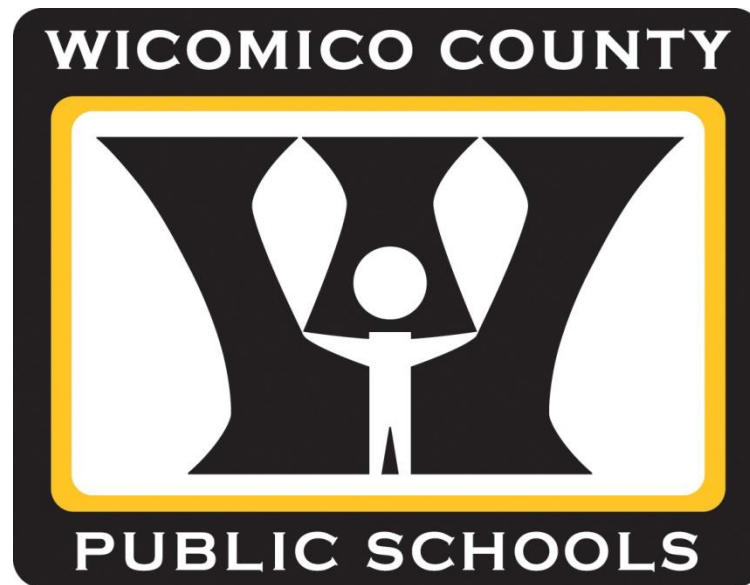# Grade 2
Mathematics Curriculum Resource
for the Maryland College and Career Ready
Standards

Everyday Mathematics 4

- EM4 strategically distributes instruction and practice in a spiral design format. Therefore, it is vital to follow the sequence of lessons and units.
- The goal is to complete four lessons per week utilizing the fifth day for reviewing concepts through EM 4 activities, differentiation, additional resources, and enrichment.
- The additional resources listed in this document are to supplement lessons for differentiation, re-teaching, and review.
- Since the program spirals, it is **not** necessary to master concepts before moving on.
- Some lessons may take more than one day. However, you should adhere to the suggested timeline for each unit in this document so that your students will be adequately prepared for local assessments.
- It is required that you complete the Open Response and Reengagement lessons in each unit. These provide you with formative information which focus on the eight Standards for Mathematical Practice. Utilize PLCs for scoring and range finding.
- It is expected that information be distributed to families regarding the Clever log in procedures to access math apps and programs.
- "Math Boxes" are a daily math student journal page or activity that reviews material on a regular basis and can be completed at any point during the day. It can provide useful ongoing assessment information.
- Games are a vital part of the program. They provide the repetition of the concepts needed for reinforcement and practice; therefore, they should be played regularly.
- It is expected to continue the routines of Math Meetings and Number Talks in addition to the EM 4 lesson components. (See the Suggested 75-minute planning template).
- The county expectation for **DreamBox** is 5 lessons per week.
- Continue to utilize the tasks from ES9 Tasks, Tackle the Task booklets, and reasoning and modeling item bank which can be found on the shared drive and/or in eDoctrina.

Components for Focus, Coherence, And Rigor

These components can be found at the beginning of each unit to focus instruction on rigorous content, as well as coherence of vertical alignment across grade levels.

Components for Differentiation

These components provide instructional support within the lessons to address the needs of special populations.

WIN Time and Flex Day Clarification

WIN (What I Need) Time 25 Minutes Daily	Flex Days 1-2 Per Week
Use eDoctrina Unit Report, MAP reports, exit tickets, clipboard cruising, etc. to determine what you will focus on in both WIN time and flex days. ****DreamBox can be utilized either day, but usage should not exceed 60 minutes per week.	
• Meet with small groups based on data. • Different groups can focus on different skills. (Based on data) • *Do the Math* small groups meet. • Provide enrichment as well as intervention.	• This is a teaching day, whether it be whole group or small group, it is not a game day. • These days can be used to "catch up" if you are beyond the suggested dates of the At-a-Glance document. • Reteach or extend a lesson. • Build background for an upcoming unit. (Example: Reviewing place value before a unit on partial sums addition and expand-and-trade subtraction.) • Use additional resources from Google shared drive unit folders. • Use additional EM4 materials you may not have been able to use on the day of the lesson. • Complete writing tasks, Tackle the Task or ES9 Tasks. • Give students activities to promote independence. Written or task type activities should be completed without support/clarification and with time limits. • Use technology resources aligning with current unit including Braining Camp or Tang Math.

GR K-5 Suggested Math Lesson Plan Template (75 Minute Block)

EM4 Lesson and Overview –

Standards/Objectives –

Standards for Mathematical Practice (Circle those applicable.)							
1. Students make sense of problems and persevere in solving them	2. Students reason abstractly and quantitatively	3. Students construct viable arguments and critique the reasoning of others	4. Students model with mathematics	5. Students use appropriate tools strategically	6. Students attend to precision	7. Students look for and make use of structure	8. Students look for and express regularity in repeated reasoning

**Times are approximate and may vary for each component based on lesson/skill.

Lesson Component	Time	Activities	Materials
Lesson Openers	10/15 min 10 min	• Math Meeting and/or Number Talk • Daily Structured Word Problem • Strategy focused basic fact discussion	Number Talk Book Quick Look Cards (K-3) Math Meeting Materials Brainingcamp Tang Math Word Problems

	Time	EM4 Focus	Materials
Lesson Focus (Step 2) (2-4 activities) Practice (Step 3)	30 min	• Math Message • Share objective, essential questions, and success criteria • Focus Activities • Journal Pages/Tackle the Tasks • Math Boxes – Math Boxes must be completed daily to give students sufficient opportunities to review skills and concepts. • Assessment Check-In	EM4 Tackle the Task and ES9 Tasks 3 Act Tasks Student Math Journals Tang Math Nearpod Brainingcamp

Lesson Component	Time	Activities	Materials
Supplemental Support	15-20 min	• Small Group Support/DreamBox	EM4 Tang Math

Lesson Component	Time	Activities	Materials
Closure	5-10 min	• Review objective(s), essential question, and success criteria. • Students reflect on their learning and the success criteria	Formative assessment in eDoctrina Exit ticket

GR K-5 Suggested Math Lesson Plan Template (75 Minute Block)

EM4 Lesson and Overview –

Standards/Objectives –

Standards for Mathematical Practice (Circle those applicable.)							
1. Students make sense of problems and persevere in solving them	2. Students reason abstractly and quantitatively	3. Students construct viable arguments and critique the reasoning of others	4. Students model with mathematics	5. Students use appropriate tools strategically	6. Students attend to precision	7. Students look for and make use of structure	8. Students look for and express regularity in repeated reasoning

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Lesson Component	Time	Activities	Materials
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	Time	**EM4 Focus**	**Materials**
Lesson Focus (Step 2) (2-4 activities) Practice (Step 3)	30 min	• Math Message • Focus Activities • Journal Pages/Math Boxes/ ACIs	
Lesson Component	**Time**	**Activities**	**Materials**
Supplemental Support	15-20 min		
Lesson Component	**Time**	**Activities**	**Materials**
Closure	5-10 min		

Math Meetings

Math Meetings **must** be done 2-5 times a week. A Math Meeting gets your students thinking and ready for math class. It helps create a routine for part of the 75-minute math block.

Value of Routines -

1. Bring sense of predictability and comfort to our classrooms.
2. Help with organization and classroom management and help make transitions smooth.
3. Can enhance instruction.
4. Offer access to big ideas in mathematics and allow deep understanding of math concepts.
5. Can be designed to focus on the desired math content/student needs.
6. Give students opportunities to develop expertise with the eight Standards for Mathematical Practice.

Elements of a Math Meeting:

▪ Takes place daily unless a full Number Talk is done that day

▪ Is 10 - 15 minutes in duration (timer would be helpful)

▪ Students use whiteboards/pinch cards/templates to show responses

▪ Include a variety of activities based on place value, facts fluency, number sense, and problem solving

▪ The expectation is to complete several activities in 10-15 minutes

▪ Students can be brought to a common area around the teacher (or move some closer)

▪ Review of skills previously taught this year and earlier years (spiral)

▪ Add variety as the year progresses

- **Grade 2 - Suggested Math Meeting Activities (For all year):**

- Number of the Day – 2-digit numbers
- Placing a number on an open number line
- Simple addition and subtraction on a number line
- Telling time to the nearest hour, half hour, quarter hour and 5 minutes
- 120 Chart activities
- Subitizing – dot cards, ten frames, double ten frames
- Number Bonds
- Give Me a Ten
- Hit the Target Activity
- Here to There Activity
- Tens and Ones chart activities (can include up to hundreds)
- Movin' On Two Trains Activity
- Tens Are Friends Activity
- Counting Collections
- Fact Fluency strategies
- 10 more/less and 100 more/less on a hundred chart
- Counting coins and bills
- Four Square template to show ways to solve a problem
- Three Digit Number Representations to 500
- Odd Man Out
- Decompose to add and subtract
- Even and odd numbers (identify/explain/draw)
- Graphing activities
- Solve arrays using the bar model and/or repeated addition
- Solve word problems using a number line, graphs, money, and measurement
- Look fast cards
- Review shapes
- Find the difference in length of two objects. Compare and contrast.

38	➡	58
25	➡	55
37	➡	87
46	➡	55
53	➡	93

Number Talks

Number Talks **must** be done at least 2-3 times a week. The activity will take between 5 and 15 minutes. Sherry Parrish's book, *Number Talks,* provides examples that will help build students' fluency, mental math capabilities and reasoning skills. Video clips from Math Solutions can be found on the disc located in your Number Talks book.
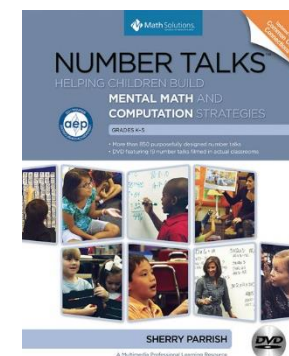
During the Number Talk, the teacher is not the definitive authority. The teacher is the facilitator and is listening for and building on the students' natural mathematical thinking. The teacher writes a problem horizontally on the board in whole group or a small setting. The students mentally solve the problem and share with the whole group **how** they derived the answer. They must justify and defend their reasoning. The teacher simply records the students' thinking and poses extended questions to draw out deeper understanding for all.

The effectiveness of Numbers Talks depends on the routines and environment that is established by the teacher. Students must be given time to think quietly without pressure from their peers. To develop this, the teacher should establish a signal, other than a raised hand, of some sort to identify that one has a strategy to share. One way to do this is to place a finger on their chest indicating that they have one strategy to share. If they have two strategies to share, they place out two fingers on their chest and so on.

Number talks lessons often have a focus strategy such as counting on, doubles/near doubles, making tens, landmark or friendly numbers, compensation, and adding up in chunks. Providing students with a string of related problems, allows students to apply a strategy from a previous problem to subsequent problems. Some units lend themselves well to certain Number Talk topics. These mental math strategies should be applied with problems throughout daily math lessons.

Wicomico County's Fact Fluency Expectations

A substantial amount of mathematics education research shows that children do not master their math facts through memorization alone. Instead, true mastery comes from being equipped with quick and effective strategies for finding the solution. By using these strategies, children will always have the mental tools needed to find the correct answer and the confidence to use them (Boaler, 2009).

Pivotal Ideas for Numerical Fluency (Steve Leinwand)

1. All quantities are comprised of **parts and wholes** so that one understands that quantities can be put together and taken apart in a variety of ways.

2. All numbers greater than 1 can be **decomposed into small numbers**. Automaticity with decomposing the numbers 3, 4, 5 and 6 are non-negotiable and completely teachable aspects of numerical fluency. THIS ONE IS A GATEKEEPER!

3. **Acquisition of the language of the four operations** must precede the learning of facts because number sentences and equations make no sense unless grounded in situations. Accordingly, storytelling and acting out are essential strategies for developing operation sense and numerical fluency.

4. There are several **powerful properties of operations** that reduce memory load and contribute to numerical fluency.

5. **Numerical fluency requires that students talk** about how numbers relate to one another and participate in discussions of alternative approaches that students use.

6. **5 and 10 are cornerstones of numerical fluency** and play a critical role in our number system, hence the power of five frames and ten frames. Mastery of 5 + numbers, that is, 5 + 1, 5 + 2, 5 + 3, etc., is critical for developing fluency.

7. **A deep understanding that 9 and (10 – 1)** are the same number, supports numerical fluency with a range of so-called "hard" addition, subtraction, multiplication and division facts.

8. **Deep knowledge of groups of 2, 3, 5 and 10 are cornerstones to multiplication fluency.**

9. **Addition facts are a foundation for all of the rest of the operations.**

10. **Place value understanding dominates fluency with larger numbers.**

Students develop basic fact fluency through stages:

1. Introduce a strategy with concrete materials and pictorial representations.
2. Reinforcing the strategy through pictorial models and connecting it to the symbolic models.
3. Practice the strategy through a range of activities that are written and oral. This stage develops accuracy and speed of recall.
4. Extend the strategy by applying the strategy to other numbers.

In grades K-2 stages 1 and 2 utilize subitizing cards, ten frames, and rekenreks. Then students should connect these pictorial models to a written strategy first by orally explaining and then by writing.

By mid-year, the focus should be on connecting to written strategies. Representations alone are not enough to demonstrate fluency.

For example: Make a Ten Strategy

$$9 + 6$$

$$10 + 5$$

$$7 + 6 = \_\_\_\_$$

$$10 + \_\_\_\_ = \_\_\_\_$$

$$9 + 6 = 15$$
$$9 + 1 = 10$$
$$10 + 5 = 15$$
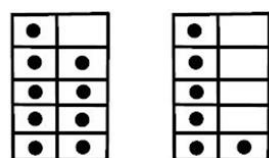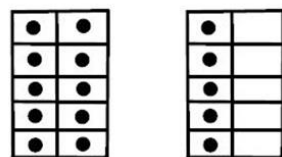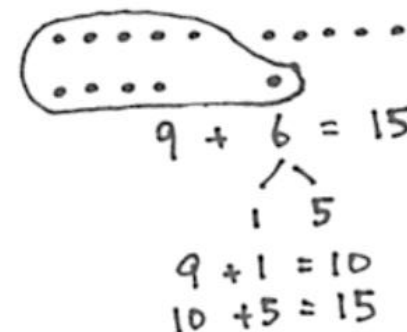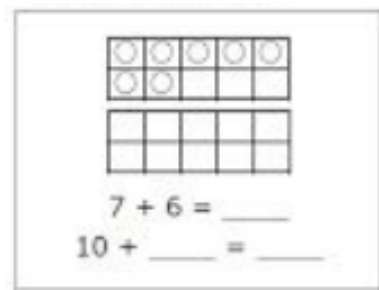
If you know the sum, just write it down. If not, then find the sum by making ten.

$$7 + 4 =$$

$$4 + 7 =$$

| 5 | 7 | 6 | 8 | 7 | 9 |
| + 9 | + 4 | + 8 | + 4 | + 6 | + 4 |

| 7 | 3 | 9 | 8 | 4 | 6 |
| + 7 | + 8 | + 6 | + 3 | + 7 | + 9 |

Resources for Fluency Practice
See Chapter 4: Helping Children Master the Basic Facts in Van de Walle (K-3)
Using flashcards for purposeful practice. See Van de Walle (sorting facts, supporting a strategy)
Drill and practice which focus on strategies – See Van de Walle pg. 117
Number Talks (students discuss strategies and flexibility of numbers)
Quick Look Cards, Subitizing Cards, Ten frames, Triangle Flashcards
Games which reinforce strategies – EM 4 Games, See folder in shared drive

Assessment – student interviews, observation, and writing prompts.
Avoid timed tests and drills since they offer little insight about how flexible students are in their use of strategies or even which strategies a student selects.

FIGURE 2

Various responses to a journal prompt illustrate the strategies that first graders used and reveal which children were able to appropriately select and explain an efficient strategy for the task.

If your friend did not know the answer to 4 + 5, how could he figure it out?

MAY 10, 2012
I would tell my friend to take 5 and count 4 in your hand

I would tell my friend to Start with 5 then add 2 Then one more 2 and then You have 9.

I would tell my friend to yoos a double plus 1. 4+4=8 so count up now you get your ancer

I would tell my friend To take away one number from ten. And that is nine. I know that five plus five equals ten.

TABLE 3

This collection of prompts addresses the four components of fluency with basic facts. Writing about their strategies on a weekly basis engages students in self-reflection and monitoring, as well as emphasizes the importance of strategies in practicing basic facts.

Writing prompts for developing fluency with the basic facts

Appropriate strategy selection	Flexibility
• Explain how to use the "count on" strategy for 3 + 9. • What strategy did you use to solve 6 + 8? • A friend is having trouble with some of his times 6 facts. What strategy might you teach him? • Emily solved 6 + 8 by changing it in her mind to 4 + 10. What did she do? Is this a good strategy? Tell why or why not.	• How can you use 7 × 10 to find the answer to 7 × 9? • Solve 6 × 7 using one strategy. Now try solving it using a different strategy. • Emily solved 6 + 8 by changing it in her mind to 4 + 10. What did she do? Does this strategy always work?

Efficiency	Accuracy
• What strategy did you use to solve 9 + 3? • How can you use 7 × 7 to solve 7 × 8? • Which facts do you "just know"? For which facts do you use a strategy?	• Crystal explains that 6 + 7 is 12. Is she correct? Explain how you know. • What is the answer to 7 × 8? How do you know it is correct (how might you check it)?

Creative writing ideas that address several components

• Develop a "Face the facts" or "Ask Cougar" column (like Dear Abby) for the class. (Pick a fun name for the column that makes sense for the class, such as the school mascot.) Students send a letter about a tough fact. Rotate different students into the role of responder. The responder writes letters back, suggesting a strategy for the tough fact.
• Create a strategy rhyme (e.g., If times four is giving me trouble, I'll remember to double and double).
• Make a facts survival guide. Children prepare pages illustrating with visuals (e.g., ten frames or arrays) of how find "tough" facts.
• Write a yearbook entry to some facts (e.g., Dear 8 × 7, I …)

(See McIntosh 1997 for many more ideas).

Grade 2 Overview

Operations and Algebraic Thinking (OA)
- Represent and solve problems involving addition and subtraction.
- Add and subtract within 20.
- Work with equal groups of objects to gain foundations for multiplication.

Number and Operations in Base Ten (NBT)
- Understand place value.
- Use place value understanding and properties of operations to add and subtract.

Measurement and Data (MD)
- Measure and estimate lengths in standard units.
- Relate addition and subtraction to length.
- Work with time and money.
- Represent and interpret data.

Geometry (G)
- Reason with shapes and their attributes

Major Cluster   **Supporting Cluster**   **Additional Cluster**

Standards for Mathematical Practice	
Standards	**Explanations and Examples**
	Mathematical Practices are listed throughout the grade level document in the last column to reflect the need to connect the mathematical practices to mathematical content in instruction.
1. Make sense of problems and persevere in solving them.	In second grade, students realize that doing mathematics involves solving problems and discussing how they solved them. Students explain to themselves the meaning of a problem and look for ways to solve it. They may use concrete objects or pictures to help them conceptualize and solve problems. They may check their thinking by asking themselves, "Does this make sense?" They make conjectures about the solution and plan out a problem-solving approach.
2. Reason abstractly and quantitatively.	Younger students recognize that a number represents a specific quantity. They connect the quantity to written symbols. Quantitative reasoning entails creating a representation of a problem while attending to the meanings of the quantities. Second graders begin to know and use different properties of operations.
3. Construct viable arguments and critique the reasoning of others.	Second graders may construct arguments using concrete referents, such as objects, pictures, drawings, and actions. They practice their mathematical communication skills as they participate in mathematical discussions involving questions like "How did you get that?", "Explain your thinking," and "Why is that true?" They not only explain their own thinking, but listen to others' explanations. They decide if the explanations make sense and ask appropriate questions.
4. Model with mathematics.	In early grades, students experiment with representing problem situations in multiple ways including numbers, words (mathematical language), drawing pictures, using objects, acting out, making a chart or list, creating equations, etc. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed.
5. Use appropriate tools strategically.	In second grade, students consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be better suited. For instance, second graders may decide to solve a problem by drawing a picture rather than writing an equation.
6. Attend to precision.	As children begin to develop their mathematical communication skills, they need to use clear and precise language in their discussions with others.
7. Look for and make use of structure.	Second graders look for patterns and structure in mathematics. For example, they adopt mental math strategies based on patterns (making ten, fact families, doubles).
8. Look for and express regularity in repeated reasoning.	Students notice repetitive actions in counting and computation, etc. When children have multiple opportunities to add and subtract, they look for strategies, such as rounding up and then adjusting the answer to compensate for the rounding. Students continually check their work by asking themselves, "Does this make sense?"

GRADE 2 COMMON CORE INTRODUCTION

In the two years prior to Grade 2 students gained an understanding of whole numbers to 120, began to develop strategies for addition and subtraction, worked with non-standard measurement, and reasoned about attributes. Students are fluent in adding and subtracting within 10. Students also have an initial understanding of place value of two-digit numbers.

In Grade 2 students apply the strategies for addition and subtraction they developed in earlier grades to larger numbers and develop more sophisticated computational strategies based on place value, the relationship between addition and subtraction, and properties of the operations. They solve addition and subtraction problems within 1000 by applying their experience with using models. They develop, discuss, and use generalizable methods to efficiently and accurately compute sums and differences of whole numbers. They reach fluency in addition and subtraction within 100, and mental fluency in addition and subtraction within 20. Throughout Grade 2 students extend their problem-solving strategies to include one-and two-step problems involving all the problem types shown in the table on page 16. They are introduced to standard units of measure and estimation of length. Students continue developing geometric concepts and spatial reasoning by composing and decomposing shapes with a new focus on examining sides and angles.

The Table below is an important resource for understanding addition and subtraction structures. Problems in this format should be used on a regular basis.

Table 1 Common addition and subtraction situations[1]

	Result Unknown	Change Unknown	Start Unknown
Add to	Two bunnies sat on the grass. Three more bunnies hopped there. How many bunnies are on the grass now? $2 + 3 = ?$	Two bunnies were sitting on the grass. Some more bunnies hopped there. Then there were five bunnies. How many bunnies hopped over to the first two? $2 + ? = 5$	Some bunnies were sitting on the grass. Three more bunnies hopped there. Then there were five bunnies. How many bunnies were on the grass before? $? + 3 = 5$
Take from	Five apples were on the table. I ate two apples. How many apples are on the table now? $5 - 2 = ?$	Five apples were on the table. I ate some apples. Then there were three apples. How many apples did I eat? $5 - ? = 3$	Some apples were on the table. I ate two apples. Then there were three apples. How many apples were on the table before? $? - 2 = 3$

	Total Unknown	Addend Unknown	Both Addends Unknown[2]
Put Together/ Take Apart[3]	Three red apples and two green apples are on the table. How many apples are on the table? $3 + 2 = ?$	Five apples are on the table. Three are red and the rest are green. How many apples are green? $3 + ? = 5, 5 - 3 = ?$	Grandma has five flowers. How many can she put in her red vase and how many in her blue vase? $5 = 0 + 5, 5 = 5 + 0$ $5 = 1 + 4, 5 = 4 + 1$ $5 = 2 + 3, 5 = 3 + 2$

	Difference Unknown	Bigger Unknown	Smaller Unknown
Compare[4]	("How many more?" version): Lucy has two apples. Julie has five apples. How many more apples does Julie have than Lucy? ("How many fewer?" version): Lucy has two apples. Julie has five apples. How many fewer apples does Lucy have than Julie? $2 + ? = 5, 5 - 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Lucy has two apples. How many apples does Julie have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Lucy has two apples. How many apples does Julie have? $2 + 3 = ?, 3 + 2 = ?$	(Version with "more"): Julie has three more apples than Lucy. Julie has five apples. How many apples does Lucy have? (Version with "fewer"): Lucy has 3 fewer apples than Julie. Julie has five apples. How many apples does Lucy have? $5 - 3 = ?, ? + 3 = 5$

[2]These take apart situations can be used to show all the decompositions of a given number. The associated equations, which have the total on the left of the equal sign, help children understand that the = sign does not always mean makes or results in but always does mean is the same number as.

[3]Either addend can be unknown, so there are three variations of these problem situations. Both Addends Unknown is a productive extension of this basic situation, especially for small numbers less than or equal to 10.

[4]For the Bigger Unknown or Smaller Unknown situations, one version directs the correct operation (the version using more for the bigger unknown and using less for the smaller unknown). The other versions are more difficult.

Grade 2 Math At-A-Glance 2022 – 2023		
Units	**Suggested Dates**	**Important Dates**
Unit 1: Establishing Routines In this unit, children work in an active, collaborative environment to learn both mathematics content and mathematical practices.	September 19 – October 14 20 days (6 flex days)	September 5 – Labor Day September 6 – 16 Building Math Routines & Community MAP Testing
Unit 2: Fact Strategies In this unit, fact strategies and program routines from *First Grade Everyday Mathematics* are reviewed and extended. Frequent experiences throughout second grade with these strategies and routines should prepare children to know from memory all sums of two 1-digit numbers by the end of the year.	October 17 – November 16 21 days (7 flex days)	October 20 – Early Dismissal – PD in PM October 21 – MSEA Convention November 7 – Early Dismissal November 8 – General election
Unit 3: More Fact Strategies In this unit, more fact strategies are developed, with a focus on strategies for solving subtraction facts. Additional routines and games for practicing facts are introduced, and frequent use of them will support the development of fluency with addition and subtraction within 20 by the end of second grade.	November 17 – December 16 19 days (6 flex days)	November 23 – 25 Thanksgiving December 19 –January 1 Winter Holiday
Unit 4: Place Value In this unit, children extend their understanding of place value, which provides a foundation for the development of strategies for fluently adding and subtracting multi-digit numbers later in second grade. They also explore standard tools and units for measuring length and time.	January 2 – February 1 21 days (8 flex days)	January 16 MLK Day January 30 PD Day – no students MAP Testing
Unit 5: Addition and Subtraction In this unit, children review addition and subtraction problems in the context of money and number stories. They learn strategies for mentally adding and subtracting 10 and 100.	February 2 – March 3 21 days (8 flex days)	February 17 – Early Dismissal – PD in PM February 20 – President's Day
Unit 6: Whole Number Operations and Number Stories In this unit, children collect and display data about pockets on two different types of graphs. They are introduced to comparison number stories and two-step number stories. Later in the unit, they share and record their own invented strategies for addition and learn a formal addition strategy.	March 6 – April 5 23 days (11 flex days)	March 17 – Early Dismissal – PD in PM April 5 – Early Dismissal for students April 6-10 – Spring break
Unit 7: Whole Number Operations, Measurement, and Data In this unit, children further explore addition and subtraction strategies and use them to add three or more numbers. They use units of yards and meters to measure distances. At the end of the unit, they collect data and display it in a frequency table and a line plot. Introduce 2 and 3-digit subtraction and continue to add 2 & 3-digit numbers	April 11 – May 3 17 days (6 flex days)	
Unit 9: Equal Shares and Whole Number Operations In this unit, children partition shapes into equal shares and apply these ideas to further explore length measurement. They also learn a new subtraction strategy based on place value and continue working with equal groups. Include 3-digit addition and subtraction with and without regrouping	May 4 – May 26 17 days (4 flex days)	May 29 – Memorial Day MAP Testing
Unit 8: Geometry and Arrays In this unit, children explore 2- and 3-dimensional shapes and their attributes. They partition rectangles into rows and columns of same-size squares. At the end of the unit, they explore strategies for determining the total number of objects in equal groups and rectangular arrays.	May 30 – June 14 12 days	June 12-14 -1/2 day for students

Grade 2 Math Standards	Units								
The following standards will appear in the Curriculum Document in the Units as marked.	1	2	3	4	5	6	7	8	9
2.OA.A.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.		X	X		X	X	X	X	X
2.OA.B.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.	X	X	X	X	X	X	X	X	X
2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	X	X							X
2.OA.C.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.				X	X	X		X	X
2.NBT.A.1 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).		X		X		X	X		X
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.	X	X		X	X	X		X	X
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	X	X	X	X		X	X		X
2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	X			X		X			X
.2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	X	X	X	X	X	X	X		X

Grade 2 Math Standards	Units								
The following standards will appear in the Curriculum Document in the Units as marked.	1	2	3	4	5	6	7	8	9
2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations							X		X
2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds	X	X	X	X	X	X			X
2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	X				X				X
2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)	X	X	X		X	X	X		X
2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.				X		X	X		X
2.MD.A.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.				X		X	X		
2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.				X			X		
2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard, length unit.						X	X		X
2.MD.B.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.						X			

Grade 2 Math Standards	Units								
The following standards will appear in the Curriculum Document in the Units as marked.	1	2	3	4	5	6	7	8	9
2.MD.B.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.	X		X		X	X	X		X
2.MD.C.7. Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.				X	X				
2.MD.C.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?*	X	X	X		X				X
2.MD.D.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				X			X		
2.MD.D.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						X	X		
2. G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.		X		X	X	X	X		
2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	X		X					X	
2.G.A.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.		X						X	X

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**

Lesson 1-1 Numbers All Around
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons
2.MD.B.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.

Children explore counts and represent whole numbers as lengths from 0 on a number line. Explain to them that number lines can be horizontal, vertical, or curved. They will understand place value and relate addition and subtraction to length. **2.NBT.A.2** Students need many opportunities counting, up to 1000, from **different starting points**. They should also have many experiences skip counting by 1s, 10s, and 100s to develop the concept of place value. Examples: • The use of the 120s chart may be helpful for students to identify the counting patterns. Then build to larger numbers. • The use of money (pennies, nickels, dimes, and dollars) or base ten blocks may be helpful visual cues. The ultimate goal for second graders is to be able to count in multiple ways with no visual support. Example: Students can use finger paint to make handprints. Then they can practice counting by 2's, 5s, or 10's.	**2.NBT.A.2** **Teaching Student Centered Mathematics** Skip Count Patterns, page138 **Lessons:** Count Up and Down Between 100 and 220 Using Ones and Tens Model 1 More and 1 Less, 10 More and 10 Less, and 100 More and 100 Less When Changing the Hundreds Place **Activities and Tasks:** More or Less Activity Floor Size Number Line
Use a 120 chart to help students practice starting from different points. Examples: Start at 48 and count by 5's. Or start at 29 and count by 10's.	**2.MD.B.6** **Lessons:** Frog and Toad on a Number Line
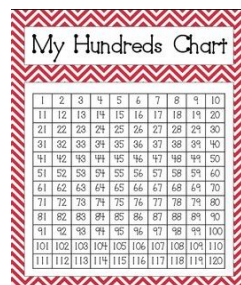
Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**
2.NBT.A.3 Students need many opportunities reading and writing numerals in multiple ways. In this lesson, teachers can address this standard by using the differentiated options (Ordering Numbers, Solving Number-Line Puzzles, or Counting on a Number Line). **2.MD.B.6** Students represent their thinking when adding and subtracting within 100 by using a number line. In this lesson, students are exploring ways to use a number line involving adding, subtracting, and counting. Example: Students can use a number line to model numbers and find missing numbers.	
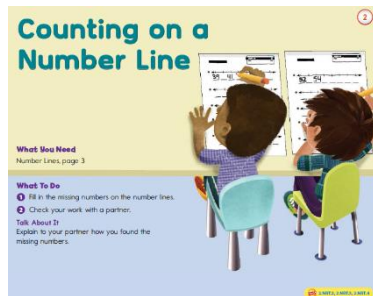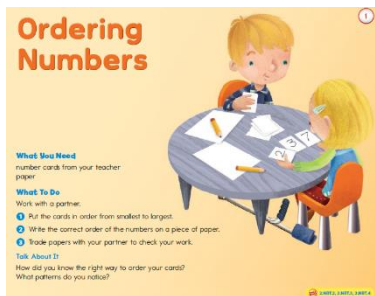
Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**

Lesson 1-2 Number Lines and Partnership Principals

2.OA.B.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.

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

2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

2.MD.B.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.

Children practice partnership principles while solving addition and subtraction number stories and representing whole-number sums and differences on a number line. They also play a game to practice locating and comparing numbers on a number line. **2.OA.B.2** This standard is strongly connected to all the standards in this domain. It focuses on students being able to fluently add and subtract numbers to 20. Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Mental strategies help students **make sense** of number relationships as they are adding and subtracting within 20. The ability to calculate mentally with efficiency is very important for all students. **2.NBT.A.3 & 2.NBT.4** Students will play *Number-Line Squeeze*. Partners compare numbers on number lines. **2.NBT.B.7 All lessons for 2.NBT.7 also cover 2.NBT.9.** There is a strong connection between this standard and place value understanding with addition and subtraction of smaller numbers. Students may use concrete models or drawings to support their addition or subtraction of larger numbers. In this lesson, students will solve number stories using one of the number lines inside the back cover of their journals. **2.MD.B.6** Students represent their thinking when adding and subtracting within 100 by using a number line.	**2.OA.B.2** **Teaching Student-Centered Mathematics** Strategies for Addition Facts, pgs. 99-111 One Up and One Down: Addition, page 308 **Lessons:** Building Towards Fluency **Activities and Tasks:** Find multiple activities in the fact fluency resources folder on the "V" drive. **2.NBT.B.7** **Teaching Student Centered Mathematics** Chapter 6, Strategies for Whole Number Computation, pages 157-172 Expanded Lesson: Exploring Subtraction Strategies, pages 184-185

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**
Addition: Example - John has 13 crayons. He found 6 more. How many crayons does John have? (19 crayons) **Subtraction:** Example – Shelly made 12 cupcakes for her friend's birthday party. Her friends ate 7 cupcakes. How many cupcakes did Shelly have left? **(See lesson 1-1 for Additional Resources for this lesson)**	**Online:** Thinking Blocks for bar models

Lesson 1-3 Math Tools, Lesson 1-8 My Reference Book, Quarters, and Math Boxes
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.MD.C.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?*

In lesson 1-3, children count tallies and calculate the values of coin combinations. In lesson 1-8, children investigate *My Reference Book* and are introduced to the quarter and Math Boxes. **2.NBT.A.2** Students will skip count by 1s, 5s, and 10s. They will also use tally marks and coins to skip count. **2.NBT.A.3** Students will learn the Slate Routine and practice writing numbers, number names, etc. (*Example: Write the number that comes before 200. **199***) **2.MC.C.8** Students will identify and count using dimes, nickels, and pennies. In lesson 1-3, the focus is on the examining the nickel. Discuss size (it is larger than the dime and thicker than the penny). Also, discuss pictures on each side of the coins. The quarter is introduced in lesson 1-8. = 1 cent = 5¢ = 10 cents	**2.NBT.A.2 & 2.NBT.A.3 (See Lesson 1-1 for Additional Resources)** **2.MD.C.8** **Teaching Student-Centered Mathematics:** Activity 5.28 Money Counts page 151 Activity 5.29 Coin-Number Addition page 152 **Activities and Tasks:** Counting Collections Cards **Templates and Visuals** Money Posters (teacher made) Anchor Chart for Coins (teacher made)

Lesson 1-4 Class Number Scroll
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.

Children will make a class number scroll from 0 to 1,000 using place-value strategies. **2.NBT.A.2** Students will skip-count by 2s, 5s, 10s.	**2.NBT.A.2 & 2.NBT.A.3 (See Lesson 1-1 for Additional Resources)**

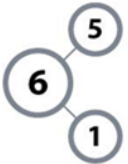| Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**
2.NBT.A.3 Students are expected to write numbers in a sequence and explore patterns. **2.NBT.B.8** Students need many opportunities to practice mental math by adding and subtracting multiples of 10 and 100 up to 500 using different starting points. They can practice this by counting and thinking aloud, finding missing numbers in a sequence, and finding missing numbers on a number line or thousands chart. Explorations should include looking for relevant patterns. Students who are forced to rely on algorithms and procedural understanding of mathematics struggle with the ability to fluently add and subtract 10 and/or 100 to numbers. These students often try to rewrite the problem in an algorithmic fashion because they believe that is what they must do to do math. Mental math strategies may include: • counting on; 300, 400, 500, etc. • counting back; 450, 350, 250, etc. Examples: • 100 more than 353 is _____ (453) • 10 less than 487 is _____ (477) • "Start at 248. Count up by 10s until I tell you to stop." Sample Questions: • Add and subtract 10 from 247. What do you notice when looking at the three numbers? What about when you add and subtract 100 from 247? • Starting at 765, how many groups of ten will you need to add to get to 805? (Reverse these question types for subtraction) • How does a hundred chart help you when you are adding and subtracting 10 from a number like 57? (Or multiple groups of 10 such as 30 and 50) • Caroline is solving 72 + 10. She is using a hundred chart. She starts on 72 and counts 73, 74, 75, etc. until she gets to 82. Paul says there is an easier way to find the answer using the hundred chart. What do you think Paul will tell Caroline?	**2.NBT.B.8** **Lessons:** Relate 1 More, 1 Less, 10 More, and 10 Less to Addition and Subtraction of 1 and 10 **Activities and Tasks:** More or Less Adding Ten and One Chart Puzzle Pieces Number Puzzle Frames Plus 10 Skip Counting Paths **Learn Zillion Videos on YouTube:** Mentally Add or Subtract 10 Using a Hundred Chart Add and Subtract 10 with Regrouping by Using a Place Value Model **Online:** ICT Educational Games

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**

	In this lesson, students use a number grid (120 chart) and a number scroll to describe a counting pattern and learn how to add and subtract using multiples of 10 or 100. Example: Start at 3 on the number grid and count by 3s to 50. Example: Start at 14. What is 10 more than 14? Example: Start at 68. Count back 40. What number did you land on?	

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110

Common Misconception: Watch for children who write 139 as 10039. Remind them that a number in the hundreds has three digits. Display using a place value chart for students. Also watch for children who have difficulty with transitioning from 109 to 110, or from 199 to 200. Use a calculator to show the change from 9 to 0 in the ones/tens places. Or use a number line.

Lesson 1-5 Number-Grid Puzzles (2 days – Open Response and Re-engagement)
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.
2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

Day 1 Children use patterns to solve an open response problem. Open Response and Re-engagement lessons provide excellent opportunities for modeling problem-solving strategies for children. Modeling may involve demonstrating what a good response looks like, showing steps to solve a problem, or having a discussion so students can explain their thinking. **2.NBT.A.2** Students will skip-count by 5s and 10s. **2.NBT.B.8** Students will use a number grid (120 chart) to find four missing numbers in a section of the number grid. They will need to add and subtract 1s and 10s to find the missing numbers in sequence. **2.NBT.B.9** Students need multiple opportunities explaining their addition and subtraction thinking. Operations embedded within a meaningful context promote development of reasoning and justification. Students should be able to connect different representations and explain the connections. Representations can include numbers, words (including mathematical language), pictures, number lines, and/or physical objects. Students should be able to use any/all of these representations as needed.	**2.NBT.A.2 (See Lesson 1-1 for Additional Resources)** **2.NBT.B.8 (See Lesson 1-4 for Additional Resources)** **2.NBT.B.9** **Lessons:** All lessons from 2.NBT.B.7 cover this standard as well.

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**
Day 2 Students will need to explain why/how their addition or subtraction strategy worked. (Counting on, counting back, or using place-value patterns) *Common Misconception: Many children recognize that the numbers 10, 20, and 30 are counting by 10s. But they struggle knowing that 54, 64, and 74 also show counting by 10. Have them use a number grid to see how much the numbers increase as they move down one row on the grid.*	
Lesson 1-6 Equivalent Names for Numbers, Lesson 1-7 Playing Fish for 10, and Lesson 1-10 Skip-Counting Patterns **2.OA.B.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.** **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.**	
Children use addition and subtraction to write equivalent names for numbers. They reinforce place-value concepts by skip counting on calculators and number grids. They also build fact fluency by finding combinations of 10. *(Calculator part in Lessons 1-6 and 1-10 are optional)* **2.OA.B.2** Students will write equivalent names for numbers (*example: 1+9 = 6+4 each expression shows an equivalent name for 10*). In Lesson 1-10, students will need to practice writing equivalent names for numbers higher than 10 (*example: 20+10 = 15+15 equivalent names for 30*). **2.NBT.A.2** Students will skip count by 2s, 5s, and 10s using 2-digit numbers. They will discuss patterns they see and can also use calculators to skip count. (If students appear comfortable, you may extend the activity and see if they can count by 2s using 3-digit numbers) Start at 102 and count by 5s. Color the counts. You may use your calculator. 										100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147	148	149	150 | **2.NBT.B.5** Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Students should have experiences solving problems which are written both horizontally and vertically. They need to communicate their thinking and be able to justify the strategy used in both written and verbal form. Students in second grade need to communicate their understanding of why some properties work for some operations and not for others. Properties that students should know, and use are: Commutative, Associative, and Identity. They need to explain their thinking, but they may not necessarily know these names.	**2.OA.B.2 (See Lesson 1-2 for Additional Resources)** **2.NBT.A.2 (See Lesson 1-1 for Additional Resources)** **2.NBT.B.5** **Teaching Student-Centered Mathematics** Adding and Subtracting with Ten Frames, page 165, Activity 6.1 **Activities and Tasks:** Keep on Doubling Number Wheel Spin

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**

Strategies that will develop fluency:
 	
  ▪ Make ten and subtract from ten (e.g., 8 + 3 = 8+ 2 + 1 and 15 – 7 = 10 – 7 + 5 = 3 + 5)
  ▪ Ten plus (e.g., 10 + 3 = 13, 30 + 5 = 35, 70 + 8 = 78)
  ▪ Number bond (e.g., 5 + 1 = 6, 1 + 5 = 6, 6 – 1 = 5, 6 – 5 = 1)
 	
• Show 2. Pretend the 2 key is not working. Sample answer: ①〔+〕① 〔=〕
• Show 18. Pretend the 1 and 8 keys are broken. Sample answer: ② ⓪ 〔−〕② 〔=〕
• Show 21. Pretend the 2 key is broken. Sample answer: ① ⓪ 〔+〕① ⓪ 〔+〕① 〔=〕
 	
Students will solve broken-calculator problems in Lessons 1-6 and 1-10. They pretend a number on the calculator is broken and they have to find another way to make that number to solve the problem. *(Optional)*	

Lesson 1-9 Even and Odd Number Patterns **2.OA.B.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.** **2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.**	
Children explore even and odd numbers using concrete and visual models. **2.OA.C.3** Students explore odd and even numbers in a variety of ways including the following: students may investigate if a number is odd or even by determining if the number of objects can be divided into two equal sets, arranged into pairs, or counted by twos. After the above experiences, students may derive that they only need to look at the digit in the ones place to determine if a number is odd or even since any number of tens will always split into two even groups. Example: Students need opportunities writing equations representing sums of two equal addends, such as: 2 + 2 = 4, 3 + 3 = 6, 5 + 5 = 10, 6 + 6 = 12, or 8 + 8 =16. This understanding will lay the foundation for multiplication and is closely connected to 2.OA.C.4.	**2.OA.C.3** **Teaching Student Centered Mathematics:** Activity 10.17, Fair Shares for Two, page 292 Activity 10.18, Bumpy or Not Bumpy, page 292 **Lessons:** Relate Doubles to Even Numbers Pair Objects to Relate to Even Numbers Investigate the Pattern of Even Numbers **Activities and Tasks:** Buttons Odd and Even Even Odd Sorting Numbers Chart Even Odd Pattern Block Grab
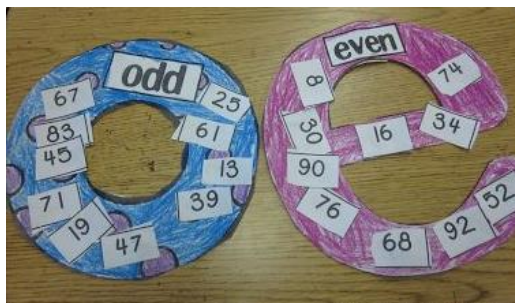
Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**
Activity: Students can sort and glue even and odd numbers.	Even Steven, Odd Todd Activity **Learn Zillion Videos on YouTube:** Recognize Even or Odd Numbers by Forming Equal Groups Determine Even or Odd by Pairing Write Even or Odd Numbers as the Sum of Two Equal Addends **Online:** Odd or Even (Illustrative Mathematics)

Lesson 1-11 Comparing Numbers and Home Links
2.OA.B.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.
2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
2.MD.C.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?*

Children will discuss the meaning of >, <, and = symbols and use them to compare numbers, money amounts, and addition and subtraction expressions.

2.OA.B.2 Students will continue to practice their fact fluency using the Quick Look Cards.

2.NBT.A.4 Students practice comparing numbers and money amounts.

Comparative language includes but is not limited to: more than, less than, greater than, most, greatest, least, same as, equal to and not equal to. Students use the appropriate symbols to record the comparisons.

- $7 > 3 + 2$
- $9 + 4 > 14 - 3$
- $4 + 1 = 5$
- $10 - 6 < 4 + 2$

- $15¢ < 25¢$
- $100 < 200$
- $40¢ > 34¢$
- $120 < 130$
- $20 = 20$
- Ⓓ Ⓓ Ⓝ < Ⓠ Ⓟ Ⓟ

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**

Lesson 1-12 Exploring Base-10 blocks, Area, and Dominoes (Explorations)
2.OA.B.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.
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.

Children count by 100s and 10s to find the value of base-10 "buildings," use shapes to cover rectangles, and sort dominoes according to the number of dots. **2.OA.B.2** Students will continue to practice their fact fluency using Quick Look Cards and sorting dominoes based on the total number of dots (addition facts). (Activity card 19, Exploration C Activity)	**2.G.A.2** **Lessons:** Use Square Tiles to Compose a Rectangle and Relate to the Array Model

Activities and Tasks: Making Rectangles More Making Rectangles |
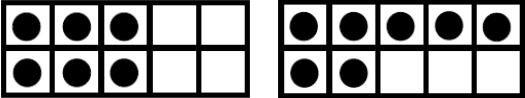
2,NBT.A.2, 2.NBT.A.3, 2. NBT.B.7, 2.NBT.B.8, 2.NBT.B.9 Students will count, read, and write numbers as they create a building out of base-10 blocks. They will work together to add the hundreds, tens, and ones as they build to find the total value of their building. (Activity card 17, Exploration A Activity)

Grade 2 Unit One – Establishing Routines	
Connections/Notes	**Additional Resources**
2.G.A.2 This standard is a precursor to learning about the area of a rectangle and using arrays for multiplication. Manipulatives such as square tiles, cubes, or other square shaped objects can be used to help students' partition rectangles. In Exploration B Activity, students will determine whether squares, triangles, or circles are best for covering a rectangle. (Activity card 18, Exploration B Activity)	
Lesson 1-13 Unit 1 Assessment (Option of 2 days)	**Math GR 2 Unit 1 Summative Assessment in eDoctrina**

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
Lesson 2-1 Grouping by 10s **2.NBT.A.1 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).** **2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.** **2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.** **2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)** **2.MD.C.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?***	
Children will understand place-value concepts with money and practice grouping by 10s using bills. **2.NBT.A.1** Understanding that 10 ones make one ten and that 10 tens make one hundred is fundamental to students' mathematical development. Students were provided multiple opportunities	**2.NBT.A.1** **Videos:** **Place Value Math Song**
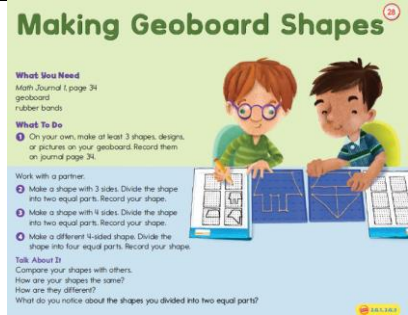
Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
counting and "bundling" groups of tens in first grade. In second grade, students build on their understanding by making bundles of 100s with or without leftovers using base ten blocks, cubes in towers of 10, ten frames, etc. This emphasis on bundling hundreds will support students' discovery of place value patterns. As students are representing the various amounts, it is important that emphasis is placed on the language associated with the quantity. For example, 243 can be expressed in multiple ways such as 2 groups of hundred, 4 groups of ten and 3 ones, as well as 24 tens and 3 ones. When students read numbers, they should read in standard form as well as using place value concepts. For example, 243 should be read as "two hundred forty-three" as well as 2 hundreds, 4 tens, 3 ones. Students need to be able to read and write these numbers in various forms using base-ten, numbers, and number names (**2.NBT.A.3**). Place value cards showing the "place" of the digit and also the "value" of the digit. Each place value is color coded, which is important to show students that each digit in a number has a different value. **2.NBT.B.7, 2.NBT.B.9, & 2.MD.C.8** Students should be able to solve various problems by grouping 10s using $1, $10, and $100 bills. They need to find the total combination of a group of bills. They should practice ways to make exchanges by trading (example: trade 10 $1 bills for one $10 bill or trade 10 $10 bills for one $100 bill). 	**Online:** Place Value Models Game **2.NBT.B.7** **Lessons:** Change 10 Ones for 1 Ten, 10 Tens for 1 Hundred, and 10 Hundreds for 1 Thousand **2.MC.C.8** **Teaching Student-Centered Mathematics:** Activity 5.28 Money Counts page 151 **Lessons:** Count the Total Value of $1, $10, and $100 Bills
Lesson 2-2 Addition Number Stories **2.OA.A.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.**	

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
2.OA.B.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.	
Children write and solve addition number stories. **2.OA.A.1** Word problems that are connected to students' lives can be used to develop fluency with addition and subtraction. In this lesson, students are expected to learn parts-and total (two or more separate parts are known) and change-to-more (Start with a given number of items and increase that number). Students will also write their own number model to represent their number story and solve their number story. Sample Questions: Parts-and-Total Stories: April has 7 dollars. Don has 3 dollars. How many dollars do they have in all? Change-to-More Stories: April has 7 dollars. Don gives her 3 more dollars. How many dollars does April have now? **2.OA.B.2** Students will continue to practice their fact fluency using Quick Look Cards and solving simple addition number stories. *Common Misconception: Although this lesson focuses on addition number stories, some children may write subtraction number stories for the picture. Point out that their story is a subtraction number story and suggest that they also write an addition number story.*	**2.OA.A.1** **Activities and Tasks:** September Structure Problems (includes different types of problems) One Step Word Problems Fall Story Structure Word Problems PowerPoint (includes different types of problems)
Lesson 2-3 Doubles and Combinations of 10 **2.OA.B.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.**	
Children will explore doubles and combinations of 10 to build fact fluency. **2.OA.B.2** In this lesson, students will use doubles ten frames to represent doubles and show ways to make 10. They will be able to name doubles, show all the combinations of 10, show patterns using dots on the doubles ten frame cards, and demonstrate automaticity with most double addition facts and combinations of 10. A formative assessment to check for accuracy can be done through student interviews, anecdotal records while playing *Fishing for 10*, or using the Teacher Facts Record Sheet in the Assessment Handbook. Examples of doubles: 4 + 4 = 8, 5 + 5 = 10, 6 + 6 = 12	**2.OA.B.2** **Google Shared Drive:** 📁 Fact Fluency Resources
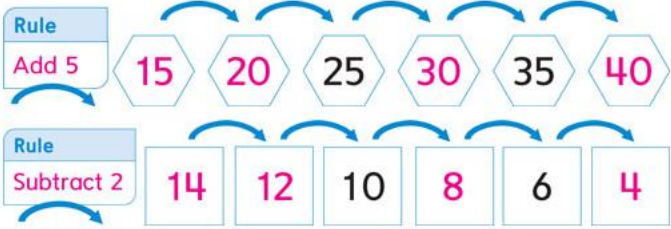
Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
Examples of combinations of 10: 8 + 2 = 10, 5 + 5 = 10, 6 + 4 = 10	
Lesson 2-4 The Making-10 Strategy **2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.**	
Children use a strategy based on place value to add within 20. **2.OA.B.2** In this lesson, students will use doubles ten frames show ways to make 10. Students should be able to list combinations of 10 so that they are ordered by their first addends – from smallest to largest. Students should also be able to decompose one addend to form a combination of 10 with the other addend and then adding on what is left. For example: Combination of 10 is 6 + 4 = 10 Therefore: 6 + 7 = 13 Another helpful strategy could be as follows: 6 + 7 = ____ I know that 6 + 4 = 10 and 10 + 3 = 13, therefore, 6 + 7 = 13.	**2.OA.B.2** **Google Shared Drive:** 📇 Fact Fluency Resources
Lesson 2-5 The Near-Double Strategy **2.OA.B.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.**	
In this lesson, children will use the near-double strategy to solve addition facts. **2.OA.B.2** In this lesson, students will use Quick Look Cards and Activity cards to identify facts close to double facts. They learn to use double facts they know to help them solve near doubles. Students will need to verbally explain how they got their answer, as well as write how they got their answer. Example: Solve 8 + 5 = **13** I know that 5 + 5 = 10 and 3 more than 5 is 8, so I know that 8 + 5 is 3 more than 10, which is 13. I know that 8 + 8 = 16, and 3 less than 8 is 5, so I know 8 + 5 is 3 less than 16, which is 13.	**2.OA.B.2** **Google Shared Drive:** 📇 Fact Fluency Resources
Lesson 2-6 The Turn-Around Rule for Addition **2.OA.B.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.**	

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
In this lesson, children use dominoes to explore the turn-around rule for addition. **2.OA.B.2** In this lesson, students will write addition number sentences using the dots on a domino. They will learn that if they turn around the domino, they get another number sentence by switching the addends. (Example: 4 + 5 = 9 and 5 + 4 = 9). Dominoes with the same number on each side will only show a doubles fact. This is the Commutative Property of Addition. Students in 2nd grade are expected to use this property to add to 1,000, but they are not expected to know the formal name or definition. Students should be able to summarize this rule.	**2.OA.B.2** **Google Shared Drive:** 📁 Fact Fluency Resources

Lesson 2-7 Subtraction and the Turn-Around Rule (2 days – Open Response and Re-engagement)
2.OA.A.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.
2.OA.B.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.
2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)

Children will solve an open response problem by writing number stories and models. They will discuss solutions and revise their work. **Day 1** *Common Misconception: Students will look at number stories to sharpen their understanding of the turn-around rule. They should be able to see that this rule does not apply to subtraction. For example, 9 – 4 = 5. A student might want to turn this around and say 9 – 5 = 4. This is a way that students try to switch the order of the numbers that makes sense and creates a true equation, but it misapplies the turn-around rule. If you only switch the addends, 5 – 9 = 4, they will not get the same answer. This misconception should be addressed during this lesson.* **Day 2** Students will look at their number stories from Day 1 and revise their work. They will justify their answers about how the turn-around rule for subtraction does not work and why.	

Lesson 2-8 Exploring Addition Tools, Odd and Even Patterns, and Shapes (Explorations)
2.OA.B.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.
2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.
2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds **2.MD.B.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. **2.G.A.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. **2.G.A.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.	
In this lesson, children will explore counting up, odd and even numbers, and shapes. **2.OA.B.2 & 2.OA.C.3** Students will sort dominoes based on whether the dots on the 2 sides are both even, odd, or one even an one odd. (Activity card 27, Exploration Activity B) **2.NBT.7 & 2.MD.B.6** Students will find sums using number lines and number grids. (Activity card 26, Exploration Activity A) **2.G.A.1 & 2.G.A.3** (Exploration C) Using Activity Card 28, students will make shapes or pictures using geo-boards and record their findings on geo-board papers.	**2.OA.C.3** **Lessons:** Investigate the Pattern of Even Numbers **Learn Zillion Videos on YouTube:** Recognize Even or Odd Numbers by Forming Equal Groups Determine Even or Odd by Pairing Write Even or Odd Numbers as the Sum of Two Equal Addends **Online:** Odd or Even (Illustrative Mathematics) **2.MD.B.6** **Lessons:** Number Line Frog Hop on Gizmos **2.G.A.1** **Activities and Tasks:** The Greedy Triangle Geoboard Quadrilaterals Geoboard Triangles

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
	Learn Zillion Videos on YouTube: Draw a Hexagon Draw a Quadrilateral Identify Quadrilaterals **2.G.A.3** **Activities and Tasks:** Folding Flags (AIMS) Geoboard Halves Geoboard Fourths

Lesson 2-9 Even Numbers and Equal Addends
2.OA.B.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.
2.OA.C.3 Determine whether a group of objects (up to 20) has an odd or even number of members e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.

In this lesson, children identify even and odd numbers, and they write number models to express even and odd numbers as sums. **2.OA.B.2 & 2.OA.C.3** Students will share doubles facts and explain why the sums of doubles facts are even. Expect students to identify even and odd numbers using ten frames and counters. Students should be able to write a number model to express an even number as the sum of two equal addends. A number model for an odd number would be the sum of two equal addends, plus or minus one.	**(See Lesson 2-8 for Additional Resources)**

Lesson 2-10 Name-Collection Boxes
2.OA.B.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.
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.

In this lesson, children will write different names for numbers and write them in name-collection boxes. **2.OA.B.2 & 2.NBT.A.3** Students will write equivalent names for numbers. They will do this in a name-collection box. A name-collection box is an open box with a tag in the corner that identifies the number.	

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
Students need to be able to show multiple ways to represent that number such as using basic addition and subtraction facts, tally marks, a picture presentation, or words.	

Lesson 2-11 Playing *Name That Number*
2.OA.B.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.
2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
2.NBT.B.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.OA.B.2 & 2.NBT.A.3 Students share different names for 20. They can use dominoes to find equivalent names for numbers (Activity card 19) or play *Name That Number*. **2.NBT.B.5** Students will play *Name That Number* – they will write equivalent names for a target number using both addition and subtraction. 	**2.NBT.B.5** **Teaching Student-Centered Mathematics** Strategies for Whole Number Computation, pages 157-172

Grade 2 Unit Two – Fact Strategies	
Connections/Notes	**Additional Resources**
Lesson 2-12 Frames and Arrows **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.**	
In this lesson, students will skip count, add, and subtract to solve Frames-and-Arrows problems. **2.NBT.A.2** Students will skip count to find a missing number. They will also have to find the rule to generate a pattern. **2.NBT.B.5** Students will use the Frames-and Arrows model to solve problems by skip counting and finding the rule or pattern. Students may need to begin with concrete materials first such as a number line, number grid, or counters. 	**2.NBT.B.5** **(See Lesson 2-11 for Additional Resources)**
Lesson 2-13 Unit 2 Assessment (Option of 2 days)	**Math GR 2 Unit 2 Summative Assessment in eDoctrina**

Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**
Lesson 3-1 Using Addition Strategies (2 days – Open Response and Reengagement) **2.OA.B.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.**	

Grade 2 Unit Three – More Fact Strategies

Connections/Notes	Additional Resources
2.OA.B.2 Students will solve an open response problem using their own fact strategies. Then they will discuss with the class their drawings and explanations and revise their work. **Day 1** Students will discuss how to make a 10 on a double ten frame. Allow students to develop their own fact strategy with this open response. Making a ten is a key strategy that children can use to efficiently find many facts. By using the double ten frame students should be able to show using counters both numbers and how to make a ten. They should be using drawings and words to explain their thinking. Quick Look Card 117 **Day 2** Students will review their open response problem from yesterday and discuss how to use double ten frames, drawings, and words to explain their thinking. Through class discussion, students should revise their work to make improvements in their responses.	**2.OA.B.2** **Teaching Student-Centered Mathematics** Strategies for Addition Facts, pgs. 99-111 One Up and One Down: Addition, page 308 **Google Shared Drive:** Fact Fluency Resources
Lesson 3-2 Subtraction from Addition: Think Addition, Lesson 3-8 Use Doubles to Subtract **2.OA.A.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.** **2.OA.B.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.** **2.NBT.B.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.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)**	
Lesson 3-2 Children write subtraction number stories and generate related addition and subtraction facts. **2.OA.A.1** Students will model real world problems using various strategies and methods such as dominoes, number lines, connecting cubes, or counters. They will explore the relationship between addition and subtraction facts based on a visual model and illustrate the meaning of related facts.	**2.OA.A.1** **Activities and Tasks:** Story Structure One Step Word Problems Fall Story Structure Word Problems PowerPoint **Learn Zillion Videos for YouTube:** Solve Word Problems by Making a Model Solve Word Problems by Drawing Bar Models

Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**

For example: Tavon had 10 model cars. He lost 3 model cars. How many model cars does Tavon have now? 7 model cars
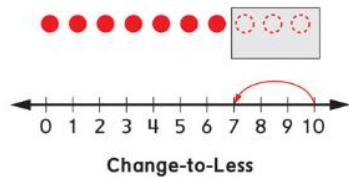
(Change-to-less Number Story)

Change-to-Less

For example: Supat has 10 model cars. Neal has 3 model cars. How many more model cars does Supat have? 7 model cars

(Comparison Numbery Story)

Comparison

2.NBT.B.5 Adding and subtracting fluently refers to knowledge of procedures, knowledge of when and how to use them appropriately, and skill in performing them flexibly, accurately, and efficiently. Students should have experiences solving problems which are written both horizontally and vertically. They need to communicate their thinking and be able to justify the strategy used in both written and verbal form. Students in second grade need to communicate their understanding of why some properties work for some operations and not for others. Properties that students should know, and use are: Commutative, Associative, and Identity. They need to explain their thinking, but they may not necessarily know these names.

Additional Resources:

2.NBT.B.5
Learn Zillion Videos for YouTube:
Add Within 100 Using Base Ten Blocks
Subtract Within 100 Using Base Ten Blocks
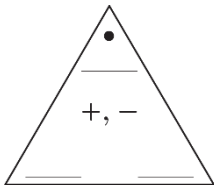
Additional Online Videos:
Addition to 20 Without Regrouping
Subtraction Within 20 Without Regrouping

Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**
Lesson 3-8 Children use doubles to solve subtraction facts in number stories. **(2.OA.B.2)** **Professional Development** Children often have more difficulty with subtraction than with addition. Helping children relate subtraction to addition—particularly when using familiar addition facts such as doubles—encourages fluency with single-digit subtraction. Using this relationship is a key component of the Number and Operations in Base Ten domain of the Grade 2 Common Core State Standards. *For example:* • Dylan has 14 new colored pencils in his desk. He sharpened 7 of them before school. How many pencils does he have left to sharpen? 7 pencils; helper fact: 7 + 7 = 14 • There are 18 baseball players warming up on the field. There are 9 players from the home team. The rest are from the visiting team. How many players are from the visiting team? 9 players; helper fact: 9 + 9 = 18	**2.OA.B.2** **Google Shared Drive:** 📇 Fact Fluency Resources
Lesson 3-3 Fact Families **2.OA.B.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.** **2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.**	
Children generate fact families using related numbers on Fact Triangles. **2.OA.B.2 & 2.NBT.5** Students are introduced to Fact Triangles, which are EM4s version of flash cards, with the added benefit of emphasizing the inverse relationship between addition and subtraction. In this unit, children will begin the routine of sorting these into "known" and "unknown" fact piles as they take inventory of their own addition fact fluency. Discuss the everyday meaning of *family* and point out that the large dot on the Fact Triangle identifies the number that is the sum for the addition facts and the first number (the minuend) for the subtraction facts. (Page 263) Students will practice with partners, then they will sort their own Fact Triangles to determine ones they know from memory and ones they need more practice. They can monitor their progress using a student self-assessment (journals pages 94-95).	**2.NBT.B.5** **Activities and Tasks:** Fast and Furious Mental Math

Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**
Students will be expected to practice fact families. Another way to practice is by making a fact-family chain or they can make houses of fact families. ***Common Misconception: Some children may think that 9 + 3 = 12 is a member of the 3, 6, 9 fact family. Explain that this fact belongs to the 3,9, 12 fact family. The 3, 6, 9 family includes facts that use only the numbers 3, 6, and 9***.	
Lesson 3-4 Playing Salute! **2.OA.B.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.** **2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.** **2.NBT.B.5 Fluently add and subtract 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.**	
Children play *Salute!* to find missing addends. **2.OA.B.2, 2.NBT.A.3, & 2.NBT.B.5** Students will share equivalent names for 16. (Examples: 8 + 8, 10 + 6, sixteen, 20 – 4) Next, children will play *Salute!* to practice addition by solving for a **missing addend**, which is an important strategy for developing fluency with addition and subtraction facts. Look for the following strategies: • Counting back by 1s • Counting back in pieces (by numbers larger than 1) • Counting up by 1s • Counting up in pieces • Think addition, especially with a known or easier fact • Making 10 • Near doubles	**2.NBT.A.3** **Teaching Student-Centered Mathematics** Activity 5.6 Base-Ten Riddles, page 134 **Activities and Tasks:** Number Word Concentration Representing Numbers in Four Ways **2.OA.B.2** **Google Shared Drive:** 📁 Fact Fluency Resources
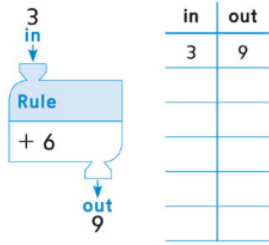
Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**
Common Misconception: Watch for children who are not sure how to interpret either seeing a 0 card or hearing a sum that is the same as the card they see. Encourage them to discuss +0 and -0 facts and consider how those might look in a game of Salute!	<u>Online:</u> <u>Shark Pool Game</u>
Lesson 3-5 Subtraction Strategies: Counting Up and Counting Back, Lesson 3-6 -0 and -1 Fact Strategies and *Subtraction Top-It* **2.OA.B.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.**	
Children use the counting-up and counting-back strategies for subtraction. They also explore the -0 and -1 fact strategies and play *Subtraction Top-It.* **2.OA.B.2** This is the first exposure to counting-up and counting-back strategies for subtraction. Focus on children's responses in the discussion. Expect most to be able to identify the more efficient strategy for a particular problem after they've tried both. **GMP6.4** For those who struggle identifying the more efficient strategy even after attempting both, encourage them to draw and mark their hops on a number line and then count the hops it takes for each strategy. Later lessons include additional instruction as well as practice opportunities for choosing efficient strategies. **Lesson 3-6** Children apply their knowledge of the take-away model of subtraction to find answers to -0 and -1 subtraction facts and develop rules for solving these facts. Observe children as they play *Subtraction Top-It.* Expect most to be able to apply a strategy to solve the subtraction fact when they don't know the difference. If children struggle finding the differences, encourage them to refer to their My Subtraction Fact Strategies table on journal page 48. Additional subtraction strategies are introduced in later lessons. Practice with subtraction facts will occur regularly throughout second grade.	**2.OA.B.2** <u>**Google Shared Drive:**</u> 📁 Fact Fluency Resources
Lesson 3-7 "What's My Rule?" **2.OA.A.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.** **2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.** **2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)**	

Grade 2 Unit Three – More Fact Strategies

Connections/Notes	Additional Resources
Children find missing numbers and missing rules for tables. **2.OA.A.1 & 2.NBT.B.7** In this lesson, sometimes children are asked to use the rule to find missing *out* numbers, which provides practice with both basic facts and multi-digit computation. Other problems ask children to use the rule to find missing *in* numbers. Because this requires them to work backward from the rule, these problems provide practice with the inverse relationship between addition and subtraction. Children can also find the rule by looking for patterns in the table. **2.NBT.B.9** Explain why the rules work for these function machines/tables. Explain that the diagram shows a **function machine.** The machine is set to follow a certain rule. If you drop a number in the top, the machine does something to the number according to the rule, and a new number comes out of the bottom. Introduce the terms **input** and **output** as "what you put in" and "what the machine puts out," respectively. Read about function machines with your class on *My Reference Book*, pages 56–58.	**2.NBT.B.9** **Learn Zillion Videos on YouTube:** Choose Appropriate Strategies to Explain Why Addition or Subtraction Work to Solve Word Problems **Online Videos:** Input and Output Tables: Find the Rule What's My Rule?
Lessons 3-9 Going-Back-Through-10 Strategy for Subtraction, Lesson 3-10 Going-Up-Through-10 Strategy for Subtraction **2.OA.A.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.** **2.OA.B.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.** **2.MD.B.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.**	
Children use the going-back-through-10 and the going-up-through-10 strategies for subtraction. **2.OA.A.1, 2.OA.B.2, & 2.MD.B.6** In lessons 3-9 and 3-10, children learn two new subtraction strategies that use the friendly number 10. They use number lines to help them visualize using 10 as a breaking point.	**2.MD.B.6** **Lessons:** Identify Unknown Number on a Number Line Diagram Represent Sums and Differences Using a Ruler as a Number Line **Activities and Tasks:** Frog and Toad on the Number Line (IM)

Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**
Examples for 15 - 7 • **Going Up Through 10** First find the distance from 7 to 10 (3) and then find the distance from 10 to 15 (5). Finally, add the distances together for a total of 8. So 15 − 7 = 8. • **Going Back Through 10** Start from 15. Take away 5 (to land on 10) and then take away 2 more (to land on 8). So 15 − 7 = 8. 	**Learn Zillion Videos on YouTube:** Create a Number Line Using Benchmark Numbers Solve Addition Story Problems Using a Number Line Solve Subtraction Problems Using a Number Line Add Two Numbers Using a Number Line **Online:** Subtract on a Number Line **Templates and Visuals:** Open Number Line
Lesson 3-11 Exploring Rectangles, Fact Wheels, and Coins (Explorations) **2.OA.B.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.** **2.MD.C.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?*** **2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.**	
Children cover rectangles with squares, practice addition and subtraction facts on a fact wheel, and make coin stamp booklets. 2.G.A.2 Children cover a rectangle with small and large squares. (Activity card 43, Exploration A Activity)	**2.G.A.2** **Activities and Tasks:** Making Rectangles More Making Rectangles Treasure Trove (AIMS) Use Drawings to Compose Rectangles
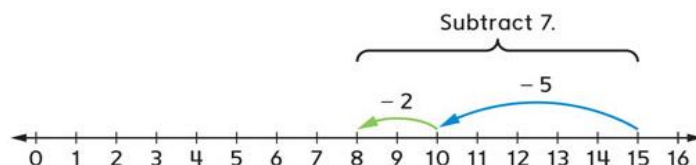
Grade 2 Unit Three – More Fact Strategies	
Connections/Notes	**Additional Resources**
Make sure there are no overlaps when they cover the rectangle. But it's okay if some space is left over on the edges because they are only trying to find *about* how many squares it takes to cover the rectangle. A fact wheel **2.OA.B.2** Children will use fact wheels to generate facts. (Activity card 44, Exploration B Activity) **2.MD.C.8** Children make booklets showing various groups of coins and their values. (Activity card 45, Exploration C Activity)	**<u>Learn Zillion Videos on YouTube:</u>** <u>Partition rectangles into Same Sized Squares Using Toothpicks</u> <u>Partition Rectangles by Creating Rows and Columns</u> **2.MD.C.8** <u>**Activities and Tasks:**</u> Coin Money Match Up Roll a Value
Lesson 3-12 Unit 3 Assessment (Option of 2 days)	**Math GR 2 Unit 3 Summative Assessment in eDoctrina**
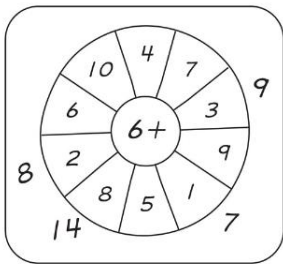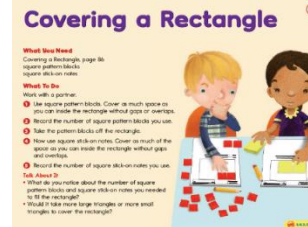
Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**
Lesson 4-1 Clocks and Telling Time, Lesson 4-2 Telling Time to the Nearest 5 Minutes, and Lesson 4-3 A.M. and P.M. **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.MD.C.7 Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.**	
Children will tell time to the nearest hour and half hour, to the nearest 5 minutes, and using A.M. and P.M. **2.NBT.B.2** Students may use the skip counting by 5s strategy to tell time to the nearest five-minute interval. **2.MD.C.7** Students need to tell and write time from analog and digital clocks, first to the hour, then the nearest half hour, and last to the nearest five minutes. Clocks that measure time in hours and minutes are examples of *reference frames,* or systems for locating numbers in a given context. Most reference frames have a zero point. On the clock, the zero point is 12:00. For example, if the clock reads 3:15, then 3 hours and 15 minutes have passed since 12:00. Because the day is 24 hours long, the hands on the analog clock go around twice. The abbreviations a.m. or p.m. are used to tell whether the time occurs during the first or second 12-hour period of the day. A.M. stands for **before midday** and P.M. stands for **after midday**. The clock with the hour hand pointing between the 4 and the 5 shows the correct placement of the hour hand for 4:30 *Which clock shows 4:30? Explain to a partner how you know. Use the words* minute hand *and* hour hand.	**2.NBT.A.2** **Learn Zillion Videos on YouTube:** Skip Count by 5s, 10s, and 100s Count Objects by 5s, 10s, and 100s **2.MD.C.7** **Teaching Student Centered Mathematics:** Measuring Time, pages 242-245 Activity 8.16, Which Takes Longer, page 243 **Lessons:** Construct a Clock by Partitioning Circles into Halves and Fourths Tell Time to the Nearest Five Minutes **Activities and Tasks:** Clock Matching Telling Time PowerPoint Common Assessment Telling Time One Hour Earlier, One Hour Later Quarter Past/Til Flashcards **Learn Zillion Videos on YouTube:** Understand the Passage of time in Terms of Units Distinguish Between A.M. and P.M. **Online:** Compare Clocks AM or PM
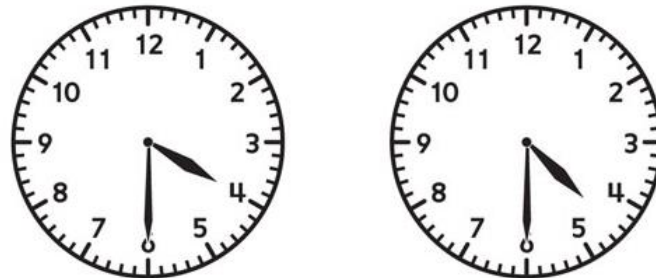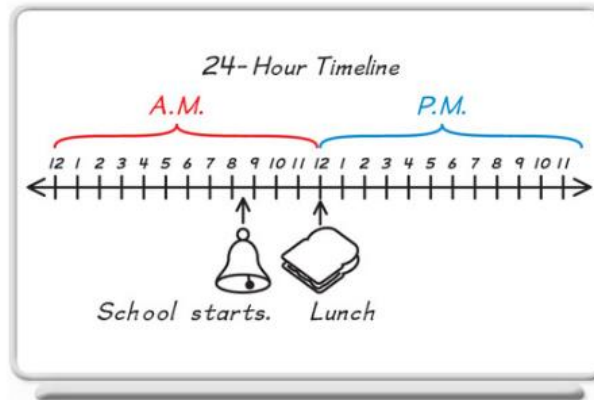
Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**
Common Misconception: Watch for children who draw the clock hands incorrectly. If they are confused about which hand is shorter and which is longer, have them label the hour and minute hands or color the hour hand red.	
Lesson 4-4 Numeration and Place Value, Lesson 4-5 Using Place Value to Compare Numbers **2.NBT.A.1** 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). **2.NBT.A.3** Read and write numbers to 1,000 using base-ten numerals, number names, and expanded form. **2.NBT.A.4** Compare two three-digit numbers based on meanings of the hundreds, tens, and one's digits, using >, =, and < symbols to record the results of comparisons.	
Children discuss place value and represent 3-digit numbers using base-10 blocks and expanded form. They will use place value and expanded form to compare 3-digit numbers. **2.NBT.A.1 & 2.NBT.A.3** In Lesson, 4-4 students will do the following: • Build numbers with base-10 blocks. 235 is 2 flats, 3 longs, and 5 cubes. (2.NBT.A.1)	**2.NBT.A.1** **Activities and Tasks:** Base Ten Puzzles Place Value Riddles

Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**
• Write numbers as the sums of the values of their digits. 235 can be written as 200 + 30 + 5. This is called **expanded form.** (2.NBT.A.3) • Create numbers using a place value mat. **2.NBT.A.4** In lesson 4-5 children will compare 3-digit numbers. Students work in pairs to each represent a three-digit number. They will compare with greater than, less than, and equals to cards. Students will discuss their reasoning for their answers.	**Videos:** **Place Value Math Song** **2.NBT.A.3** **Teaching Student-Centered Mathematics** Activity 5.6 Base-Ten Riddles, page 134 Three Digit Number Names, page 136 **Lessons:** Write Base-10 Three-digit Numbers in Unit Form; Show the Value of Each Digit Write Base-10 Numbers in Expanded Form Model Numbers with more than 9 ones or 9 tens; Write in Expanded, Unit, Standard, and Word Forms **Activities:** 3 Digit Base Ten Concentration Sort It Out Place Value **Learn Zillion Videos on YouTube:** Model a Number to Find the Value of Digits **Online:** Shark Pool Game **2.NBT.A.4** **Lessons:** Compare two 3-digit Numbers **Activities and Tasks:** Comparing 3-Digit Numbers Comparing Whole Numbers Game
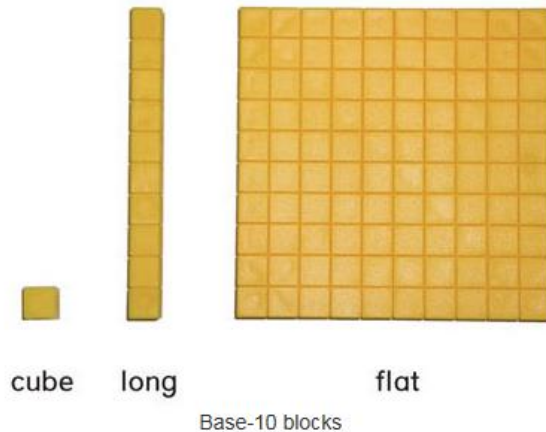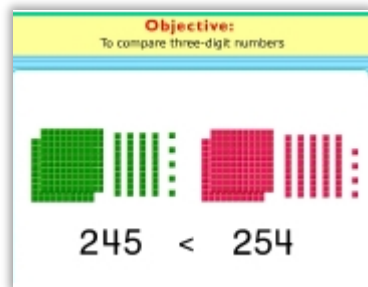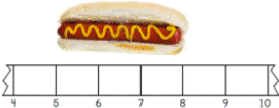
Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**
Lesson 4-6 Using Base-10 Blocks to Show a Number (2-day Open Response and Reengagement) **2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 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).** **2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.**	
For this lesson, children make sense of a 3-digit number represented by base-10 blocks by making trades or counting. On Day 2, the class analyzes explanations and drawings, and children revise their work. **Day 1** The focus of this lesson is to make sense of the representations that students use. Children make sense of a drawing of base-10 blocks that, for the first time, has more than 10 blocks of one type. For example, 3 flats, 12 longs, and 4 cubes may be incorrectly interpreted as 3,124. They need to decide if they need to do something else (count the blocks or trade) to represent the number correctly. **Day 2** On day 2, children review the open response problem and discuss what a complete response includes. They review how to discuss other's work.	
Lesson 4-7 Playing Target **2.NBT.A.1 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).** **2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.** **2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting**	

Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**

three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Connections/Notes	Additional Resources
Children use base-10 blocks to model addition and subtraction of multi-digit numbers. **2.NBT.A.1, 2.NBT.A.3, & 2.NBT.B.7** Students will use base-10 blocks to solve addition and subtraction problems. Next, students will learn how to play *Target.* Start out playing to 50. (See page 377 for directions) Observe (formative assessment) and discuss the following: *How did you decide whether to make a 1 or a 2-digit number? To add or subtract your number?* *How did you know when to make an exchange?*	**2.NBT.A.3** <u>Online:</u> Base 10 Number System **2.NBT.B.7** **Teaching Student Centered Mathematics** Chapter 6, Strategies for Whole Number Computation*, pages 157-172 Expanded Lesson: Exploring Subtraction Strategies, pages 184-185 <u>Online</u>: Adding Two 2-Digit Numbers Using Base-10 Blocks Subtracting Two 2-Digit Numbers Using Base-10 Blocks

Lesson 4-8 How Big Is a Foot? Lesson 4-9 The Inch, and Lesson 4-10 The Centimeter
2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.MD.A.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.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.
2.MD.D.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.

Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**
Students in second grade will build upon what they learned in first grade from measuring length with non-standard units to the new skill of measuring length in metric and U.S. Customary with standard units of measure. They should have many experiences measuring the length of objects with rulers, yardsticks, meter sticks, and tape measures. **They will need to be taught how to use a ruler appropriately to measure the length of an object especially as to where to begin the measuring. Do you start at the end of the ruler or at the zero?** **2.MD.A.1** Selecting an appropriate tool for measuring is an important life-skill. Understanding that length is the difference between two points allows us to use any tool flexibly. Students do not need to line up one end of a 6-inch pencil with the 0 on the ruler to find that it is 6 inches long**. It is important that students investigate starting with any number on the ruler and subtracting the difference between the beginning and ending points.** *For example, a 6-inch pencil remains 6 when it is aligned with the 2 and 8 or 3 and 9 on the ruler.* How many inches long is this hotdog? 8 – 5 = 3 (Students need to notice that the hotdog **is not** aligned at zero on the broken ruler. It begins at 5 inches and ends at 8 inches.) **2.MA.A.2** Students measure the length of the same object using different tools (**ruler with inches, ruler with centimeters,** a yardstick, or meter stick). This will help students learn which tool is more appropriate for measuring a given object. They describe the relationship between the size of the measurement unit and the number of units needed to measure something. For instance, a student might say, "The longer the unit, the fewer I need." Example: Students can measure a pencil using small and jumbo paper clips. Then compare the results. Next, have them measure in inches and centimeters. Compare again. Have a class discussion on their findings. **2.MD.A.3** Estimation helps develop familiarity with the specific unit of measure being used. To measure the length of a shoe, knowledge of an inch or a centimeter is important so that one can approximate the	**2.MD.A.1** **Videos:** Measure It! Measuring Length with Different Tools **Learn Zillion Videos on YouTube:** Measuring with Foot and Yard Units **2.MD.A.2** **Lessons:** Measure and Compare Lengths Using Centimeters and Meters **Learn Zillion Videos on YouTube:** Compare Measurements of an Object in Nonstandard Units Compare a Measurement in Inches with a Measurement in Centimeters **2.MD.A.3** **Teaching Student-Centered Mathematics** Activity 8.5 Guess and Measure pg. 231 **Lessons:** Measure Various Objects Using Centimeter Rulers and Meter Sticks Estimation at Your Desk **Learn Zillion Videos on YouTube:** Find the Difference in the Length of Two Objects Using Addition Use Everyday Objects to Determine the Difference in the Length of Two Objects

Connections/Notes	Additional Resources
length in inches or centimeters. Students should begin practicing estimation with items which are familiar to them (length of desk, pencil, favorite book, etc.). Some useful benchmarks for measurement are: • First joint to the tip of a thumb is about an inch • Length from your elbow to your wrist is about a foot • If your arm is held out perpendicular to your body, the length from your nose to the tip of your fingers is about a yard Sample Questions: • What in this room is longer than 1 foot but less than 2 feet? • Can you make a list of animals that would be best measured in feet? Can you make a list of animals that would be best measured in centimeters? • Based on what you know about units of length, what is a reasonable length in feet for a car? Explain your reasoning. In Lessons 4-8, 4-9, and 4-10, children transition from measuring length using concrete objects to using rulers and tape measures. (**2.MD.A.1**) To have students make a connection between concrete objects they have used in the past and the unit spaces on a ruler, they line up 1-inch square pattern blocks along an inch ruler and centimeter cubes along a centimeter ruler. They should measure objects using both the blocks and the rulers to show that the measurements are the same. (**2.MD.D.9**) They also measure the same object using both inches and centimeters and discuss that it will take more centimeters to fill the space along a given object (**2.MA.A.2**).	DIFFERENTIATE Common Misconception When using pattern blocks to measure a path with square corners, some children may try to avoid breaks in their line of blocks by placing an additional block just touching the corner. They erroneously add an extra unit to the total length of the path or to one of the segments before or after the misplaced block. Emphasize that the corner block does not measure any segment of the path. Ask: *What space on the path does this block fill?* None A similar mistake can arise if children place a block on the inside of a corner. Because two sides of the block are measuring space along two segments of the path, this block needs to be counted twice. Emphasize that it is the length of the *side* of the block we are counting as units of length to measure the path, not the block itself. Ask: *How many spaces on the path does this block fill?* 2 The corner block fills no space on the path.
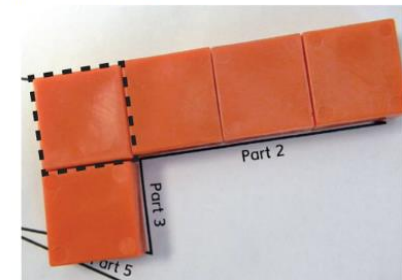
Lesson 4-11 Matching Facts with Strategies, Measuring a Path, Exploring Arrays (Explorations)
2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.
2.OA.C.4 Use addition to find the total number of objects arranged 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.

Grade 2 Unit Four – Place Value and Measurement	
Connections/Notes	**Additional Resources**
2.NBT.B.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.MD.A.1** Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes. **2.MD.A.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.	
Children match subtraction facts with strategies, measure a path in inches and centimeters, and explore arrays. **2.OA.A.2 & 2.NBT.B.5** Children match subtraction facts to possible solution strategies. (Activity card 60, Exploration A Activity) **2.MD.A.1 & 2.MD.A.2** Children measure to find the total length of a path in both inches and centimeters. (Activity card 61, Exploration B Activity) **2.OA.C.4** Children build two different rectangular arrays for a number. (Activity card 62, Exploration C Activity)	**Learn Zillion Videos on YouTube:** Read Arrays by Skip-Counting Use Repeated Addition to Find the Total in an Array
Lesson 4-12 Unit 4 Assessment (Option of 2 days)	**Math GR 2 Unit 4 Summative Assessment in eDoctrina**
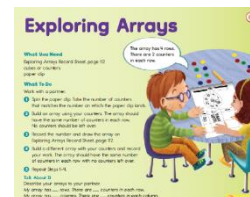
Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**
Lesson 5-1 Playing *Beat the Calculator (Optional Lesson Using Calculators)* **2.OA.B.2 Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.**	
Children play *Beat the Calculator* to develop fact power by using mental strategies to add two 1-digit numbers. In *Everyday Mathematics* the ability to recall basic facts is called *fact power.* This is critical for building computation with multi-digit numbers and problem solving. In this lesson, children learn to play *Beat the Calculator* to try to recall the answer to a fact faster than their classmates can find the answer using a calculator. As children increase their fact power, they will also build confidence in providing an answer faster than a calculator. ***Children will continue to play this game once per unit for the rest of the year to build on knowing from memory all sums of two 1-digit numbers.*** (**2.OA.B.2**)	**2.OA.B.2** **Google Shared Drive:** [📁 Fact Fluency Resources]
Lesson 5-2 Using Coins to Buy Things, Lesson 5-3 Counting Up with Money, Lesson 5-4 Coin Calculations **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds** **2.MD.C.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?***	
Lesson 5-2 – Children review coin equivalencies and make different combinations of coins for the same amount of money. **2.NBT.B.2 & 2.MD.C.8** In this lesson, students will count coins (quarters, dimes, nickels, and pennies) to find the total and equivalencies **up to one dollar***. For example, "How many pennies would you trade for a nickel?"* They will also show various combinations of coins to purchase items. **Note:** Throughout this and other lessons involving money, be sure to use different money notations, such as 25₵ and $0.25 or 100₵, $1, and $1.00. Although children are not yet expected to use the $ symbol and the decimal point, exposure to various money notations in class prepares children for exposure to them in everyday life. In addition, learning to use both the $ and ₵ symbols correctly is a Grade 2 goal.	**2.NBT.A.2** **Learn Zillion Videos on YouTube:** Skip Count by 5s, 10s, and 100s Use Number Patterns to Count Forwards and Backwards **2.MD.C.8** **Teaching Student-Centered Mathematics:** Activity 5.31 How Much More with Coin Numbers page 154

Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**

Lesson 5-3 – Children find coin combinations to pay for items and make change by counting up. **2.NBT.A.2, 2.NBT.B.5, & 2.NBT.B.7** In this lesson, students will draw coins to show the cost of items and learn how to make change by counting up for the cost of an item. For example, I bought an apple for 12 cents. I paid with two dimes (20 cents). *My change would be 8 cents. (12 + 8 = 20 use the counting up strategy)* **Note:** Explain to students they could "make change" as an equal exchange, such as, 4 quarters equals one dollar. But "make change" can also mean to give the difference between the price of an item and the value of the coins used to pay for it. ***Common Misconception: Some children may choose combinations of coins that have a value significantly greater than the value of the item. It does not make sense to pay for a 7cent onion with 2 quarters. Have the students ask: "Do you have one coin that will cover the cost? What combination of coins is worth only a little more than the price of the item?"*** Lesson 5-4 – Children make purchases and practice making change. **2.NBT.A.2, 2.NBT.B.7, & 2.MD.C.8** In this lesson, children will show combinations of coins to buy items and they will show multiple strategies to make change. **Note:** ==Make sure students understand "exact change" means that you must have the exact amount an item costs, and sometimes it can involve the use of bills. (Page 465) Students will need to practice buying items with exact change and without exact change.==	**Activities and Tasks:** Use Different Strategies to Make a Dollar Money Cards Money Riddles Counting and Using Money PowerPoint **Learn Zillion Videos on YouTube:** Create Combinations of Coins with the Same Value by Drawing Pictures Count Money by Drawing Pictures Add and Subtract Money Using Mental Math

Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**

Lesson 5-5 Exploring Arrays, Time, and Shapes (Explorations)
2.OA.C.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.**
2.MD.C.7 **Tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m.**
2. G.A.1 **Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.**

Children make arrays, match clock faces to digital notation, and construct shapes on geo-boards. **2.OA.C.4** Children will skip count to find the number of dots in arrays and write addition number models to represent them. (Activity card 69, Exploration A Activity) **2.MD.C.7** Children match times on clocks to digital notation. (Exploration Activity card 70, Exploration B Activity) **2.G.A.1** Children make shapes on geo-boards. (Activity card 71, Exploration C Activity)	**2.OA.C.4** **Activities and Tasks:** Making Arrays Accounting for Butterflies **Learn Zillion Videos on YouTube:** Read Arrays by Skip-Counting Use Repeated Addition to Find the Total in an Array **Online:** **Counting Dots in Arrays** (Illustrative Mathematics) **2.MD.C.7** **Learn Zillion Videos on YouTube:** Understand the Passage of time in Terms of Units Distinguish Between A.M. and P.M. **Online:** Compare Clocks Telling Time Game AM or PM **2.G.A.1** **Lessons:** Use Attributes to Draw Different Polygons
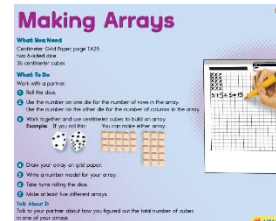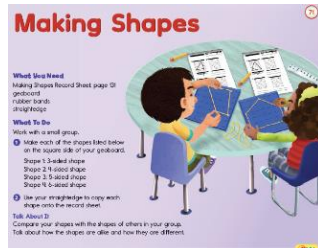
Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**
	Use Attributes to Identify and Draw Quadrilaterals

Lesson 5-6 Mentally Adding and Subtracting 10 and 100, Lesson 5-7 Open Number Lines
2.OA.A.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.
2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.
2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.NBT.B.8 Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.
2.MD.B.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.

Lesson 5-6 Children develop strategies for mentally adding and subtracting 10 and 100.	**2.OA.A.1**
2.NBT.B.2 & 2.NBT.B.8 In this lesson, children use patterns when skip-counting by 10s and 100s on a calculator to develop rules for mentally adding and subtracting 10 and 100. *(Use of Calculator is Optional)*	**Activities and Tasks:** Add to Change Unknown Problems to 100 Add to Start Unknown Problems to 100 Take from Change Unknown Problems to 100 Take from Start Unknown Problems to 100 February Story Structure Problems
2.NBT.B.5 & 2.NBT.B.7 Children share strategies for adding and subtracting 10 and 100 with a 3-digit number. Some ways they may solve include the number line, number scroll, or counting on.	
Common Misconception: When counting up by 10 from a 3-digit number with 9 in the tens place, some may change the tens digit to a 0 without increasing the hundreds digit. For example, they would change 492 to 402. Have these children build the starting number with base-10 blocks and add along each time they count up by 10 and trade 10 longs for 1 flat at each hundred (exchange).	**2.NBT.B.8** **Lessons:** Relate 1 More, 1 Less, 10 More, and 10 Less to Addition and Subtraction of 1 and 10
Lesson 5-7 Children use open number lines as a tool for solving number stories.	**Activities and Tasks:** Adding Ten and One Plus 10 Skip Counting Paths Race Around Add 10 Race Around Subtract 10

Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**
2.NBT.B.5 In this lesson, children apply the rules for adding and subtracting 10 to develop mental strategies for solving more difficult problems. ***This strategy can be extended to adding numbers that are not multiples of 10.*** (For example: 24 + 23 *24 plus 10 is 34, plus 10 is 44. Then add 3 more to get 47.*) **2.MD.B.6** Students will use open number lines to solve problems. These number lines show only the numbers that are needed to solve a particular problem with a particular strategy. Example: *Sherry has 21 marbles. How many more does she need to have 57 marbles?* 36 marbles Have several children share their strategies and display them on the board. Sample strategies should include the following: • I started from 21 and made a jump of 20 to get to 41. I knew I could make another jump of 10, which put me at 51. Then I had to jump 6 more to get to 57. So all together I hopped 20 + 10 + 6 = 36. • I wanted to get to an easy number to start. So, from 21 I went up 9 to 30. From there I made jumps of 10 to get to 40 and then to 50. I had to go 7 more to get to 57. So, in all, I hopped 9 + 10 + 10 + 7, which is 36. 	**Learn Zillion Videos on YouTube:** Mentally Add 10 or 100 Visualizing Base Ten Blocks Mentally Add or Subtract 10 Using a Hundred Chart **2.MD.B.6** **Learn Zillion Videos on YouTube:** Add Two Numbers Using a Number Line Solve Subtraction Problems Using a Number Line 1 Solve Subtraction Problems Using a Number Line
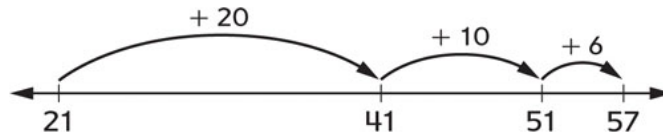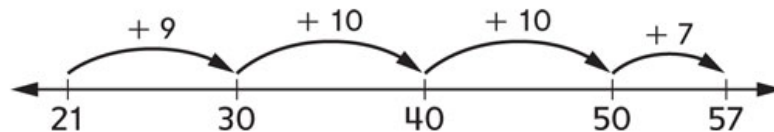
Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**

Lesson 5-8 Change-to-Move Number Stories, Lesson 5-9 Parts-and-Total Number Stories, Lesson 5-10 Change Number Stories
2.OA.A.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.
2.OA.B.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.
2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

Lesson 5-8 Children solve change-to-more number stories. (Adding to problems) **2.OA.A.1, 2.NBT.B.5, & 2.NBT.B.7** Change-to-more is when the start quantity increases. The end quantity will be more than the start quantity. Fish K weighs 35 pounds. It swallows Fish D, which weighs 5 pounds. How much does Fish K weigh now? 40 pounds 	**2.OA.A.1** **(See Lesson 5-6 for Additional Resources)** <u>Online:</u> Change-to-More Number Stories Lesson Jessie Solving Word Problems
Professional Development In *Everyday Mathematics,* children use number models to represent situations and summarize relationships among quantities. In first through fifth grade, number models are used to clarify the quantitative relationships in a problem. Writing number models may help some children decide how to solve a problem, but more importantly, doing so helps them learn the mathematical-symbol system. Translating a word problem into a number model that can be manipulated to find an answer comes later, when children begin to learn formal algebra.	

Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**
Lesson 5-9 Children solve parts-and-total number stories. **2.OA.A.1, 2.OA.A.2, 2.NBT.B.5 & 2.NBT.B.7** Students will solve number stories with two or more parts that are combined to find a total. Children will write number models to represent the stories. **Total** **17** **Part** | **Part** **8** | **9** A parts-and-total diagram for the domino in the Math Message Tell children that the diagram is a convenient way to represent the domino in the Math Message. The Part boxes show the number of dots on each side of the domino, and the Total box shows the **total** number of dots on the domino. **GMP2.1** Lesson 5-10 Children solve change number stories involving temperature. **2.OA.A.1, 2.NBT.B.5, & 2.NBT.B.7** Children will discuss the thermometer and temperature. Using temperatures that are multiples of 5 or 10, pose several temperature-change problems like the one below. Have children write the answers on their slates. Ask: • *It was 50°F at 9:00 A.M. and 70°F at noon. Did it get warmer or cooler?* Warmer • *What type of change happened?* Sample answers: It got warmer. The temperature went up. • *Did it change to more or change to less?* Change to more **GMP1.1** Then write the information in a change diagram. **GMP4.1** Write 50 in the Start box, 70 in the End box, and then + ? on the Change line.	**2.OA.A.1** <u>Online:</u> [Part-Part-Whole Word Problems](#)
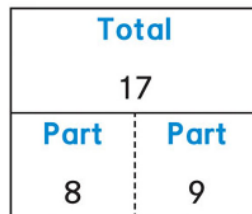
Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**
Write the number model 50 + ? = 70 below the diagram. **GMP4.1** Point to the relevant parts of the change diagram as you read the number model aloud. Ask: *How many degrees warmer did it get?* 20°F **GMP4.2** Record the summary number model 50 + 20 = 70 and have children share their solution strategies. *For example:* • Model the change on a number line. Sketch an open number line on the board to illustrate the problem.	
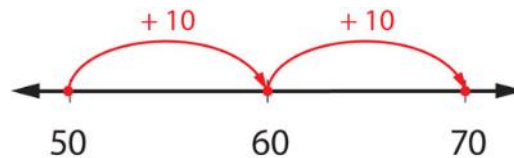
Lesson 5-11 Adding Multi-digit Numbers (Open Response and Reengagement – 2 days)
2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.
2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)
2.MD.C.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?*

2.NBT.B.5, 2.NBT.B.9 & 2.MD.C.8	**2.NBT.B.9**
	Learn Zillion Videos on YouTube:
Day 1 Students will solve problems in more than one way. They will use strategies to calculate the cost of two items in two different ways.	Choose Appropriate Strategies to Explain Why Addition or Subtraction Work to Solve Word Problems
Children use a range of tools and strategies to calculate the cost of two items in two different ways. Using multiple strategies helps children deepen their understanding of the role of place value in addition.	Explain Addition by Decomposing Numbers Explain Subtraction by Decomposing Numbers
Common Misconception: Many activities involving money in Units 1–4 used cents as the unit, so children may report their answer to the Math Message problem in cents. Ask these children to complete a unit box for the problem and discuss the difference between 12 cents and 12 dollars. Emphasize that strategies for working with cents or other units also work for dollars. Have	

Grade 2 Unit Five – Addition and Subtraction	
Connections/Notes	**Additional Resources**
children discuss the similarities and differences in the symbols $ and ¢. For example, the dollar symbol is written before the number (as in $24) while the cents symbol is written after the number (as in 24¢). **Day 2** The class will discuss their selected strategies and revise their work.	
Lesson 5-12 Unit 5 Assessment (2 days)	**Math GR 2 Unit 5 Summative Assessment in eDoctrina**

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**
Lesson 6-1 Representing Data: Pockets **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.MD.B.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.** **2.MD.D.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.**	
In this lesson, children draw picture graphs and bar graphs to represent a set of data. **2.MD.D.10** Students will collect data about the number of pockets on their clothing and display the data on a picture graph and a bar graph. Be sure to discuss the parts of a graph with the students too (title, key, etc.) See page 528 for further explanation.	**2.MD.D.10** **Teaching Student-Centered Mathematics:** pages 310-321 **Lessons:** Draw and Label a Picture Graph Draw a Bar Graph to Represent Data **Activities and Tasks:** Button Bar Graph

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**

Lesson 6-2 Comparison Number Stories, Lesson 6-3 Interpreting Number Stories
2.OA.A.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.
2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.
2.MD.B.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.

Lesson 6-2 In this lesson children will solve number stories that describe comparison situations. Comparison Situations involve two separate quantities and the *difference* between them. They can be about things that are counted or measured. **(All of the above standards relate to number stories)**	**2.OA.A.1** **Activities and Tasks:** Two-Step Word Problems Two-Step Word Problems PowerPoint Comparing Story Structures PowerPoint Spring Story Structures PowerPoint **Learn Zillion Videos on YouTube:** Solve Word Problems with Missing Parts Using Bar Models Solve Word Problems Using Bar Models Solving Multi-Step Word Problems Using Bar Models Solve Word Problems by Comparing **2.MD.B.5** **Teaching Student-Centered Mathematics:** Crooked Paths, pages 249 – 250 **Activities and Tasks:** Length Word Problems (1 & 2) Guided Word Problems

Quantity
Fish A: 14 inches

Quantity
Fish B: 6 inches

?

Difference

Possible number models:
14 – 6 = ?
14 – ? = 6
? + 6 = 14
6 + ? = 14
Sample summary number model:
14 – 6 = 8

difference

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**

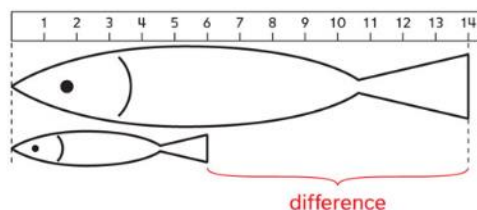|	
NOTE *Everyday Mathematics* does not recommend teaching a keyword approach to solving number stories. It is problematic, for example, to tell children that the keyword *more* indicates that they should add because this is not always true. In Example 1, the word *more* appears, but adding the numbers given in the problem does not produce the correct answer. Instead of teaching keywords, encourage children to think through the relationships between the given numbers before choosing an operation. Lesson 6-3 In this lesson, students will choose their own diagram. It is important for them to understand that there is no one correct choice of diagram. Many number stories can be interpreted in more than one way, and a child's choice of diagram should depend on the way he or she thinks about the problem. **(All of the above standards related to number stories)** Show children how different diagrams can be used to organize the information in Problem 1, *(math journal p. 140)* which can be interpreted as a change situation, a comparison situation, and a parts-and-total situation. *For example:* • **Change Situation** Last year there was some number of water slides at Rushing Waters (the Start number). Nine new slides were added (the Change number). Now there are 26 slides (the End number). I want to find the Start number. **GMP1.1** • **Comparison Situation** I'm comparing the number of slides this year (the larger Quantity: 26) to the number of slides last year (the smaller Quantity). I know that there are more slides this year (the Difference: 9). I want to find the smaller Quantity. **GMP1.1** • **Parts-and-Total Situation** I know there are 26 slides in all (the Total). Of these, some slides (the first Part) were there last year, and 9 new slides (the second Part) were added this year. I want to find the first Part. **GMP1.1**	**Learn Zillion Videos for YouTube:** Solve Length Word Problems Using the Bar Model Solve Length Word Problems Using a Ruler **Online:** Measurement Word Problems

Lesson 6-4 Animal Number Stories
2.OA.A.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.
2.NBT.B.5 Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.

Grade 2 Unit Six – Whole Number Operations and Number Stories

Connections/Notes	Additional Resources
2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **2.MD.A.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.B.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.A.2 & 2.MD.B.5 In this lesson, children will solve animal number stories based on length and height. Explain to the students that *length* is the distance across something from one end to another. *Height* is how tall someone or something is. **Note:** Children should learn to be flexible and efficient in their solution strategies. For example, there is no need for them to turn to the number grid or any other tool if they are able to find the correct answer mentally. Other times, representing a problem visually with pictures, counters, or base-10 blocks will result in a better understanding of how to solve it. If some children rely solely on the number grid to find answers, encourage them to try different strategies and then use the number grid to check their answers. Example: Have children imagine the crocodile and the giant squid lying nose to nose. Tell children that we would like to find the total length in feet. To help find the total length in feet, display a unit box with the label "feet" as well as a parts-and-total diagram. Remind children that diagrams are tools to help organize their thinking about number stories. Ask: *What do you know about the animals in the story?* The crocodile is 23 feet long, and the giant squid is 55 feet long. Write those numbers in the diagram. Ask: *What do you need to find out?* The total length of the two animals **GMP1.1** Write ? for the unknown number and have a volunteer write a number model.	**2.MD.A.2** **Teaching Student Centered Mathematics:** Activity 8.6 Changing Units page 231 **Lessons:** Measure and Compare Lengths **Activities and Tasks:** Fruit Roll Up Measurement **Videos:** Discussing Unit Difference **Learn Zillion Video on YouTube:** Compare Measurements of an Object in Non-Standard Units

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**

Unit
feet

Total
?

Part	Part
23	55

Number model:
23 + 55 = ?

Have children share their solution strategies. Some children may have added mentally by starting at 55 and first adding the tens from the second addend (55 + 20 = 75) and then adding the ones (75 + 3 = 78). The total length is 78 feet. Emphasize the importance of including the unit in the answer. **GMP6.3**

Have a volunteer demonstrate this strategy on an open number line. The child starts at 55, hops 20, and lands at 75. Then he or she hops 3 more and lands at 78. So, 55 + 20 + 3 = 78. The total length is 78 feet.

Lesson 6-5 Two-Step Number Stories
2.OA.A.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.
2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.

| Children will solve two-step number stories and share the number stories they wrote. | **2.OA.A.1**
(See Lesson 6-2 for Additional Resources) |

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**
2.OA.A.1, 2.NBT.B.5, & 2.NBT.B.7 Remind students that more than one model can often fit a number story. With two-step number stories, children can write one- or two-step number models to represent each story. *Common Misconception: Watch for children who mistakenly add all three quantities in the problem or add the first two numbers but do not know what to do with the third. Encourage them to break the number story into two parts. Ask:* **What happened first? What happened next?**	
Lesson 6-6 Recording Addition Strategies, Lesson 6-7 Partial-Sums Addition, Part 1, Lesson 6-8 Partial-Sums Addition, Part 2 **2.NBT.A.1 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).** **2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.** **2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.** **2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)**	
Lesson 6-6 Children will make ballpark estimates and invent and record their own strategies for solving addition problems. **2.NBT.B.5 & 2.NBT.B.7** In this lesson, children share their own invented strategies for adding 2- and 3-digit numbers. They are typically one of the following:	**2.NBT.A.1** **Activities and Tasks:** Place Value Riddles **Learn Zillion Videos on YouTube:** Combine Tens and Ones to Create Numbers Show Numbers in Different Ways by Taking Numbers Apart

Grade 2 Unit Six – Whole Number Operations and Number Stories

Connections/Notes	Additional Resources
Sample strategies for 26 + 74: • **Counting Up** I used an open number line. I started at 74 because that was the bigger number. I jumped up 6 to get to an easy number, 80. I know 26 is the same as 20 + 6, so I had 20 more to go. I made two more jumps of 10 and landed at 100. • **Combining 10s and 1s** I added the 10s together: 20 + 70 = 90. Then I added the 1s together: 6 + 4 = 10. When I put 90 and 10 together, I got 100. • **Making Friendly Numbers** I know 26 is 1 more than 25 and 74 is 1 less than 75, so I moved 1 from 26 to 74 to make the problem 25 + 75. That's like counting quarters, and I know 25 + 75 = 100. · Counting up (on an open number line): $+6$ $+10$ $+10$ 74 80 90 100 · Combining 10s and 1s: 20 + 70 = 90 6 + 4 = 10 90 + 10 = 100 · Making friendly numbers: 26 + 74 -1 ↓ ↓ $+1$ 25 + 75 = 100 ***Common Misconception: When making friendly numbers to add, some children may not appropriately adjust the second addend or the answer. For example: to solve 52 + 29, children may add 1 to 29 to make 30, find 52 + 30 = 82, but then forget to subtract the 1 they added. Encourage children to write down their steps to help them remember what to do.*** Lesson 6-7 Children use base-10 blocks to find partial sums and build readiness for partial-sums addition. ***They will work with 2-digit and 3-digit numbers.*** **(All standards listed above)** See sample problem below:	[Regroup by Trading Cubes, Rods, and Flats](#) **2.NBT.A.3** **Teaching Student-Centered Mathematics:** Activity 5.6 Base-Ten Riddles, page 134 **Lessons:** Write Base Ten Numbers in Expanded Form **Activities and Tasks:** Number Word Concentration **Learn Zillion Videos on YouTube:** [Read and Write Numbers in Expanded Form Using Arrow Cards](#) **Online:** [Shark Pool Game](#) **2.NBT.B.9** **Learn Zillion Videos on YouTube:** [Choose Appropriate Strategies to Explain Why Addition or Subtraction Work to Solve Word Problems](#) [Explain Addition by Decomposing Numbers](#) [Explain Subtraction by Decomposing Numbers](#)

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**
Display the problem 45 + 26 in vertical form. Distribute base-10 blocks and instruct children to represent 45 and 26 using as few blocks as possible. Display an image of the base-10 blocks arranged to resemble the vertical addition problem. Step 1: 45 + 26 Step 2: Combine 10s and 1s. 60 + 11 = 71 Have children follow along with their blocks as you model using them to solve 45 + 26. Review the combining-10s-and-1s strategy discussed during the Math Message Follow-Up. Explain that children can follow the same steps with their base-10 blocks: add the 10s, add the 1s, and then add the two parts together. Ask: • *Which blocks show the 10s?* **GMP5.2** The longs Collect all the longs into one group. • *Count the 10s. How many are there?* Six 10s, or 60 • *Which blocks show the 1s?* **GMP5.2** The cubes Collect all the cubes into another group. • *Count the 1s. How many are there?* Eleven 1s, or 11 • *What do we still need to do to find the answer?* **GMP1.2** Add the 10s and 1s together: 60 + 11 = 71 Some children may notice that they have more than 10 cubes after they combine them, so they exchange 10 cubes for 1 long. Making the exchange is fine if they recognize the possibility on their own, but it is not necessary at this time. Point out that children used the blocks to find parts of the sum, or **partial sums**, and then added the partial sums together to find the total. Have children explain in their own words how to use base-10 blocks to find partial sums. Lesson 6-8 Children will be introduced to partial-sums addition. (Decomposing for addition) **2.NBT.B.3 & 2.NBT.B.7** Base-10 blocks and expanded form are two representations that highlight place value. Using such representations when they compute with multi-digit numbers can help children keep the size of the numbers they are working with in mind. These representations may also help children	

Connections/Notes	Additional Resources
stay more aware of whether their answers are reasonable (which children can lose sight of when they manipulate individual digits without thinking of their values).	

$$53 = 50 + 3$$

$$44 = 40 + 4$$

$$90 + 7 = 97$$

Display the expanded form for 53 and 44 as shown below. Ask: *How could this expanded form help us do the same thing we just did with the base-10 blocks?* **GMP2.3** Sample answer: We can add 50 and 40 to find the 10s and add 3 and 4 to find the 1s. Think aloud as you point to the relevant parts of the expanded form and record the partial sums: *First I add the 10s: 50 plus 40 is 90. Then I add the 1s: 3 plus 4 is 7. What is 90 + 7?* 97 Record the answer as shown below.

Pose another 2-digit addition problem, such as 36 + 75. 111 Write the problem vertically. Ask children to tell you how to write each number in expanded form and record the expanded form off to the side. You may want to use a second color.

```
      36      30 + 6
    + 75      70 + 5
30 + 70 =  100
  6 + 5 =   11
           111
```

Children will work with 2-digit and 3-digit addends.

Common Misconception: Some children may struggle when using partial-sums addition to add a 3-digit number to a 2-digit number. For example, when adding 125 + 63, they may write 100 + 600 = 700 as the first partial sum. Encourage these children to write the addends in expanded form and use a zero to represent the hundreds in 63: 0 + 60 + 3.

Lesson 6-9 Subtraction with Base-10 Blocks (Open Response and Reengagement – 2 days)
2.OA.A.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.
2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting

Grade 2 Unit Six – Whole Number Operations and Number Stories

Connections/Notes	Additional Resources
three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	

Day 1 In this lesson, children complete an open response problem involving a subtraction number story. They invent strategies to solve a subtraction problem using base-10 blocks.

Professional Development
The focus of this lesson is **GMP5.2**. In the Math Message, children discuss how to use base-10 blocks to represent subtraction by simply removing blocks. The open response problem challenges children to invent ways to use base-10 blocks to represent subtraction when it is not possible to directly remove blocks. Children will need to use other strategies, such as covering up, crossing out, or making a trade.

$$+ 10 \quad + 10 \quad + 10 \quad + 2$$

$$10 + 10 + 10 + 2 = 32$$
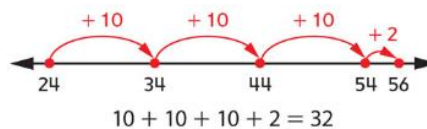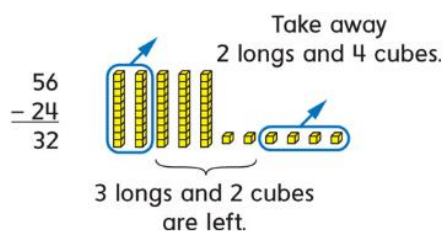
Counting up on an open number line: $56 - 24 = 32$

−9	−8	−7	−6	−5	−4	−3	−2	−1	0
1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70

Counting back on a number grid: $56 - 24 = 32$

Take away
2 longs and 4 cubes.

$$\begin{array}{r} 56 \\ -24 \\ \hline 32 \end{array}$$

3 longs and 2 cubes
are left.

Common Misconception: Look for children who include the starting number in their counts when they count up or back. Consider demonstrating two methods for solving the problem using the number grid, one that counts the starting number (resulting in an answer of 33) and one that leads to the correct answer (32). Ask: I get either 32 or 33 for my answer. Which method is correct? How do you know? Sample answer. 32 is correct. To subtract 24 from 56, you count back 2 tens from 56 like this: 46, 36. You land on 36, but you don't say the 36 twice. Count back 4 ones: 35, 34, 33, 32. You land on 32.

Day 2 In this lesson, children compare strategies and revise their work.

Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**

Connections/Notes	Additional Resources
Lesson 6-10 Exploring Arrays, Length, and Shapes (Explorations) **2.OA.C.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.** **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.** **2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard-length unit.** **2.G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.**	

In this lesson, children will build arrays on geo-boards, measure and compare lengths, and create shapes. **2.OA.C.4 & 2.NBT.A.2** Children will make arrays on geo-boards, record these arrays on dot paper, and write number models for the arrays. (Exploration Activity A)	**2.MD.A.1** **Activities and Tasks:** Measuring Paths 1 **Learn Zillion Videos on YouTube:** Measure in Centimeter and Meter Units **Videos:** Measure It!
2.MD.A.1 & 2.MD.A.4 Children will measure and compare lengths of different objects. (Exploration Activity B)	**2.MD.A.4** **Learn Zillion Videos on YouTube:** Find the Difference in the Length of Two Objects Using Addition Use Everyday Objects to Determine the Difference in the Length of Two Objects
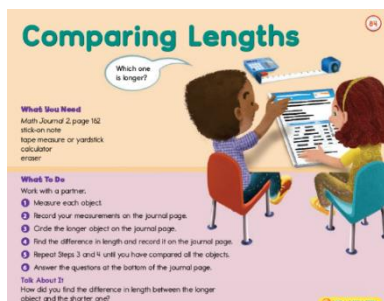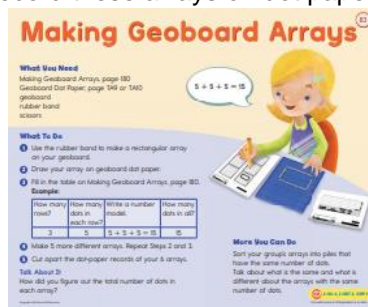
Grade 2 Unit Six – Whole Number Operations and Number Stories	
Connections/Notes	**Additional Resources**
2.G.A.1 Children will create shapes with triangles and rectangles. (Exploration Activity C)	**2.G.A.1** **Activities and Tasks:** Geoboard Quadrilaterals Geoboard Triangles
Lesson 6-11 Unit 6 Assessment (Option of 2 days)	**Math GR 2 Unit 6 Summative Assessment in eDoctrina**

Grade 2 Unit Seven – Whole Number Operations and Measurement	
Connections/Notes	**Additional Resources**
Lesson 7-1 Playing *Hit the Target* **2.OA.B.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.** **2.NBT.A.1 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).** **2.NBT.B.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.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)**	
Children practice finding differences between 2-digit numbers and multiples of 10. In Units 2 and 3, children used the number 10 for making a ten and strategies for addition and subtraction facts **(2.OA.A.2)**. In this lesson, children will use multiples of 10 as breaking points when	**2.NBT.B.5** **Teaching Student-Centered Mathematics** Strategies for Whole Number Computation, pages 157-172

Grade 2 Unit Seven – Whole Number Operations and Measurement	
Connections/Notes	**Additional Resources**
mentally adding or subtracting 2-digit numbers **(2.NBT.B.5)**. Students are encouraged to use concrete models, such as number grids (120 chart), to solve the problems and explain why a strategy works **(2.NBT.B.9)**. Student example: Enter 32 on the calculator. Change it to 50. Did you add or subtract? Add What number did you add? 18 A child might reason as follows: "What number, added to 2, will give me 10? It's 8, so 32 + 8 = 40. Which number, added to 40, will give me 50? It's 10, because 40 + 10 = 50. Finally, I know that 8 + 10 = 18, so I have to add 18 in all." *Common Misconception: Some children may add or subtract 10 more than they should. For example, to change 32 to 50 they may add 28, reasoning that it takes 20 to get from 30 to 50 and then 8 more to get from 2 to 10. Suggest that they check their answer by mentally adding just the tens part of their change to the starting number (for example, add 20 to 32 to get 52) to help them see that they are adding too much.*	**Lessons:** Add and Subtract Within Multiples of Ten Based on Understanding Place Value and Basic Facts Add Within 100 Using Properties of Addition to Make a Ten **Learn Zillion Videos on YouTube:** Add Within 100 Using Base Ten Blocks Add by Using a Hundreds Chart Add by Decomposing Numbers **2.NBT.B.9** **Learn Zillion Videos on YouTube:** Choose Appropriate Strategies to Explain Why Addition or Subtraction Work to Solve Word Problems Explain Addition by Decomposing Numbers Explain Subtraction by Decomposing Numbers
Lesson 7-2 Four or More Addends (Open Response Reengagement – 2 days) **2.OA.A.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.** **2.OA.B.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.** **2.NBT.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.**	
Day 1 In this lesson, children will discuss strategies a number story with three addends. **Note:** The focus of this lesson is **GMP7.2**. Structures can include properties of operations and place value, both of which are prominent in this lesson. In the Math Message, children discuss useful ways to apply the Associative Property or Commutative Property of Addition or both. For more information about these properties and children's strategies, see the Mathematical Background Section of the Unit 7 Organizer. Children discuss these structures without using the terms. To solve the open response	**2.NBT.B.6** **Lessons:** Solve Additions with up to 4 Addends **Learn Zillion Videos on YouTube:**

Grade 2 Unit Seven – Whole Number Operations and Measurement	
Connections/Notes	**Additional Resources**
problem, children can also use their understanding of place-value structures to add four addends. **(2.NBT.B.6)** **Day 2** The class will discuss selected solutions, and children will revise their work.	[Add Up to Four 2-Digit Numbers Using Addition Facts and Friendly Numbers](#) [Add Up to Four 2-Digit Numbers Using Place Value](#) [Add Three 2-Digit Numbers by Decomposing](#) [Add Up to Four 2-Digit Numbers by Decomposing Sums Greater than 100](#)
Lesson 7-3 Playing *Basketball Addition* **2.NBT.B.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.B.6 Add up to four two-digit numbers using strategies based on place value and properties of operations.** **2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)**	
Children will solve addition problems with three or more addends. They will learn the game, *Basketball Addition* for adding three or more numbers. *Common Misconception: Some children may think they have to add the numbers in the order they appear. Ask these children to recall the Math Message Follow-Up discussion and remind them that they can add any two numbers first.*	**2.NBT.B.6** **(See Lesson 7-2 for Additional Resources)**
Lesson 7-4 Measuring with Yards, Lesson 7-5 Measuring with Meters **2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.** **2.MD.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.** **2.MD.A.4 Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard, length unit.**	
Lesson 7-4 Children explore U.S. customary length units and measure to the nearest yard. **2.MD.A.1 & 2. MD.A.4** Students will explore nonstandard and standard units. They will compare the yardstick to a tape measure. **2.MD.A.1 & 2.MD.A.3** Students will estimate and measure distances to the nearest yard. **Note:** Explain that estimation is an important measurement skill because sometimes we need to measure when we don't have tools with us. Children might estimate the height of the slide on the	**2.MD.A.1** **Activities and Tasks:** What's in Your Yard? AIMS **2.MD.A.3** **Lessons:** Estimate and Measure Objects Using Inch Rulers and Yardsticks

Grade 2 Unit Seven – Whole Number Operations and Measurement	
Connections/Notes	**Additional Resources**
playground. Adults might estimate the length of a rug to determine if it will fit in a room. The more we practice estimating, the more accurate our estimates get. One way to estimate an object's length is to compare it to a **personal reference**, which may be a body part or a familiar object. For example, a child's personal reference for an inch might be the length from the first joint to the tip of the thumb. To estimate an object's length in inches, children might imagine how many times this part of their thumb will fit along the object. Personal references for a foot and a yard might be a sheet of notebook paper and the width of a classroom door, respectively. Lesson 7-5 Children find personal references for metric units of measure; they choose appropriate units and tools to estimate and measure lengths. **2.MD.A.1 & 2. MD.A.4** Students will compare a meter stick to a tape measure and a yardstick. **2.MD.A.1 & 2.MD.A.3** Students will estimate lengths in *metric units* and use tools to measure the lengths. **Note:** A decimeter is a unit of length equivalent to 10 centimeters, or one-tenth of a meter. Although children will identify personal references for 10 centimeters, do not expect them to use the term *decimeter.*	**2.MD.A.4** **Learn Zillion Videos on YouTube:** Find the Difference in the Length of Two Objects Use Everyday Objects to Find the Difference in Length of Two Objects
Lesson 7-6 Generating Data: Standing Jumps and Arm Spans, Lesson 7-7 Representing Data: Standing Jumps, 7-8 Representing Data: Arm Spans **2.NBT.B.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.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.** **2.MD.A.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.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.** **2.MD.D.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.**	
Lesson 7-6 Children measure lengths to the nearest centimeter and to the nearest inch. In this lesson, students will measure with a partner their arm spans in inches and in centimeters. Discuss that the measurement in centimeters will have a larger number because the centimeter is a	**2.MD.A.1 & 2.MD.A.3** **(See Lesson 7-4 for Additional Resources)** **2.MD.A.2**

Grade 2 Unit Seven – Whole Number Operations and Measurement	
Connections/Notes	**Additional Resources**
smaller unit. **(2.MA.A.1, 2.MD.A.2, 2.MD.A.3)** They will collect and record arm span data. They will also make two jumps and record the length of each one both in inches and centimeters. ***Common Misconception: If children have difficulty with following the directions, make a display of the job flow diagram to help group members know how to switch jobs for the standing jumps.*** Lesson 7-7 Children discuss the shortest and longest standing jumps and create a line plot for the data. **Note:** A line plot is a quick and easy way to organize and display data. You can think of it as a rough sketch of a bar graph. Line plots are also called *pictographs* (when the marks used on the graph are pictures), *sketch graphs*, or *dot plots.* Line plots work best with numerical data. Check marks, Xs, stick-on notes, or other marks above a labeled line show the frequency of each value. In a line plot, three data values can be clearly identified: maximum, minimum, and range. **(2.MD.D.9)** For example: Lesson 7-8 Children make a frequency table and a line plot for a set of data. Using the data from lesson 7-6, students will make a frequency table and line plot **(2.MD.D.9)**. They will answer questions using addition and subtraction strategies based on the class data **(2.NBT.B.5)**.	**Lessons:** Measure an Item Twice Using Different Length Units **2.MD.D.9** **Lessons:** Draw a Line Plot to Represent Measurement Data Draw a Line Plot, Answer Questions and Draw Conclusions **Activities and Tasks:** Measurement Line Plot **Learn Zillion Video on YouTube:** Display Data on a Line Plot
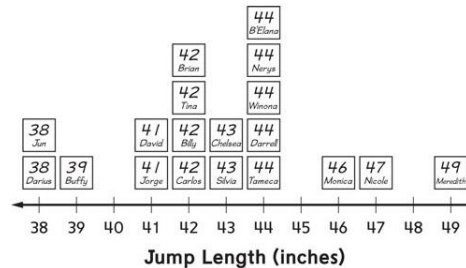
	Grade 2 Unit Seven – Whole Number Operations and Measurement	

Connections/Notes	**Additional Resources**

| | **Note:** *Frequency* means the number of times an event or a value occurs in a set of data. The arm span table shows frequency two ways: with tally marks and with numbers (counts). This filled-in table is called a *frequency table* because it shows the frequencies for all arm spans in your data set. Use the terms *frequency* and *frequency table.* Encourage, but do not expect children to use these words at this time.

Example of frequency table from a set of class data. | |

Our Arm Spans

Arm Span (Inches)	Frequency	
	Tallies	Number
42	//	2
43	/	1
44		0
45	//	2
46	////	4
47	//	2
48	////	5
49		0
50	/	1
51	/	1
52		0
53	/	1
	Total =	19

Lesson 7-9 Exploring Shape Attributes, Graphs, and Measurements (Explorations)
2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
2.MD.A.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.A.3 Estimate lengths using units of inches, feet, centimeters, and meters.
2.MD.D.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.D.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.
2. G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.

Children will sort shapes, draw a picture graph, and measure body parts. **(2.G.A.1)** Students will cut out shapes and sort them. (Exploration Activity A)	

Grade 2 Unit Seven – Whole Number Operations and Measurement	
Connections/Notes	**Additional Resources**
(2.MD.D.10) Children draw a picture graph based on the favorite-fruit data collected during the math meeting. (Exploration Activity B) **(2.MD.A.1, 2.MD.A.2, 2.MD.A.3 & 2.MD.D.9)** Children will work with a partner to measure body parts. (Exploration Activity C)	
Lesson 7-10 Unit 7 Assessment (Option of 2 days)	**Math GR 2 Unit 7 Summative Assessment in eDoctrina**

Grade 2 Unit Eight – Geometry and Arrays	
Connections/Notes	**Additional Resources**
Lesson 8-1 Attributes of 2-Dimensional Shapes, Lesson 8-2 Playing *Shape Capture*, Lesson 8-3 Comparing Triangles, Pentagons, and Hexagons, Lesson 8-4 Drawing and Reasoning About Quadrilaterals (Open-Response and Reengagement 2-days), Lesson 8-5 Attributes of 3-Dimensional Shapes **2. G.A.1 Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.**	

Grade 2 Unit Eight – Geometry and Arrays

Connections/Notes	Additional Resources
Lesson 8-1 Children describe the attributes of 2-dimensional shapes. An *attribute* is a feature of an object or a common feature of a set of objects. For 2-dimensional shapes this includes the number and lengths of the sides, the number of sides and angles, the vertex, and the presence or absence of parallel sides. **Note:** Although all the 4-sided shapes can be classified as quadrilaterals, some quadrilaterals have special features and names. Shapes G, H, I, J, and K are trapezoids. Shapes I and J are rhombuses. Shape J is a square. Shapes J and K are rectangles. Shapes I, J, and L are kites. It is important that children know all 4-sided polygons are quadrilaterals but do not expect them to know all the names of various 4-sided shapes. Lesson 8-2 Children identify shapes that have certain attributes while playing the game *Shape Capture.* Lesson 8-3 Children build and compare various polygons. They will compare different triangles, as well as compare pentagons and hexagons. Furthermore, students will need to understand the term **polygon.** • Polygons are made up of all straight sides (line segments). • The sides of a polygon do not cross. • Polygons are "closed" figures: you can trace their sides and come back to where you started without retracing or crossing any part. Lesson 8-4 **(Day 1)** Children will draw quadrilaterals with given attributes. They will look at examples and non-examples of quadrilaterals. Then they will draw quadrilaterals to plan a garden and argue that their shapes have the attributes needed. **(Day 2)** The class discusses solutions, and children revise their work. Lesson 8-5 Children will sort and compare 3-dimensional shapes according to their attributes. First students will describe cubes and their attributes. Expect them to note the following: • There are six flat surfaces, or **faces.** • All the faces are the same size. • Each face is a square. **GMP6.3**	**2.G.A.1** **Teaching Student-Centered Mathematics:** Constructing and Dissecting Shapes pages 196-200 Activity 7.17 Face Matching page 217 Activity 7.18, Shape Hunts page 217 **Lessons:** Build, Identify and Analyze Two Dimensional Shapes Describe 2-dimensional Shapes Based on Attributes **Activities and Tasks:** Comparing 3D Shapes Geoboard Quadrilaterals. **Learn Zillion Videos on YouTube:** Draw Shapes with a Specified Number of Sides Draw a Hexagon Draw a Quadrilateral Identify Quadrilaterals

Grade 2 Unit Eight – Geometry and Arrays	
Connections/Notes	**Additional Resources**
As students look at 3-D shapes, point out the following: • Cylinders, cones, and spheres all have curved surfaces. • Rectangular prisms, cubes, pyramids, cylinders, and cones all have flat surfaces called *faces.* • An edge of a cube, a prism, or a pyramid is a line segment where two faces meet. • An edge of a cone or a cylinder is a curve where a flat face meets a curved surface. • A vertex on a 3-dimensional shape such as a cube, a prism, or a pyramid is a point at which at least 3 edges meet. (The plural of *vertex* is *vertices.*) • The **apex** of a cone is the point that is opposite the flat face. **Cube and Cylinder** Last, students will compare 3-D shapes. Discuss how they are alike and different. (See example and pages 721-722 for guidance). Models of a cube and a cylinder • The cylinder can roll when pushed. The cube can't. • The cylinder has a curved surface. The cube doesn't. • The cylinder has 2 flat faces. The cube has 6 flat faces. • The cube's faces are squares. The flat faces on the cylinder are circles.	
Lesson 8-6 Partitioning Rectangles, Part 1, Lesson 8-7 Partitioning Rectangles, Part 2 **2.G.A.2 Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.**	
In Lessons 8-6 and 8-7, children partition rectangles into rows and columns of same size squares. In lesson 8-6 students will use manipulatives for this activity, and in lesson 8-7 they will use a picture of a square (visual aid) to partition rectangles. **Note:** Work with partitioning in Grade 2 lays the foundation for area measurement in Grade 3. In Grade 2 children develop the ability to visualize a rectangle as a collection of squares arranged in a row-by-column structure. This structure is important because it allows children to see the one-to-one correspondence between the number of squares in a row or a column and the number of units of measurement in the rectangle's sides. For example, a rectangle with 7 rows and 5 squares in each row	**2.G.A.2** **Lessons:** Use Drawings to Compose Rectangles Use Drawings to Decompose a Rectangle and Relate to Repeated Addition **Activities and Tasks:** Partitioning Rectangles

| Grade 2 Unit Eight – Geometry and Arrays	
Connections/Notes	**Additional Resources**
has 7 units of length and 5 units of width. Seeing this correspondence is an important step toward understanding why multiplying the length of a rectangle by its width works to determine area. **(2.G.A.2)** ***Common Misconception: Watch for children who partition their rectangles into one too many rows or one too many columns. Suggest that they run their fingers along each row or column as they count. As they adjust their drawings, have them check that the squares are the same size.***	Dividing a Rectangle into Equal Parts **Learn Zillion Videos on YouTube:** Partition rectangles into Same Sized Squares Using Toothpicks Partition Rectangles by Creating Rows and Columns
Lesson 8-8 Equal-Groups and Array Number Stories, Lesson 8-9 More Equal Groups and Arrays, Lesson 8-10 Playing *Array Concentration* **2.OA.A.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.** **2.OA.C.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.** **2.NBT.A.2 Count within 1000; skip-count by 5s, 10s and 100s.** **2.NBT.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.**	

Lesson 8-8 Children solve number stories involving equal groups of objects by using their own invented strategies. Children will solve these problems by modeling them with concrete objects or drawings, skip counting, or adding in two or more steps. **(2.OA.A.1, 2.NBT.A.2 & 2.NBT.B.7)**
Suggested number stories:
 	
• Your family has 3 bicycles. Each bicycle has 2 wheels. How many wheels are there in all? 6 wheels; Sample number models: 2 + 2 + 2 = 6; 3 × 2 = 6
 	
Sample strategies:
 	
    • Make or draw 3 groups of 2 and count the objects by 1s.
    • Skip count by 2s, moving from group to group: 2, 4, 6.
• You see a pattern of floor tiles with 4 columns of tiles and 4 tiles in each column. How many tiles are there in all? 16 tiles; Sample number models: 4 + 4 + 4 + 4 = 16; 4 × 4 = 16
	2.OA.C.4
	<u>**Lessons:**</u>
	Use Manipulatives to Create Equal Groups
	Use Drawings to Represent Equal Groups and Relate to Repeated Addition
	Create Arrays Using Square Tiles
	
	Learn Zillion Videos on YouTube:
	Read Arrays by Skip-Counting
	Use Repeated Addition to Find the Total in an Array
	
	2.OA.A.1, 2.NBT.A.2, & 2.NBT.B.7 (In Lessons 8-8 and 8-9, these standards are referenced since students will be solving number stories using equal groups and arrays)

Grade 2 Unit Eight – Geometry and Arrays	
Connections/Notes	**Additional Resources**

Sample strategies:

- Think about doubles facts: 4 + 4 = 8 for the first two columns and 4 + 4 = 8 for the last two columns. So, the total is 8 + 8 = 16.
- Use an open number line to think about adding 4s.
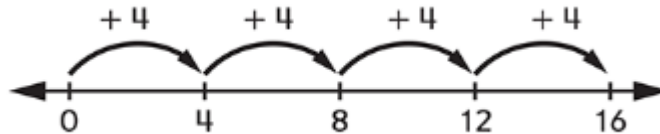
Professional Development

Working with equal groups and arrays can help children build foundations for multiplication. If children leave second grade with a solid conceptual understanding of how, for example, finding the total number of objects in 3 equal groups of 5 relates to finding the product 3 × 5, they are more likely to successfully learn multiplication facts by the end of third grade.

Lesson 8-9 Children will write a number story to match a number model, share and discuss their number stories, and build equal groups and arrays.

Amy has 3 bags of apples. There are 4 apples in each bag. How many apples does Amy have in all? She has 12 apples.

For example, the number model 5 + 5 + 5 = 15 represents 3 groups of 5, or an array with 3 rows of 5.

Note: *Some children may be ready to write multiplication number models, such as 3 X 5 =15, but this is not required in Grade 2.*

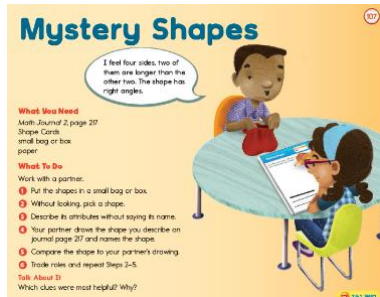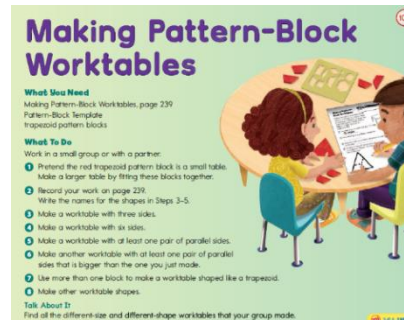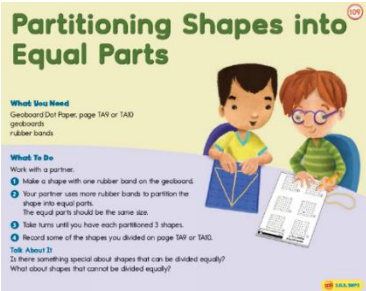| Grade 2 Unit Eight – Geometry and Arrays	
Connections/Notes	**Additional Resources**
Lesson 8-10 Children will cut out *Array Concentration* cards and practice finding the total number of objects in arrays and writing matching number models.	
Lesson 8-11 Exploring Mystery Shapes, Polygons, and Equal Parts (Explorations) **2. G.A.1** Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. (Sizes are compared directly or visually, not compared by measuring.) Identify triangles, quadrilaterals, pentagons, hexagons, and cubes. **2.G.A.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.	
(2.G.A.1) Children identify hidden shapes based on their attributes. (Exploration Activity A) **(2.G.A.1)** Students will build shapes with trapezoids and use a Pattern-Block Template to record their work. (Exploration Activity B)	**2.G.A.3** **Learn Zillion Videos on YouTube:** Fractions of a Whole Using Fraction Strips Partition a Circle into Equal Shares Partition Rectangles into Equal Shares **Online:** Thirteen Ways of Looking at a Half

Grade 2 Unit Eight – Geometry and Arrays	
Connections/Notes	**Additional Resources**
(2.G.A.3) Children divide shapes in a geo-board into fractional parts. (Exploration Activity C)	
Lesson 8-12 Unit 8 Assessment (Option of 2 days)	**Math GR 2 Unit 8 Summative Assessment in eDoctrina**

Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
Lesson 9-1 Creating and Naming Equal Parts **2.G.A.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.**	
Children divide shapes and use fraction vocabulary to name the shares. Children often apply whole-number reasoning to fractions. For example, they may say that 1/2 is less than 1/4 because 2 is less than 4. Using standard notation for fractions before development of conceptual understanding promotes such misconceptions. Children should begin by describing partitions of shapes in their own words while you model fraction vocabulary, such as *half, 1 out of 2 shares, and 2 equal parts*. If children refer to standard notation (e.g., 1/2, 1/4), point out that they will see this notation in everyday life—but avoid using it in class. Children divide shapes and use fraction vocabulary to name the shares.	**2.G.A.3** **Activity:** Dividing a Rectangle into Equal Parts **(See Lesson 8-11 for Additional Resources)**

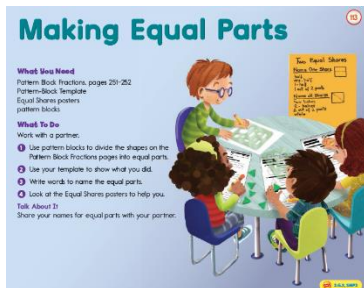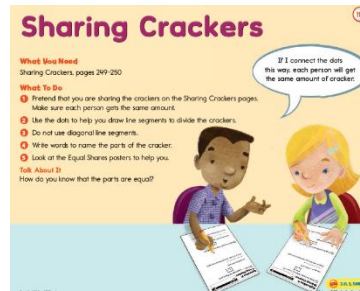| Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**

Connections/Notes	Additional Resources
Sample "2 Equal Shares Poster" Sample "4 Equal Shares Poster" **Two Equal Shares** Name One Share half one-half 1-half 1 out of 2 parts Name All Shares two-halves 2-halves 2 out of 2 parts whole **Four Equal Shares** Name One Share one-fourth 1-fourth one-quarter 1-quarter 1 out of 4 parts Name All Shares four-fourths 4-fourths four-quarters 4-quarters 4 out of 4 parts whole ***Common Misconception: Watch for children who present vertical side-to-side folds and horizontal side-to-side folds of their squares as different ways to fold the square. Display the two paper squares and rotate one to demonstrate that both squares show the same fold. GMP2.2***	

Lesson 9-2 Exploring Equal Shares, Pattern Block Fractions, and Number Lines (Explorations)
2.MD.B.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.
2.G.A.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.

Children explore equal shares of different shapes, use pattern blocks to divide shapes, and make a number line.	

Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
(2.G.A.3) Children divide crackers into equal parts and explain how they know the parts are equal. (Exploration Activity A) **(2.G.A.3)** Children use pattern blocks to divide shape into equal parts. (Exploration Activity B) **2.MD.B.6)** Children make number lines and label their halfway marks. (Exploration Activity C) 	
Lesson 9-3 Sharing Muffins (Open Response and Reengagement – 2 days) **2.G.A.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.**	
Day 1 Children will decide how to share muffins equally and use words to name their shares. They will use drawings to show equal shares of multiple wholes. Once they have made the visual models, they name the shares.	
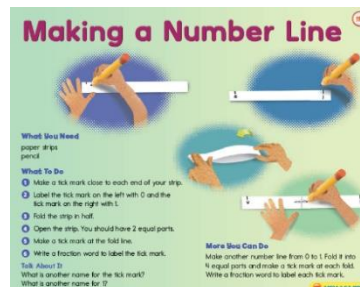
Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
The class discusses selected drawings and names, and children revise their work.	

Lesson 9-4 Fractional Units of Length
2.MD.A.1 Measure the length of an object by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.
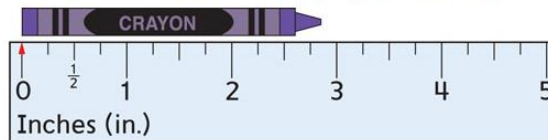**2.MD.B.6 Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, …, and represent whole-number sums and differences within 100 on a number line diagram.**

Children measure lengths to the nearest half-inch. Students are expected to identify half- and quarter inches on a 12-inch ruler. They will measure objects to the nearest half-inch. *Common Misconception* *Watch for children who mistakenly line up one end of the object with the end of the ruler instead of with the 0 mark. Consider highlighting the 0 mark with a colored marker to draw children's attention to it. Then remind children to carefully line up the 0 mark with one end of the object they are measuring.* Both of the following are measurements to the nearest half-inch (the rulers are not actual size): This crayon is about 3 inches long. This pencil is about 4 and 1-half-inches long.	**2.MD.A.1** **Teaching Student-Centered Activities:** Measuring Length Activities pages 228-234 **Activities and Tasks:** Broken Ruler Measurement Task Cards
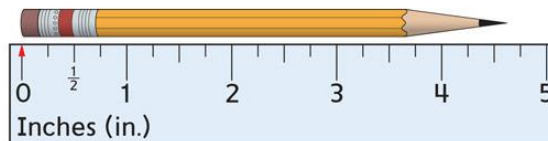
Lesson 9-5 Reviewing Place Value, Lesson 9-6 Expand-and-Trade Subtraction, Part 1, Lesson 9-7 Expand-and-Trade Subtraction, Part 2
2.NBT.A.1 Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:
a. 100 can be thought of as a bundle of ten tens – called a "hundred."

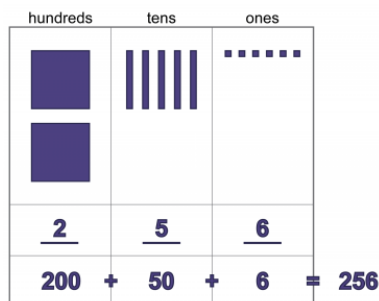| Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
b. **The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).** **2.NBT.A.3 Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.** **2.NBT.A.4 Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.** **2.NBT.B.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.B.7 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.** **2.NBT.B.9 Explain why addition and subtraction strategies work, using place value and the properties of operations. (Explanations may be supported by drawings or objects.)**	
Lesson 9-5 Children write multi-digit numbers in expanded form and compare them. ***Common Misconception: Some children may think that the thousand cube is worth only 600 because they see only the six faces of the cube. Have children count by 100s as you stack 10 flats together to show them that the thousand cube consists of 10 flats, which is worth 1,000.*** Students can use base ten blocks to represent a three-digit number and model/write in expanded form. (200 + 50 + 6 = 256) **2.NBT.A.4** Students may use models, number lines, base ten blocks, interactive websites, written words, and/or spoken words that represent two three-digit numbers. To compare, students apply their understanding of place value. They first attend to the numeral in the hundreds place, then the numeral in tens place, then, if necessary, to the numeral in the ones place. .	**2.NBT.B.4** **Lessons:** Compare Two 3-Digit Numbers Compare Two Three-Digit Numbers When There Are More than 9 Ones or 9 Tens Order Numbers in Different Forms **Activities and Tasks:** Comparing 3-Digit Numbers Comparing Whole Numbers Game **Learn Zillion Videos on YouTube:** Compare Two 3-Digit Numbers by Comparing Number Parts Compare Numbers Using a Number Line **Online:** Comparing Numbers One False Move Game Expand and Trade Slide Show

Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**

Students work in pairs to each represent a three-digit number. They will compare with greater than, less than, and equals to cards. Students will discuss their reasoning for their answers. Lessons 9-6 and 9-7 - In lesson 9-6, children use base-10 blocks to solve subtraction problems. They will show how to subtract multi-digit numbers without trades and with trades. ***Common Misconception: Watch for children who attempt to build both the larger (or starting) number and the number being subtracted. Providing a unit and supplying a context may be helpful. For example, for 53 − 37 make up a take-away number story such as the following: "There were 53 apples in the basket, and then 37 were sold. How many apples are left?" Emphasize that 53 is the starting amount from which children must take away 37.*** In lesson 9-7, children will use expand-and-trade subtraction to subtract multi-digit numbers. They will write the subtraction problem in expanded form, then subtract (with and without trades). $$\begin{array}{ll} 79 & \to 70+9 \\ -34 & \to 30+4 \\ \hline & \quad 40+5=45 \end{array}$$ $$\begin{array}{ll} 84 & \to \overset{70}{\cancel{80}}+\overset{14}{\cancel{4}} \\ -56 & \to 50+6 \\ \hline & \quad 20+8=28 \end{array}$$	**2.NBT.B.5, 2.NBT.B.7 & 2.NBT.B.9** **(In Lessons 9-6 and 9-7, these standards are referenced since students will be solving subtraction problems using the expand-and-trade strategy.)** **Activity:** Expand and Trade Subtraction Handout
Lesson 9-8 Equivalent Money Amounts **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s and 100s. **2.NBT.B.7** 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; relate the strategy to a written method. Understand that in adding or subtracting three-digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds. **2.MD.C.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?*	
In this lesson, children practice finding coin and bill combinations with equivalent values and using cents and dollars-and-cents notation.	**2.MD.C.8** **Lessons:** Engage NY Module 7

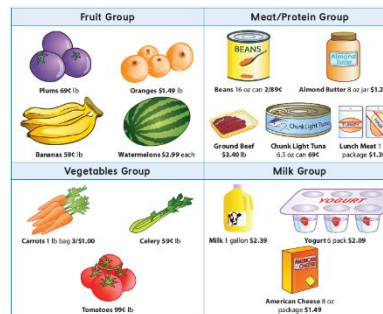| **Grade 2 Unit Nine – Equal Shares and Whole Number Operations**	
Connections/Notes	**Additional Resources**
2.NBT.A.2 & 2.MD.C.8 Students will use skip-counting strategies to review the values of coins and bills. For example: • *How many pennies are in a nickel?* 5 *In a dime?* 10 • *How many pennies are in a quarter?* 25 *In 50 cents?* 50 • *How many pennies are in a dollar?* 100 *In 2 dollars?* 200 *In 10 dollars?* 1,000 • *How many dimes are in a dollar?* 10 *In 60 cents?* 6 • *How many nickels are in a quarter?* 5 *In a dollar?* 20 *In half of a dollar?* 10 • *How many quarters are in a dollar?* 4 *In half of a dollar?* 2 Students will also learn how to write money amounts in different ways. Discuss how to interpret the dollars-and-cents notation: • The symbol $ stands for the word *dollar.* • The dot (or period) after the 1 is called a decimal point. • The number before the decimal point is the number of dollars. The number after the decimal point is the number of cents. • $1.27 is read as "1 dollar and 27 cents." Mention commonly used alternatives, such as "a dollar twenty-seven." Emphasize that $1.27 is more money than $1. Tell children that an amount with a 0 before the decimal point, such as $0.74, is less than 1 dollar. It can be written with a cent symbol as 74¢. Have children practice writing the following in dollars-and-cents notation on their slates: **GMP2.3** • 275¢ $2.75 • 305¢ $3.05 • 89¢ $0.89 • 1 dollar and 25 cents $1.25 • 2 dollars and 90 cents $2.90 **2.NBT.B.7** Last, students will find two different ways to pay for grocery items.	Susan's Choice Real World Problems **Activities and Tasks:** Money Word Problems Money Word Problems 2 Ways PPT Visiting the Arcade

Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
Common Misconception: Watch for children who write $2.75 as $2.75¢. Tell them that the dollar symbol and decimal point signal that the numbers after the decimal point are cents, so the ¢ symbol should not be used in this situation.	
Lesson 9-9 Estimating Costs (Open Response and Reengagement – 2 days) **2.OA.A.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. **2.NBT.B.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.B.6** Add up to four two-digit numbers using strategies based on place value and properties of operations. **2.NBT.B.8** Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	
Day 1 Children select items from a store poster and use mental math to estimate the total cost. They need to make sense of an estimate strategy for an addition problem and find a second estimation strategy for the same problem. They will discuss their strategies and decide what they can buy at a store for $100. **Day 2** The class discusses selected student responses, and the children revise their work.	
Lesson 9-10 Connecting Doubles Facts, Even Numbers, and Equal Groups, Lesson 9-11 Multiples of 10 and 5 **2.OA.A.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. **2.OA.B.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. **2.OA.C.3** Determine whether a group of objects (up to 20) has an odd or even number of members e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends. **2.OA.C.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. **2.NBT.A.2** Count within 1000; skip-count by 5s, 10s and 100s. **2.NBT.B.5** Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	
In lesson 9-10 children make connections among different concepts they have learned throughout the year. They begin to solve number stories about the total number of objects in two equal groups or rows. (**2.OA.A.1**, **2.OA.C 4**). When they look at the number models such as 2+2= 4, 4+4=8, they know these are double facts. They also know that the total number of objects in equal groups is always even**.** **(2.OA.C.3)**	**2.OA.C.3** **Teaching Student Centered Mathematics:** Activity 10.17, Fair Shares for Two, page 292 Activity 10.18, Bumpy or Not Bumpy, page 292

Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
Children learn that doubles addition facts and even numbers are related to finding multiples of 2. A multiple of 2 is the product of 2 and a counting number. In lesson 9-11 students will use money as a context for finding multiples of 5 and 10. Children skip count by 5s and 10s by counting collections of nickels and dimes. **(2.NBT.A.2)** Having students learn the 2s, 5s, and 10s multiplication facts will assist them with learning the rest of their multiplication facts by the end of Grade 3.	**Lessons:** Relate Doubles to Even Numbers Pair Objects to Relate to Even Numbers Investigate the Pattern of Even Numbers

Array	Addition Number Model	Multiplication Number Model
2-by-1 • •	1 + 1 = 2	2 × 1 = 2
2-by-2 • • • •	2 + 2 = 4	2 × 2 = 4
2-by-3 • • • • • •	3 + 3 = 6	2 × 3 = 6
. . .	. . .	. . .

Lesson 9-10
Example of ways to model multiples of 2s. (Using arrays, addition, and multiplication number models)

Grade 2 Unit Nine – Equal Shares and Whole Number Operations	
Connections/Notes	**Additional Resources**
Lesson 9-11 Relating 10s and 5s Remind children that *multiplication* is an operation that involves finding the total number of things that are in equal groups. Point out that a dime can be thought of as a "group" of 10 cents, so when children were finding the value of a set of dimes, they were multiplying the number of dimes in the set by 10. In each case the total value is a skip-count by 10s, or a **multiple** of 10. Display equal-groups notation for the sets of dimes in the table shown below. Ask children to suggest a multiplication number model for each set of dimes and record them. (*See table below.*) Then repeat for the nickels, pointing out that finding the total value of a set of nickels is like multiplying the number of nickels by 5. In each case the total value is a skip-count by 5s, or a multiple of 5.	**Learn Zillion Videos on YouTube:** Recognize Even or Odd Numbers by Forming Equal Groups Determine Even or Odd by Pairing Write Even or Odd Numbers as the Sum of Two Equal Addends **2.OA.C.4** **(See Lesson 8-8 for Additional Resources)**

Dimes		Nickels	
1 [10] is 10	1 × 10 = 10	1 [5] is 5	1 × 5 = 5
2 [10s] is 20	2 × 10 = 20	2 [5s] is 10	2 × 5 = 10
4 [10s] is 40	4 × 10 = 40	4 [5s] is 20	4 × 5 = 20
5 [10s] is 50	5 × 10 = 50	5 [5s] is 25	5 × 5 = 25
8 [10s] is 80	8 × 10 = 80	8 [5s] is 40	8 × 5 = 40
10 [10s] is 100	10 × 10 = 100	10 [5s] is 50	10 × 5 = 50

Lesson 9-12 Unit 9 Assessment (Option of 2 days)	**Math GR 2 Unit 9 Summative Assessment in eDoctrina**