

# NEW HANOVER TOWNSHIP

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## MATH CURRICULUM GRADE 2

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# New Hanover Township School

## Grade: 2

### Content Area: Mathematics

Domain: Operations and Algebraic Thinking

#### Stage 1: Desired Results Common Core Standards

**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, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

**Add and subtract within 20.**

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

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

^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.

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

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.

2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Essential Understandings	Content Skills
<p><b>Topic 1 Understanding Addition and Subtraction</b></p> <p>1-1: Parts of a whole is one interpretation of addition. Addition number sentence can be used to show parts of a whole.</p> <p>1-2: Joining parts to make a whole is one</p>	<p>1-1: Children will join two group and write addition number sentence to tell how many in all.</p> <p>1-2: Children will model joining stories and write an addition number sentence.</p>

interpretation of addition. Addition number sentence can be used to show joining parts of a whole.

1-3: Subtraction number sentence can be used to show separating parts from a whole or comparison subtraction situations.

1-4: Separating parts of a whole and comparison are two interpretations of subtraction.

1-5: Separating parts from a whole and comparison are two interpretations of subtraction.

1-6: Addition and subtraction have an inverse relationship. The inverse relationship between addition and subtraction can be used to find subtraction facts; every subtraction fact has a related addition fact.

1-7: Some problems can be solved by using objects to act out the actions in the problem.

### **Topic 2 Addition Strategies**

2-1: The number relationships of 0 more than, 1 more than, and 2 more than are the basis for addition facts with 0, 1, and 2.

2-2: Doubles facts can be associated with memorable real-world situations.

2-3: Basic addition facts that are near doubles can be found using a related doubles fact.

2-4: Two numbers can be added in any order.

2-5: Three or more whole number can be grouped and added in any order.

2-6: Addition facts involving 9 can be changed to an equivalent fact with 10.

Addition facts involving 8 can be changed to an equivalent fact with ten.

2-7: Information in a problem can often be shown using a picture or diagram and used to understand and solve the problem. Some problems can be solved by writing and completing a number sentence or equation.

### **Topic 3 Subtraction Strategies**

3-1: The number relationships of 0 less than, 1 less than, and 2 less than are the basis for subtraction facts with 0, 1, and 2.

1-3: Children will solve problems by writing subtraction number sentences.

1-4: Children will write subtraction sentences to solve stories about separating groups.

1-5: Children will write subtraction sentences to solve stories about comparing groups.

1-6: Children will write related addition and subtraction facts.

1-7: Children will use counters to model and solve addition and subtraction problems.

2-1: Children master addition facts involving 0, 1, 2.

2-2: Children master addition facts in which both addends are the same.

2-3: Children master addition facts where the addends are 1 apart.

2-4: Children will use the commutative property of find sums.

2-5: Children find the sum of any three addends using any order.

2-6: Children will find sums by making 10 when adding.

2-7: Children will draw a picture and write a number sentence to solve a story problem.

3-1: Children will subtract 0, 1, 2 from a number by applying the concepts of 0 less than, 1 less than, and 2 less than a number.

<p>3-2, 3, 4: Addition and subtraction have an inverse relationship. The inverse relationship between addition and subtraction can be used to find subtraction facts; every subtraction fact has a related addition fact.</p> <p>3-5: Some subtraction facts can be found by subtracting from the minuend (the larger number) an amount to get to 10 and then subtracting the amount that remains.</p> <p>3-6: Sometimes the answer to one problem or question is needed to find the answer to another problem or question.</p> <p><b>Topic 4 Working with Equal Groups</b></p> <p>4-1: Repeated addition involves joining equal parts.</p> <p>4-2: An array involves joining equal groups and is one way to think about repeated addition.</p> <p>4-3: Repeated addition involves joining equal parts.</p> <p>4-4: Information in a problem can often be shown using a diagram and used to solve the problem. Some problems can be solve by writing and completing a number sentence or equation.</p>	<p>3-2: Children will use addition doubles facts to subtract.</p> <p>3-3: Children will find differences by using related addition facts to 10.</p> <p>3-4: Children will find differences by using related addition facts to 18.</p> <p>3-5: Children will use the make 10 strategy to subtract.</p> <p>3-6: Children will solve two question problems by using the answer to the first question in the second question.</p> <p>4-1: Children model repeated addition to write number sentences.</p> <p>4-2: Children build arrays to model repeated addition situations.</p> <p>4-3: Children will use repeated addition to solve problems.</p> <p>4-4: Children will draw pictures and write number sentences to solve addition problems.</p>
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Understanding by Design	
Essential Questions	
<p>1: What are some ways to think about addition and subtraction?</p> <p>1-1: How can word sentences be used to show parts and the whole?</p> <p>1-2: How can you represent a joining story with an addition number sentence?</p> <p>1-3: How can subtraction sentences be used to find the missing part of the whole?</p> <p>1-4: How can you solve a story about separating using connecting cubes and writing a number sentence?</p> <p>1-5: How can you solve a story about comparing using models and writing subtraction sentences?</p> <p>1-6: How can you write related addition and subtraction facts?</p> <p>1-7: How can using objects help you decide whether to add or subtract to find the correct answer?</p> <p>2: What are strategies for finding addition facts?</p> <p>2-1: How are the number relationships of 0-more-than, 1 more than, and 2 more than the basis for adding with 0, 1, and 2?</p> <p>2-2: What are different ways to learn and remember doubles facts?</p> <p>2-3: How can doubles facts be used to learn near doubles facts?</p> <p>2-4: What happens to the sum of two numbers when the order of the number being added changed?</p> <p>2-5: When you add three numbers how do you decide which two numbers to add first?</p> <p>2-6: How can you make a ten when adding?</p> <p>2-7: How can drawing a picture and writing a number sentence help you solve a problem?</p> <p>3: What are strategies for finding subtraction facts?</p>	

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- 3-1: How can you use the concepts of 0 less than, 1 less than, and 2 less than to help you subtract?
- 3-2: How can you use a doubles fact to help you subtract?
- 3-3: How can you use an addition fact to help you subtract?
- 3-4: How do addition facts help you solve subtraction facts?
- 3-5: How can you use the make ten strategy to subtract?
- 3-6: How does the answer to one question in a problem help you answer another question in the same problem?
  
- 4: What is the relationship between arrays and repeated addition?
- 4-1: How can repeated addition help you find the total number of objects?
- 4-2: How can an array be used to help write an addition sentence?
- 4-3: How can you use repeated addition to solve problems?
- 4-4: How does drawing a picture help you solve a problem?

**Misconceptions**

- 1-1, 6: Confuse plus, minus, and equal signs.
- 1-2: Difficulty connecting the story, numbers and cubes.
- 1-3, 4, 5: Difficulty understanding that a whole minus a part equals a part.
- 1-7: Unsure of when to add or subtract.
- 2-1: Difficulty adding zero to a number.
- 2-2, 3, 4: Difficulty using doubles to add or subtract.
- 2-5, 6: Difficulty adding three numbers.
- 2-7: Difficulty reading a chart.
- 3-1: Difficulty writing a number sentence.
- 3-2, 3, 4: Difficulty relating subtraction facts to doubles facts or addition facts.
- 3-5: Difficulty breaking apart a subtraction fact to complete mental calculations.
- 3-6: Difficulty answering one question to solve a second question.
- 4-1: Difficulty seeing that repeated addition sentences have equal groups.
- 4-2: Difficulty breaking a group into equal parts.
- 4-3: Add the number of each row instead of amount in each row.
- 4-4: Confused by the part-part-whole model.

**Stage 2: Evidence of Learning**

Summative Traditional Assessment	Summative Performance Tasks
<ul style="list-style-type: none"> <li>◆Pre-test</li> <li>◆Mid-Year test</li> <li>◆Post-test</li> <li>◆Chapter (Topic) test</li> <li>◆Quizzes</li> <li>◆Performance Assessment Master</li> <li>◆Basic Facts Timed Tests</li> <li>◆Quick Check Master</li> <li>◆Daily Common Core Review</li> </ul>	<ul style="list-style-type: none"> <li>◆ Projects and Centers</li> <li>◆Performance Task Master</li> </ul>

**Formative Assessments**

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- Daily Math Problems
- Math Terms Dictionary
- Spiral Review
- Observation
- Exit Questions
- Classwork/Homework
- Oral Questioning
- Student Demonstrations (stations/centers)
- Problem Solving
- Notetaking

**Learning Plan**

Interdisciplinary Connections	Technology Connections
Social Studies: Discuss places where people go on vacation and what they can do there. Have children write and illustrate addition and subtraction stories for their vacation story. Publish their stories in a class book.	<ul style="list-style-type: none"><li>•Smartboard activities</li><li>•E-tools on <a href="http://www.pearsonsuccessnet.com">www.pearsonsuccessnet.com</a></li></ul>

**Unit Resources**

- Scott Foresman Envision Text
- Student workbooks
- Smartboard
- Vocabulary Cards
- Trade books/Story books
- Envision Math Series Problem of the Day
- Spiral Review
- Performance Assessment Master

# New Hanover Township School

Grade: 2

Content Area: Mathematics

Domain: Number and Operations in Base Ten
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Stage 1: Desired Results
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Common Core Standards
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**Reason with shapes and their attributes.**

◆3.G.1. Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

◆3.G.2. Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as  $\frac{1}{4}$  of the area of the shape.*

Essential Understandings	Content Skills
<p><b>Topic 5 Place Value to 100</b></p> <p>5-1: Numbers can be used to tell how many. In a two digit number the tens digit tells how many groups of ten and the ones digit tells the number of ones.</p> <p>5-2: Numbers can be used to tell how many. The numbers 21 to 99 are written by joining two number words that describe the number of tens and the number of ones. Numbers through 20 are each represented by a unique number word.</p> <p>5-3: Place value can be used to compare and order numbers.</p> <p>5-4: The position words before and after can be used to explain number relationships.</p> <p>5-5: Our place value system makes it easy to name the number that is ten more or ten less than any other given number by simply adjusting the digit in the tens place.</p> <p>5-6: Some numbers can be divided into two equal parts (even numbers) and some cannot (odd numbers.)</p> <p>5-7: In order to solve problems, data needs to be selected from a source outside the statement of the problem, like a chart.</p> <p><b>Topic 6 Mental Addition</b></p> <p>6-1: Adding tens is like adding ones.</p> <p>6-2: When adding a number less than ten to a two digit number using the traditional algorithm, it may be necessary to rename 10 ones as 1 ten.</p> <p>6-3: Two digit numbers can be broken apart using tens and ones and added in different ways.</p> <p>6-4: Patterns on a hundreds chart can be used to add numbers and to develop mental math strategies and number sense.</p> <p>6-5: Adding groups of tens is similar to adding number less than ten.</p> <p>6-6: Some problems can be solved by identifying elements that repeat in a predictable way.</p> <p><b>Topic 7 Mental Subtraction</b></p> <p>7-1: Subtracting tens is like subtracting ones.</p> <p>7-2: To find parts of 100, add on ones to make a ten and count on by tens to reach 100.</p> <p>7-3: Patterns in a hundred chart can be used to</p>	<p>5-1: Children will group objects into tens and ones to show two digit numbers.</p> <p>5-2: Children will read and write number words for numbers 0-99.</p> <p>5-3: Children will compare two digit numbers using symbols.</p> <p>5-4: Children will identify and write number that are one before and one after given numbers.</p> <p>5-5: Children will identify and write number that are ten more and ten less than given numbers.</p> <p>5-6: Children will learn to identify even and odd numbers.</p> <p>5-7: Children will use data from a chart to solve problems.</p> <p>6-1: Children will mentally add multiples of 10 to a two digit number.</p> <p>6-2: Children will mentally add a two digit number and a one digit number.</p> <p>6-3: Children will add a two digit number to a two digit number using mental math.</p> <p>6-4: Children will use a hundred chart to add 2 two digit numbers.</p> <p>6-5: Children will add using multiples of ten.</p> <p>6-6: Children will use number patterns to solve problems.</p> <p>7-1: Children will subtract multiples of 10 from two-digit numbers using mental math.</p> <p>7-2: Children will find the missing part of 100 by counting up from the given part.</p> <p>7-3: Children will find the difference between two digit</p>

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<p>subtract numbers and to develop mental math strategies and number sense.</p> <p>7-4: Subtracting groups of tens is similar to subtracting numbers less than 10.</p> <p>7-5: Some problems have data missing needed to find the answer and some problems have extra data not needed to solve the problem.</p> <p><b>Topic 8 Adding Two Digit Numbers</b></p> <p>8-1: Ten ones can be regrouped for one ten.</p> <p>8-2, 3, 4, 5: The standard algorithm for two digit and one digit numbers breaks the calculation into simpler calculations using place value, starting with the ones and then the tens. Answers to the simpler calculations are used to give the final sum.</p> <p>8-4, 5: The ones are added first and then the tens.</p> <p>8-6: Sums can be represented as lengths on a number line diagram of addition.</p> <p>8-7: Three and four digit numbers can be grouped and added in any order.</p> <p>8-8, 9-8: All sums and differences can be found using models (cubes). Some calculations are done easily using mental math or paper and pencil. More complex calculations can be done using a calculator.</p> <p>8-9: Information in a problem can often be shown using a diagram to solve the problem. Some problems can be solve by writing and completing a number sentence or equation.</p> <p><b>Topic 9 Subtracting Two Digit Numbers</b></p> <p>9-1: 1 Ten can be regrouped for 10 ones.</p> <p>9-2, 3: The standard subtraction algorithm breaks the calculation into simpler calculations starting with the ones and then the tens.</p> <p>9-4, 5: The standard subtraction algorithm for subtracting a two digit number from a two digit number is just an extension of the algorithm for subtracting two digit and one digit numbers.</p> <p>9-6: Differences can be represented as lengths in a</p>	<p>numbers less than 100.</p> <p>7-4: Students will subtract using multiples of ten.</p> <p>7-5: Children will determine whether they can solve problems with missing information or extra information.</p> <p>8-1: Children will use models to add a one digit number to a two digit number.</p> <p>8-2: Children will use concrete models to add a one digit number to a two digit number and decide if regrouping is needed.</p> <p>8-3: Children will add a one digit number to a two digit number, regroup if necessary, and record the process in a vertical addition frame.</p> <p>8-4: Children will use place value models and the standard algorithm to add 2 two digit numbers.</p> <p>8-5: Children will use the standard algorithm symbolically to add two digit number with and without regrouping.</p> <p>8-6: Children will use number lines to model two digit addition.</p> <p>8-7: Children will use paper and pencil to add 3 and 4 two digit numbers.</p> <p>8-8: Children will use different methods to help them solve additional problems.</p> <p>8-9: Children will draw pictures and write number sentences to solve addition problems.</p> <p>9-1: Children will regroup 1 ten as 10 ones.</p> <p>9-2: Children will use models to subtract a one digit number from a two digit number with or without regrouping.</p> <p>9-3: Children will subtract a one digit number from a two digit number with and without regrouping using the standard algorithm.</p> <p>9-4: Children will use models to subtract two digit numbers with and without regrouping.</p> <p>9-5: Children will use the standard subtraction algorithm to subtract a two digit number from another</p>
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<p>number line diagram of subtraction.</p> <p>9-7: The inverse relationship between addition and subtraction can be used to check subtraction.</p> <p>9-9: Sometimes the answer to one problem is needed to find the answer to another problem.</p> <p><b>Topic 10 Place Value to 1,000</b></p> <p>10-1, 2: Numbers can be used to tell how many.</p> <p>10-2: Our number system is based on groups of ten. Whenever we get 10 in one place value, we move to the next greater place value.</p> <p>10-3: Our number system is based on groups of ten. Whenever we get 10 in one place value, we move to the next greater place value.</p> <p>10-4: Adding or subtracting hundreds or tens is similar to adding or subtracting single digit numbers.</p> <p>10-5: Counting and place value patterns can be seen on the hundreds chart.</p> <p>10-6: Number lines can help with skip counting.</p> <p>10-7: Place value can be used to compare and order numbers.</p> <p>10-8: Ordering three or more digit numbers is similar to comparing two numbers because each number must be compared to each of the other numbers.</p> <p>10-9: Some problems can be solved by identifying elements that repeat in a predictable way.</p> <p><b>Topic 11 Three-digit Addition and Subtraction</b></p> <p>11-1: There are a variety of ways to add three-digit numbers.</p> <p>11-2, 6: There is more than one way to do a mental calculation. Techniques for doing addition or subtraction calculations mentally involve changing the numbers or the expression so the calculation is easy to do mentally.</p> <p>11-3: The standard algorithm for three-digit numbers breaks the calculation into simpler calculations using place value starting with the ones, then the tens, and then the hundreds.</p> <p>11-4: The standard addition algorithm for three-digit numbers breaks the calculation into simpler calculations using place value starting with the ones, then the tens, and then the hundreds.</p>	<p>two digit number.</p> <p>9-6: Children will use number lines to model two digit subtraction.</p> <p>9-7: Children will relate addition to subtraction by using one operation to check the other.</p> <p>9-8: Children will use different methods to solve two digit subtraction problems.</p> <p>9-9: Children will solve two question problems. They will select the operation to solve each question.</p> <p>10-1: Children will count by hundreds to 1,000.</p> <p>10-2: Children will use place value models to show numbers up to 1,000.</p> <p>10-3: Children will identify and record three digit number in expanded form, standard form, and number word form.</p> <p>10-4: Children will add and subtract multiples of 10 and 100 to and from a three digit number without regrouping.</p> <p>10-5: Children will find, identify, and apply number patterns to numbers on a hundreds chart.</p> <p>10-6: Children will skip count by different amounts on the number line and use the patterns to identify the numbers that come next.</p> <p>10-7: Children will compare three-digit numbers using the <math>&lt;</math>, <math>&gt;</math>, and <math>=</math> symbols.</p> <p>10-8: Children will order 3 three-digit numbers from least to greatest and greatest to least.</p> <p>10-9: Children solve problems by finding number patterns.</p> <p>11-1: Children will explore different strategies for adding three-digit numbers.</p> <p>11-2: Children will add three-digit numbers mentally without regrouping.</p> <p>11-3: Children will use place value blocks to add 2 three-digit numbers with regrouping.</p> <p>11-4: How do you add 2 three digit numbers using paper and pencil?</p>
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<p>11-5: There is a variety of ways to subtract three digit numbers.</p> <p>11-7, 8: The standard subtraction algorithm for three-digit numbers breaks the calculation into simpler calculations using place value starting with the ones, then the tens, and then the hundreds.</p> <p>11-9: Some problems can be solved by reasoning about the conditions in the problem.</p>	<p>11-5: Children will explore different strategies to subtract three digit numbers.</p> <p>11-6: Children will be given a quantity and one of its parts, and then will find the missing part by counting on or counting back.</p> <p>11-7: Children will use models to subtract three digit numbers with regrouping.</p> <p>11-8: Children will subtract three-digit numbers using a standard algorithm.</p> <p>11-9: Children will use logical reasoning to solve problems.</p>
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Understanding by Design

Essential Questions

- 5: How can numbers to 100 be shown and compared?
- 5-1: In a two digit number, what do the first and second digits tell you?
- 5-2: How are numbers through 99 written as words?
- 5-3: How can you use the symbols  $<$ ,  $>$ , and  $=$  to compare two digit numbers?
- 5-4: How can you find the number that is one before or after another number?
- 5-5: How do you find a number that is ten more or ten less than another number?
- 5-6: How do you know if a number is even or odd?
- 5-7: How can you use data from a chart to help you solve problems?
  
- 6: How can sums be found mentally?
- 6-1: When tens are added to a two digit number, how does the tens digit in the sum change?
- 6-2: How can you add a one digit number to a two digit number using the make ten strategy?
- 6-3: What are two different ways of adding tens and ones mentally?
- 6-4: How can patterns on a hundred chart be used to think about adding two digit numbers?
- 6-5: How are adding groups of ten similar to adding numbers less than 10?
- 6-6: How can looking for a pattern help you solve problems?
  
- 7: How can differences be found mentally?
- 7-1: Why does only the tens digit change when subtracting tens from a two digit number?
- 7-2: When one part of 100 is known, how can the other part be found?
- 7-3: How can a hundred chart be used to subtract two digit numbers?
- 7-4: How is subtracting groups of ten similar to subtracting numbers less than 10?
- 7-5: How do you know if there is extra information or missing information in a problem?
  
- 8: What is standard procedure for adding two digit numbers?
- 8-1: How can you use models to add a one digit number to a two digit number?

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- 8-2: How can you model and record adding a one digit number to a two digit number?
- 8-3: How can you use paper and pencil to add one digit number to two digit numbers?
- 8-4, 5: How can you use place value models and the standard algorithm to add a two digit number to a two digit number?
- 8-6: How do you use a number line to show addition?
- 8-7: Can you add three or four numbers in any order?
- 8-8: How do the addends determine the choice of adding methods?
- 8-9: How can you solve a problem using pictures and number sentences?

- 9: What is the standard procedure for subtracting two digit numbers?
- 9-1: How do you know when you need to regroup when subtracting?
- 9-2: When subtracting, how do you know when you need to regroup?
- 9-3: How do you use paper and pencil to subtract a one digit number from a two digit number?
- 9-4: How can you model subtraction of a two digit number from a two digit number with and without regrouping?
- 9-5: How can you subtract a two digit number from another two digit number using paper and pencil?
- 9-6: How do you use a number line to show subtraction?
- 9-7: How can you use addition to check subtraction?
- 9-8: How do the numbers in a subtraction problem help to determine the method you use to solve?
- 9-9: How can answering one question at a time help to solve two question problems?

- 10: What number patterns are helpful in reading and writing numbers to 1,000?
- 10-1: How many ones make a ten, how many tens make a hundred, and how many hundreds make a thousand?
- 10-2: How can a number be shown using hundreds, tens, and ones place value models?
- 10-3: How do the digits of a number up to 4 digits long show the value of a number?
- 10-4: How does a three digit number change when it is increased or decreased by a multiple of 10 or 100?
- 10-5: How can you use place value to find and describe patterns?
- 10-6: How can a number line be used to skip count?
- 10-7: How does understanding place value help you compare three-digit numbers?
- 10-8: How is ordering three numbers similar to comparing two numbers?
- 10-9: How can finding number patterns help solve problems?

- 11: What are the ways to add and subtract three-digit numbers?
- 11-1: What strategies can you use to add three-digit numbers?
- 11-2: How can you use mental math to add multiples of 100 to a three-digit number?
- 11-3: How can you model and record adding 2 three-digit numbers?
- 11-4: How do you add 2 three-digit numbers using paper and pencil?
- 11-5: What strategies can you use to subtract three digit numbers?
- 11-6: How can you count on or count back to find a missing part?
- 11-7: How can you regroup a hundred when you need to subtract more tens than are present in the tens place?
- 11-8: How do you subtract 2 three digit numbers using paper and pencil?
- 11-9: How can you use logical reasoning to help solve a problem?

### Misconceptions

- 5-1: Groups do not contain ten cubes.
- 5-2: Confused about which number to write.
- 5-3: Even if two numbers have the same number of tens, they are not equal if they do not also have the

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same number of ones.

5-4: Confuse before and after.

5-5: Difficulty using 100 chart to find ten more or less.

5-6: Difficulty using visuals to help discover even or odd numbers.

5-7: Difficulty communicating numbers in terms of ones and tens.

6-1: Confuse tens and ones when counting on.

6-2: Forget to add the remaining ones after they make the next ten.

6-3: Confuse tens and ones when isolating them.

6-4: Children confuse moving down one row and moving right one column.

6-5: Difficulty counting on.

6-6: Unsure of which numbers answer the questions asked.

7-1: Confuse tens and ones when counting back.

7-2: Forget to add ones once they have added the tens.

7-3: As children find the difference, some may lose sight of the number they are moving toward.

7-4: Difficulty counting back.

7-5: Cannot determine extra or missing information in a problem.

8-1, 2: Some students think adding two digit numbers will always result in regrouping.

8-3: Unsure of when to write a zero in the ones column.

8-4: Incorrect sum for the tens place because he or she has forgotten to note regrouping.

8-5: Difficulty noting how the tens and ones are regrouped.

8-6: Difficulty counting on the number line.

8-7: Difficulty understanding not every adding strategy will for for every problem.

8-8: Difficulty recalling basic math facts.

8-9: Write number sentences incorrectly.

9-1: Difficulty regrouping 1 ten as 10 ones on a place value mat.

9-2: Unsure of how to answer a two digit number minus zero.

9-3: Forget to subtract 1 ten from the number in the tens column.

9-4, 5: Difficulty focusing on the ones digits first.

9-6: Difficulty counting back on the number line.

9-7: Confuse a sum of an addition problem as the same as the difference of a related subtraction problem.

9-8: Difficulty regrouping in mental math.

9-9: Difficulty solving the second problem in a multiple step question.

10-1: Difficulty understanding that the one thousand cube shows 1,000.

10-2: Write numbers in the wrong places on the place value mat.

10-3: Difficulty writing the number in word form.

10-4: Difficulty adding or subtracting in one place value column.

10-5: Difficulty filling in columns and rows on chart.

10-6: Difficulty skip counting when more than two consecutive numbers are missing.

10-7: Confuse greater than and less than symbols.

10-8: Confuse place value when comparing digits.

10-9: Difficulty finding the changing place values.

11-1: Difficulty understanding addends can be broken apart.

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<p>11-2: Difficulty adding hundreds.          11-3: Difficulty adding the tens column after they have regrouped in the ones column.          11-4: Forget to write a 1 in the tens of hundreds regrouping.          11-5: Difficulty recalling math facts.          11-6: Difficulty finding a missing part.          11-7: Difficulty modeling regrouping of 1 hundred as 10 tens.          11-8: Difficulty regrouping in more than one place value.          11-9: Difficulty estimating reasonably.</p>
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Stage 2: Evidence of Learning	
Summative Traditional Assessment	Summative Performance Tasks
<ul style="list-style-type: none"> <li>•Pre-test</li> <li>•Mid-Year test</li> <li>•Post-test</li> <li>•Chapter (Topic) test</li> <li>•Quizzes</li> <li>•Performance Assessment Master</li> <li>•Basic Facts Timed Tests</li> <li>•Quick Check Master</li> <li>•Daily Common Core Review</li> </ul>	<ul style="list-style-type: none"> <li>•Projects and Centers</li> <li>•Performance Task Master</li> </ul>

Formative Assessments
<p>Daily Math Problems            Math Terms Dictionary            Spiral Review            Observation            Exit Questions            Classwork/Homework            Oral Questioning            Student Demonstrations (stations/centers)            Problem Solving            Notetaking</p>

Learning Plan	
Interdisciplinary Connections	Technology Connections
<p>Social Studies: Have children find information about cities in your state. Have the compare the information they learned with a partner's city. Tell children to illustrate and write a number sentence about a comparison. Have children share their</p>	<p>Smartboard activities            E-tools on <a href="http://www.pearsonsuccessnet.com">www.pearsonsuccessnet.com</a></p>

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information.

Literature:

Elevator Magic by Stuart J. Murphy introduces the concept of mental subtraction.

### Unit Resources

Scott Foresman Envision Text  
Student workbooks  
Smartboard  
Vocabulary Cards  
Trade books/Story books  
Envision Math Series Problem of the Day  
Spiral Review  
Performance Assessment Master

# New Hanover Township School

## Grade: 2

### Content Area: Mathematics

Domain: Geometry

Stage 1: Desired Results Common Core Standards
<p><b>Reason with shapes and their attributes.</b></p> <ul style="list-style-type: none"> <li>◆2.G.1. Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.</li> <li>◆2.G.2. Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.</li> <li>◆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.</li> </ul>

Essential Understandings	Content Skills
<p><b>Topic 12 Geometry</b></p> <p>12-1, 2: Three-dimensional or solid figures have length, width, and height. Many can be described, classified, and analyzed by their faces or flat surfaces, edges, and vertices. Many everyday objects closely approximate standard geometric solids.</p> <p>12-3: A shape can be identified by the number of its sides, vertices, or angles.</p> <p>12-4: Some shapes can be combined to make new shapes.</p> <p>12-5: Some shapes can be decomposed into other shapes.</p> <p>12-6: Rectangles can be partitioned into equal squares.</p> <p>12-7: A region can be divided into equal-sized parts in different ways. Equal-sized parts of a region have the same area but not necessarily the same</p>	<p>12-1: Children will identify solid figures by their faces, edges, and vertices.</p> <p>12-2: Children will identify the plane shapes that form the flat surfaces of solid figures.</p> <p>12-3: Children will identify and draw polygons and list their attributes.</p> <p>12-4: Children will recognize and name trapezoids, parallelograms, and hexagons put shapes together to make new shapes and identify the number of sides and vertices in each shape.</p> <p>12-5: Children will cut shapes apart or make new shapes.</p> <p>12-6: Children will divide rectangles into equal square and count how many square are needed to complete partition the rectangle.</p> <p>12-7: Children will determine whether a shape has been divided into equal or unequal parts. If the parts of equal children will count the number of parts.</p>

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shape. 12-8: Some problems can be solved by reasoning about the conditions in the problem.	12-8: Children will use clues to solve riddles about plane shapes and solid figures.
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Understanding by Design
Essential Questions
12-1: How can shapes and solids be described, compared, and used to make other shapes? 12-2: What plane shapes form the flat surfaces of some common solid figures? 12-3: How can polygons be identified by attributes? 12-4: How can new shapes be made by combining other shapes? 12-5: How can cutting larger shapes make new smaller shapes? 12-6: How can a rectangle be partitioned into equal squares and the number of squares be counted accurately? 12-7: What does "Equal parts" mean? How do you identify equal and unequal parts? 12-8: How can you use clues about attributes of plane shapes and solid figures to solve a problem?

Misconceptions
12-1: Students think a cylinder has edges. 12-2: Cannot visualize the shape that would be made by tracing the solid figure. 12-3: Think that all sides of a shape need to be equal length. 12-4: Difficulty counting sides or vertices of a shape. 12-5: Difficulty placing 3 lines in the hexagon to make 6 triangles. 12-6: Overlap square over one another. 12-7: Difficulty recognizing equal parts. 12-8: Confuse properties of plane shapes and solid figures.

Stage 2: Evidence of Learning	
Summative Traditional Assessment	Summative Performance Tasks
<ul style="list-style-type: none"> <li>•Pre-test</li> <li>•Mid-Year test</li> <li>•Post-test</li> <li>•Chapter (Topic) test</li> <li>•Quizzes</li> <li>•Performance Assessment Master</li> <li>•Basic Facts Timed Tests</li> <li>•Quick Check Master</li> <li>•Daily Common Core Review</li> </ul>	<ul style="list-style-type: none"> <li>•Projects and Centers</li> <li>•Performance Task Master</li> </ul>

**Formative Assessments**

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Daily Math Problems  
Math Terms Dictionary  
Spiral Review  
Observation  
Exit Questions  
Classwork/Homework  
Oral Questioning  
Student Demonstrations (stations/centers)  
Problem Solving  
Notetaking

**Learning Plan**

<b>Learning Plan</b>	
<b>Interdisciplinary Connections</b>	<b>Technology Connections</b>
Art: Have children search through magazines and newspaper ads for examples of cubes, prisms, cylinders, spheres, circles, rectangles, triangles, and squares. Children can glue and label the pictures they found to a piece of paper to make a shape poster. Display the posters in the classroom.	Smartboard activities E-tools on <a href="http://www.pearsonsuccessnet.com">www.pearsonsuccessnet.com</a>

**Unit Resources**

Scott Foresman Envision Text  
Student workbooks  
Smartboard  
Vocabulary Cards  
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Performance Assessment Master

New Hanover Township School

Grade: 2

Content Area: Mathematics

Domain: Measurement and Data
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Stage 1: Desired Results
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Common Core Standards
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**Measure and estimate lengths in standard units.**

- ◆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, centimeters, and meters.
- ◆2.MD.4. Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.

**Relate addition and subtraction to length.**

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

**Work with time and money.**

- ▲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 involving dollar bills, quarters, dimes, nickels, and pennies, using \$ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

**Represent and interpret data.**

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

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

- ▲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.
- ▲2.NBT.9. Explain why addition and subtraction strategies work, using place value and the properties of operations.

Essential Understandings	Content Skills
<p><b>Topic 13 Counting Money</b>                      13-1: Specific coins each have a unique value. The size of a coin does not indicate its value.                      13-2: Money amounts can usually be counts in different ways. When counting money, it is usually easier to start with the coin or bill with the greatest value.                      13-3: The same amount of money can often be represented using different combinations of coins and bills.                      13-4: Specific coins or bills each hae a unique value. The size of a coin does not indicate its value.                      13-5: Some problems can be solve by generating a list of outcomes and organzing that list ina systematic way so all outcomes are accounted for.</p> <p><b>Topic 14 Money</b>                      14-1: The process for adding money, written using cent notation, is th same as adding whole numbers.                      14-2: The process for subtracting money wirtten using cent notation is the same as subtracting whole numbers.                      14-3: Rounding can be used to estimate sums and differences as can place value an number relationships.                      14-4: Some problems can be solved by making a reasoned first try for what the answer might be and then trhoguth additional reasoning arrive at the correct answer.</p> <p><b>Topic 15 Measuring Length</b>                      15-1: The length of some objects is measureable.                      15-2, 3, 4, 5: The length of any object can be used as a measurement unit for length but a standard unit such as an inch or centimeter is always the same length.</p> <p>15-6: Measurement is a process of comparing a unit to the object being measured. The length of any object can be used as a measurement unit for length.                      15-7: Measurement in ths same unit like inches can be added or subtracted in the same way as</p>	<p>13-1: Children will identify the value of a group of half dollars, quarters, dimes, nickels, and pennies.                      13-2: Children will count collections of coins that include half dollars, quarters, dimes, nickels, and pennies.                      13-3: Children will show the same amount of moey using different sets of coins.</p> <p>13-4: Children will count money amounts greater than one dollar and write the amount with a dollar sign and a decimal point.                      13-5: Children will make an organized list fo find different combinations of coins.</p> <p>14-1: Chidlren will complete and record addition problem using two digit coin amounts.</p> <p>14-2: Children will subtract using two digit coin amounts.</p> <p>14-3: Chidlren will estiamte the sum and difference of 2 two digit numbers.</p> <p>14-4: Children will solve problems involving adding and subtracting money by using the try, check, and revise strategy.</p> <p>15-1: Children will measure the lengths of objects using non-standard notation.                      15-2: Chidlren will estimate and measaure items using inches.                      15-3:Chidlren will estimate and measaure items using centimeters.                      15-4: Chidlren will estimate and measaure items that are an inch, foot, and yard.                      15-5, 6:Chidlren will estimate and measaure the lengths and heights of objects in centimeters and meters and different units.</p> <p>15-7: Children will use addition and subtraction to solve measurement problems.</p>

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<p>adding the subtracting whole numbers. The measurement unit needs to be written with the sum or difference.</p> <p>15-8: The length of two objects can be compared by subtracting to find the difference.</p> <p>15-9: Some problems can be solved by using objects to act out the actions in the problem.</p> <p><b>Topic 16 Time, Graphs, and Data</b></p> <p>16-1: Tie can be given to the nearest five minutes. Time can be expressed using diffreen tunits that are related to each other. AM and PM are used to designate certain time periods.</p> <p>16-2: Time can be expressed before or after the hour.</p> <p>16-3: Data can be organized in different ways.</p> <p>16-4: The lengths of objects can be organized in different ways. A line plot can be used as a visual representation of the relative lengths of objects.</p> <p>16-5: Each type of graph is most appropriate for certain kinds of data. Pictographs and bar graphs make it easy to compare data.</p> <p>16-6: Some problems can be solved by making, reading, and analyzing a graph.</p>	<p>15-8: Children will measure to compare length and express the length difference in a standard unit.</p> <p>15-9: Children will use string and rulers to measure to the nearest inch the length of paths that are not straight.</p> <p>16-1: Children will learn to associate numerals on an analog clock face with increments of five minutes.</p> <p>16-2: Children will read and express time in terms of quare and half past an hour and before an hour.</p> <p>16-3: Children will represent a set of data in a tally chart and Children will use rulers to measure objects and graph the results.</p> <p>16-5: How does showing data in a pictograph and a tally chart help you compare that dat?</p> <p>16-6: Children will use picture graphs and bar graphs to solve problems.</p>
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<p>Understanding by Design Essential Questions</p>
<p>13-1: What strategies can be used to count money?</p> <p>13-2: How can you find the value of a set of mixed coins?</p> <p>13-3: How do you show 100 cents or 1 dollar with different groups of coins?</p> <p>13-4: How do you count combinations of money that include both bills and coins?</p> <p>13-5: How can an organized list show the different ways to make the same amount of money?</p> <p>14: How can sums and differences be estimated?</p> <p>14-1, 2: How is adding money amounts in cents similar to adding tens and ones?</p> <p>14-3: How can you estimate a two digit sum and difference?</p> <p>14-4: How can trying a method, checking the result, and revising as necessary be used to solve problems?</p> <p>15-1: What is the process for measuring length?</p> <p>15-2: How oare standard units such as inches used to measure length?</p> <p>15-3: How oare standard units such as centimeters used to measure length?</p> <p>15-4:What are inches, feet, and yards?</p> <p>15-5: Which classroom objects can be used to approximate the standard unites centimeter and meter?</p> <p>15-6: How does the length of the unit of measurement affect the number of units needed to measure an objects length?</p>

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- 15-7: How can you use addition and subtraction to solve measurement problems?
- 15-8: How can you compare the length of two paths?
- 15-9: How can you use objects to measure lengths of objects that are not straight?
  
- 16-1: How can clocks, bar graphs, and pictographs be used to show data and answer questions?
- 16-2: How can the hands on an analog clock be arranged to show time?
- 16-3: What are different ways to say the time before and other the hour?
- 16-4: How can you use a bar graph to organize information and compare data?
- 16-5: How can you show the lengths of objects to see which is the longest or shortest?
- 16-6: How can you solve a problem by using a graph?

**Misconceptions**

- 13-1: Difficulty counting on from quarters with dimes.
- 13-2: Confuse the size of coin with their values.
- 13-3: Difficulty reading the dollar sign and decimal point.
- 13-4: Difficulty counting coins.
- 13-5: Difficulty finding combinations using limited types of coins.
  
- 14-1: Difficulty adding money amounts.
- 14-2: Forget to note decimal and dollar sign.
- 14-3: Difficulty using the ones place to estimate.
- 14-4: Unable to choose pairs using reasonableness.
  
- 15-1: Become concerned that the paperclip goes beyond the end of the object they are measuring.
- 15-2, 3: Difficulty measuring to the nearest inch or centimeter.
- 15-4: Unsure of the relationship between inches, feet, and yards.
- 15-5: Difficulty determining reasonableness of estimate of a measurement.
- 15-6: Trouble finding the starting and ending points for measuring an objects height.
- 15-7: Misunderstand whether to add or subtract measurements.
- 15-8: Difficulty using the terms longer or shorter.
- 15-9: Difficulty finding the length of an object that is not straight.
  
- 16-1: Difficulty writing time.
- 16-2: Difficulty finding time before the hour.
- 16-3: Difficulty reading a graph.
- 16-4: Difficulty interpreting a line plot.
- 16-5: Difficulty using symbols to represent more than one.
- 16-6: Difficulty using a graph to solve a problem.

**Stage 2: Evidence of Learning**

Summative Traditional Assessment	Summative Performance Tasks
<ul style="list-style-type: none"> <li>•Pre-test</li> <li>•Mid-Year test</li> <li>•Post-test</li> </ul>	<ul style="list-style-type: none"> <li>• Projects and Centers</li> <li>•Performance Task Master</li> </ul>

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<ul style="list-style-type: none"> <li>•Chapter (Topic) test</li> <li>•Quizzes</li> <li>•Performance Assessment Master</li> <li>•Basic Facts Timed Tests</li> <li>•Quick Check Master</li> <li>•Daily Common Core Review</li> </ul>	
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Formative Assessments
<p>Daily Math Problems            Math Terms Dictionary            Spiral Review            Observation            Exit Questions            Classwork/Homework            Oral Questioning            Student Demonstrations (stations/centers)            Problem Solving            Notetaking</p>

Learning Plan	
Interdisciplinary Connections	Technology Connections
<p>STEM: Ask children to choose their favorite dinosaur from this list: Brachiosaur, Pterodactyl, Tyrannosaurus Rex, or Triceratops. Have children research their favorite dinosaur and then draw it on an index card. Tape the cards in corresponding places to make bars.</p>	<p>Smartboard activities            E-tools on <a href="http://www.pearsonsuccessnet.com">www.pearsonsuccessnet.com</a></p>

Unit Resources
<p>Scott Foresman Envision Text            Student workbooks            Smartboard            Vocabulary Cards            Trade books/Story books            Envision Math Series Problem of the Day            Spiral Review            Performance Assessment Master</p>