropriate, drawings or equations; understand that these numbers are composed of a group of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

2.NBT.1 (Future Grade Standard)

Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
 a. 100 can be thought of as a bundle of ten tens — called a hundred.”
 b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.NBT.3

Compare two two-digit numbers based on meanings of the tens and ones

digits, recording the results of comparisons with the symbols $>$, $=$, and $<$.

Common Misconceptions

Often when students learn to use an aid (bird, alligator, etc.) for knowing which comparison sign ($,$ $=$) to use, the students don't associate the real meaning and name with the sign. The use of the learning aids must be accompanied by the connection to the names: $<$ Less Than, $>$ Greater Than, and $=$ Equal To. More importantly, students need to begin to develop the understanding of what it means for one number to be greater than another. In Grade 1, it means that this number has more tens, or the same number of tens, but with more ones, making it greater. Additionally, the symbols are shortcuts for writing down this relationship. Finally, students need to begin to understand that both inequality symbols can create true statements about any two numbers where one is greater/smaller than the other, ($15 < 28$ and $28 > 15$).

Vocabulary

- Greater Than
- Less Than
- Equal To
- Compare

Essential Questions

How can the digits in a two digit number help me tell which number is greater than, less than, or equal to?

Essential Skills

- I can identify the value of each digit represented in a two-digit number.
- I know what each symbol represents $>$, $<$, and $=$.
- I can compare two two-digit numbers based on meanings of the tens and ones digits.
- I can use $>$, $=$, and $<$ symbols to record the results of comparisons.

Examples

23 has 2 tens and three ones while 32 has 3 tens and two ones.
 $23 < 32$ because 23 has fewer tens than the number 32.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Students need to move through a progression of representations to learn a concept. They start with a concrete model, move to a pictorial or representational model, then an abstract model. For example, ask students to place a handful of small objects in one region and a handful in another region. Next have them draw a picture of the objects in each region. They can draw a likeness of the objects or use a symbol for the objects in their drawing. Now they count the physical objects or the objects in their drawings in each region and use numerals to represent the two counts. They also say and write the number word. Now students can compare the two numbers using an inequality symbol or an equal sign.

K.CC.6 (Prior Grade Standard)

Orally identify (without using inequality symbols) whether the number of objects in one group is greater/more than, less/fewer than, or the same as the number of objects in another group, not to exceed 10 objects in each group.

2.NBT.4 (Future Grade Standard)

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using $>$, $=$, and $<$ symbols to record the results of comparisons.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.NBT.4

Add within 100, including adding a two-digit number and a one-digit number and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; record the strategy with a

written numerical method (drawings and, when appropriate, equations) and explain the reasoning used. Understand that when adding two-digit numbers, tens are added to tens; ones are added to ones; and sometimes it is necessary to compose a ten.

Common Misconceptions

Students who have not mastered the concept of place value may struggle with how to break numbers apart to add them. They may not see that when adding two-digit numbers, one adds tens and tens, ones and ones. Sometimes when adding, you must make another ten.

Vocabulary

- Add
- Regroup
- Explain

Essential Questions

- What strategy will best help me show this addition or subtraction problem?
- How can grouping objects help me add and subtract?

Essential Skills

- I can identify the value of each digit of a number within 100.
- I can decompose any number within one hundred into tens and ones.
- I can choose an appropriate strategy for solving an addition problem within 100.
- I can relate the chosen strategy (using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction) to a written method (equation) and explain the reasoning used.
- I can use composition and decomposition of tens when necessary to add within 100.

Examples

$23 + 40 = 63$ because I added the twenty and forty together to get sixty and then added the three ones to get 63.
When I add $36 + 5$ I initially have 3 tens. But when I add the 5 ones and 6 ones it becomes a 10 and 1 one. So 30 plus 10 is 40 plus 1 more one is 41.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Students should solve problems using concrete models and drawings to support and record their solutions. It is important for them to share the reasoning that supports their solution strategies with their classmates.

K.NBT.1 (Prior Grade Standard)

Compose and decompose numbers from 11 to 19 into a group of ten ones and some further ones by using objects and, when appropriate, drawings or equations; understand that these numbers are composed of a group of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

2.NBT.7 (Future Grade Standard)

Add and subtract within 1000, using concrete models or drawings and strategies based on properties of operations, and/or the relationship between addition and subtraction; record the strategy with a written method (drawing and, when appropriate, equations) and explain the reasoning used. Understand that when adding or subtracting three-digit numbers, hundreds are added or subtracted from hundreds, tens are added or subtracted from tens, ones are added or subtracted from ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.NBT.5

Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.

Common Misconceptions

Students have difficulty with ten as a singular word that means 10 things. For many students, the understanding that a group of 10 things can be replaced by a single object and they both represent 10 is confusing.

Vocabulary

- Ten
- More
- Less
- Explain

Essential Questions

Why can I find 10 more or 10 less than a number quickly?
How can finding 10 more or 10 less quickly help me solve problems?

Essential Skills

I can identify the value of each digit in a number within 100.
I can explain how to mentally find 10 more or 10 less than a given two-digit number.
I can apply knowledge of place value to mentally add or subtract 10 to/from a given two-digit number.

Examples

78 - 10 will be 68 because I take one bundle of ten from 78 (7 - 1) and that gives me 68.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Students will usually move to using base-ten concepts, properties of operations, and the relationship between addition and subtraction to invent mental and written strategies for addition and subtraction. Help students share, explore, and record their invented strategies. Recording the expressions and equations in the strategies horizontally encourages students to think about the numbers and the quantities they represent. Encourage students to try the mental and written strategies created by their classmates. Students eventually need to choose efficient strategies to use to find accurate solutions.

K.NBT.1 (Prior Grade Standard)

Compose and decompose numbers from 11 to 19 into a group of ten ones and some further ones by using objects and, when appropriate, drawings or equations; understand that these numbers are composed of a group of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

2.NBT.8 (Future Grade Standard)

Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.NBT.6

Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between

addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Common Misconceptions

Students have difficulty with ten as a singular word that means 10 things. For many students, the understanding that a group of 10 things can be replaced by a single object and they both represent 10 is confusing.

Vocabulary

- Subtract
- Count Back
- Less
- Explain
- Relate
- Model

Essential Questions

How can I easily show a subtraction problem that has only tens?

Why can I solve this subtraction problem using this strategy?

Essential Skills

I can identify the value of each digit of a number within 100.

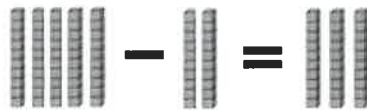
I can subtract multiples of 10 in the range of 10-90 from multiples of 10 in the range of 10-90 (positive or zero differences).

I can choose appropriate strategy (concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction) for solving subtraction problems with multiples of 10.

I can relate the chosen strategy to a written method (equation) and explain the reasoning used.

Examples

50 - 20 = 30 because ...



Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Have students connect a 0-99 chart or a 1-100 chart to their invented strategy for finding 10 more and 10 less than a given number. Ask them to record their strategy and explain their reasoning.

K.NBT.1 (Prior Grade Standard)

Compose and decompose numbers from 11 to 19 into a group of ten ones and some further ones by using objects and, when appropriate, drawings or equations; understand that these numbers are composed of a group of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

2.NBT.7 (Future Grade Standard)

Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; record the strategy with a written method (drawing and, when appropriate, equations) and explain the reasoning used. Understand that in adding or subtracting three-digit numbers, hundreds are added or subtracted from hundreds, tens are added or subtracted from tens, ones are added or subtracted from ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.MD.1

Order three objects by length; compare the lengths of two objects indirectly by using a third object.

Common Misconceptions

Some students may view the measurement process as a procedural counting task. They might count the markings on a ruler rather than the spaces between (the unit of measure). Students need numerous experiences measuring lengths with a variety of objects.

Vocabulary

- Length
- Short
- Long
- Compare
- Length
- Shorter/shortest
- Longer/longest
- Measure
- Order

Essential Questions

What can I tell about these objects' lengths?
Why do I know an object is longer or shorter than another object?

Essential Skills

I can identify the measurement known as the length of an object.
I can directly compare the length of three objects.
I can order three objects by length.
I can compare the lengths of two objects indirectly by using a third object.

Examples

Using Unifix cubes I can arrange three different stacks in order from shortest to longest.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

The measure of an attribute is a count of how many units are needed to fill, cover or match the attribute of the object being measured. Students need to understand what a unit of measure is and how it is used to find a measurement. They need to predict the measurement, find the measurement and then discuss the estimates, errors and the measuring process. It is important for students to measure the same attribute of an object with differently sized units.

K.MD.2 (Prior Grade Standard)

Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

2.MD.4 (Future Grade Standard)

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.MD.2

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to

contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

Common Misconceptions

Some students may view the measurement process as a procedural counting task. They might count the markings on a ruler rather than the spaces between (the unit of measure). Students need numerous experiences measuring lengths with a variety of objects as it is difficult not to overlap.

Vocabulary

- Unit
- Measure
- Measure

Essential Questions

Why does measuring an object help me tell about its length?

How can I represent an object's length?

Essential Skills

I know to use the same size nonstandard objects as repeating units.

I know that length can be measured with various units.

I can compare a smaller unit of measurement to a larger object.

I can determine the length of a measured object to be the number of smaller iterated or repeated objects that equal its length.

I can demonstrate the measurement of an object using non-standard units by laying the units of measurement end to end with no gaps or overlaps.

Examples

I can measure the length of my pencil by using a single Unifix cube and finding how many laid end to end would be the same as my pencil.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Measurement units share the attribute being measured. Students need to use as many copies of the length unit as necessary to match the length being measured. For instance, use large footprints with the same size as length units. Place the footprints end to end, without gaps or overlaps, to measure the length of a room to the nearest whole footprint. Use language that reflects the approximate nature of measurement, such as the length of the room is about 19 footprints. Students need to also measure the lengths of curves and other distances that are not straight lines.

K.MD.2 (Prior Grade Standard)


Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*

2.MD.4 (Future Grade Standard)

Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

<div style="border: 2px solid black; border-radius: 15px; padding: 10px; display: inline-block;"> <h1 style="margin: 0;">1.MD.3</h1> </div>	<p>Work with time and money.</p> <p>a. Tell and write time in hours and half-hours using analog and digital clocks.</p> <p>b. Identify pennies and dimes by name and value.</p>	<p>Common Misconceptions</p> <p>Students have a difficult time telling the differences between the two hands and how they work. When the hour hand is not directly pointing to a number the students struggle to identify the time.</p> <p>Students need experiences exploring the idea that when the time is at the half-hour the hour hand is between numbers and not on a number.</p>	<p>Vocabulary</p> <ul style="list-style-type: none"> ▪ Hour ▪ Hour Hand ▪ Minute ▪ Minute Hand ▪ Analog Clock ▪ Digital Clock ▪ O'clock ▪ Half Hour ▪ Tell ▪ Write
<p>Essential Questions</p> <p>How do the hands on a clock help me tell time?</p>			
<p>Essential Skills</p>		<p>I can recognize that analog and digital clocks are objects that measure time.</p> <p>I know hour hand and minute hand and distinguish between the two</p> <p>I can determine where the minute hand must be when the time is to the hour (o'clock).</p> <p>I can determine where the minute hand must be when the time is to the half-hour (thirty).</p> <p>I can tell and write the time to the hour and half-hour correctly using analog and digital clocks.</p>	
<p>Examples</p> <p>The time is 3:30.</p>			
<p>Ohio Department of Education Model Curriculum Instructional Strategies and Resources</p> <p>Students need to experience a progression of activities for learning how to tell time. Begin by using a one-handed clock to tell times in hour and half-hour intervals, then discuss what is happening to the unseen big hand. Next use two real clocks, one with the minute hand removed, and compare the hands on the clocks. Students can predict the position of the missing big hand to the nearest hour or half-hour and check their prediction using the two-handed clock. They can also predict the display on a digital clock given a time on a one- or two-handed analog clock and vice-versa.</p>			
<p>K.MD.1 (Prior Grade Standard)</p> <p>Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object</p>		<p>2.MD.7 (Future Grade Standard)</p> <p>Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.</p>	

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.MD.4

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

category than in another.

Common Misconceptions

Incorrectly recording the data from the table to the picture graph or sorting categories.
 Forgetting to apply one-to-one correspondence when comparing the data from different categories.
 Incorrectly sorting the data into categories

Vocabulary

- Tally Chart
- Survey
- Data
- Graph
- Picture
- Picture Graph
- Bar Graph
- Organize
- Represent
- Answer

Essential Questions

How can I best show a set of data?
 What does the data tell me?
 Why does showing the data this way help me tell about it?

Essential Skills

I can recognize different methods to organize data.
 I can recognize different methods to represent data.
 I can organize data with up to three categories.
 I can represent data with up to three categories.
 I can interpret data representation by asking and answering questions about the data.

Examples

I can organize data into a neat display of categories.
 I can count the data points in each category and determine which categories have more or less.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Ask students to sort a collection of items in up to three categories. Then ask questions about the number of items in each category and the total number of items. Also ask students to compare the number of items in each category. The total number of items to be sorted should be less than or equal to 100 to allow for sums and differences less than or equal to 100 using the numbers 0 to 100.

K.MD.3 (Prior Grade Standard)

Classify objects or people into given categories; count the numbers of objects in each category and sort the categories by count. The number of objects in each category should be less than or equal to ten. Counting and sorting coins should be limited to pennies.

2.MD.10 (Future Grade Standard)

Organize, represent, and interpret data with up to four categories; complete picture graphs when single-unit scales are provided; complete bar graphs when single-unit scales are provided; solve simple put-together, take apart, and compare problems in a graph. .

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.G.1

defining attributes.

Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus nondefining attributes (e.g., color, orientation, overall size); build and draw shapes to possess

Common Misconceptions

Students may think that a square that has been rotated so that the sides form 45-degree angles with the vertical diagonal is no longer a square but a diamond. They need to have experiences with shapes in different orientations to understand defining attributes.

Vocabulary

- Rectangle
- Vertex
- Square
- Side
- Triangle
- Trapezoid
- Cube
- Face
- Cone
- Cylinder
- Describe
- Build
- Circle
- Two-Dimensional Shapes
- Three-Dimensional Shape
- Rectangular Prism

Essential Questions

Why is this shape its name?

What makes a shape its shape?

Essential Skills

- I can identify defining and non-defining attributes of shapes.
- I can compare and contrast defining and non-defining attributes of shapes.
- I can draw shapes to show defining attributes.
- I can build shapes to show defining attributes.

Examples

What's important about a triangle is that it has three sides - not the color.
Build a shape that has four sides and all the sides are of equal length.

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Students can easily form shapes on geoboards using colored rubber bands to represent the sides of a shape. Ask students to create a shape with four sides on their geoboard and then copy the shape on dot paper. Students can share and describe their shapes as a class while the teacher records the different defining attributes mentioned by the students.

K.G.2 (Prior Grade Standard)

Correctly name shapes regardless of their orientations or overall size.

2.G.1 (Future Grade Standard)

Recognize and identify triangles, quadrilaterals, pentagons, and hexagons based on the number of sides or vertices. Recognize and identify cubes, rectangular prisms, cones, and cylinders.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.G.2

Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quartercircles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a

composite shape; and compose new shapes from the composite shape. Students do not need to learn formal names such as "right rectangular prism."

Common Misconceptions

Students may think the newly composed shape includes the same name as its parts. For example they may think a sphere is a circle.

Vocabulary

- Composite Shape
- Put together

Essential Questions

How can smaller shapes make a larger shape?

Essential Skills

- I know that shapes can be decomposed to create composite shapes.
- I can describe properties of original, decomposed and composite shapes.
- I can determine how the original and created composite shapes are alike and different.
- I can create two- and three-dimensional composite shapes.
- I can compose new shapes from a composite shape.

Examples

Put these triangles together to form other shapes and name the attributes of these new shapes.
Put these 3-D shapes (cubes, cones, prisms, etc.) together to make new shapes and describe them.

Common Core Appendices Support

Students do not need to learn formal names such as "right rectangular prism."

K.G.6 (Prior Grade Standard)

Combine simple shapes to form larger shapes.

2.G.1 (Future Grade Standard)

Recognize and identify triangles, quadrilaterals, pentagons, and hexagons based on the number of sides or vertices. Recognize and identify cubes, rectangular prisms, cones, and cylinders.

Ohio's Learning Standards-Clear Learning Targets

Math, Grade 1

1.G.3

Partition circles and rectangles into two and four equal shares, describe the shares using the words

halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of or four of the shares in real-world contexts. Understand for these examples that decomposing into more equal shares creates smaller shares

Common Misconceptions

Some students may think that the size of the equal shares is directly related to the number of equal shares. For example, they think that fourths are larger than halves because there are four fourths in one whole and only two halves in one whole.

Vocabulary

- Whole
- Equal Part
- Halves
- Fourths
- Divide
- Describe

Essential Questions

How can I describe the equal shares of this shape?

What happens to the equal shares as more equal shares are made within a shape?

Essential Skills

- I can partition circles and squares into two and four equal shares. Identify when shares are equal.
- I can describe equal shares using vocabulary: halves, fourths, and quarters, half of, fourth of, and quarter of.
- I can describe the whole as two of two or four of four equal shares.
- I can analyze that dividing a circle or rectangle into more equal pieces creates smaller shares.

Examples

Divide the circle into four equal parts and name each part.

If two students divide the same size circle into equal parts and one has 2 parts and the other has 4 parts, how does the size of the parts compare?

Ohio Department of Education Model Curriculum Instructional Strategies and Resources

Folding shapes made from paper enables students to physically feel the shape and form the equal shares. Ask students to fold circles and rectangles first into halves and then into fourths. They should observe and then discuss the change in the size of the parts.

K.G.4 (Prior Grade Standard)

Describe and compare two- and three dimensional shapes, in different sizes and orientations, using informal language to describe their commonalities, differences, parts, and other attributes.

2.G.3 (Future Grade Standard)

Partition circles and rectangles into two, three, or four equal shares; describe the shares using the words *halves*, *thirds*, or *fourths and quarters*, and use the phrases *half of*, *third of*, or *fourth of and quarter of*.. Describe the whole as two halves, three thirds, or four fourths in real-world contexts. Recognize that equal shares of identical wholes need not have the same shape.