First Grade Color Math Teacher's Manual Additions:

Understanding the Meaning of the Equal Sign (1.OA.7)

Lesson 32

Standard: 1.OA.7

Objective 4. Students will compare addition problems.

Materials: 1-20 Number Line and 2 counters
True or False Addition sheet 1.OA.7-1 (Resource Pack)

Teaching 4.

Use the True or False Addition sheet. Two addition problems are joined by an equal sign. Is the sentence true or false? Students can use the number line and counters to solve both equations in the number sentence. If the answers are the same, the problems are equal and the sentence is true. A letter T is written in the box. If the problems have different answers, they are not equal and the number sentence is false. The letter F is written in the box.
Answers: 1. T, 2. F, 3. T, 4. T, 5. F, 6. F, 7. F, 8. T, 9. T, 10. T

Lesson 102

Standard: 1.OA.7

Objective 4. Students will compare addition problems.

Materials: 1-20 Number Line and 2 counters
True or False Subtraction sheet 1.OA.7-2 (Resource Pack)

Teaching 4.

Use the True or False Subtraction sheet. Two subtraction problems are joined by an equal sign. Is the sentence true or false? Students can use the number line and counters to solve both equations in the number sentence. If the answers are the same, the problems are equal and the sentence is true. A letter T is written in the box. If the problems have different answers, they are not equal and the number sentence is false. The letter F is written in the box.
Answers: 1. F, 2. T, 3. T, 3. T, 4. T, 5. F, 6. T, 7. T, 8. F, 9. T, 10. F

Lesson 126

Standard: 1.OA.7

Objective 4. Students will compare addition and subtraction problems.

Materials: 1-20 Number Line and 2 counters
True or False Mix sheet 1.OA.7-3 (Resource Pack)

Teaching 4.

Use the True or False Mix sheet. Subtraction and addition problems are joined by an equal sign. Is the sentence true or false? Students can use the number line and counters to solve both equations in the number sentence. If the answers are the same, the problems are equal and the sentence is true. A letter T is written in the box. If the problems have different answers, they are not equal and the number sentence is false. The letter F is written in the box.

Answers: 1. F, 2. F, 3. T, 4. T, 5. T, 6. F, 7. T, 8. T, 9. F, 10. F

Determining the Unknown (1.OA.8)

Lesson 81

Standard: 1.OA.8

Objective 4. Students will find an unknown and relate it to other number sentences.

Materials: Counters
Determining the Unknown (Resource Pack)
Whole and Parts Mat (Resource Pack)
Unknowns 1.OA.8-1 sheet

Teaching 4.

Read the Determining the Unknown section in the Resource Pack. Use the Whole and Parts Mat with counters to model the problems on the Unknowns worksheet. Have students talk through at least a row of the problems to make sure they understand why the variable has the same value in each equation.

For example: “In the problem, 8 - a = 5, I put 8 counters in the whole part of the mat. I moved 5 of them to a part section and moved the rest to the other section and counted them. There were three. I did the same thing for 8 - 5 = a. For 5 + a = 8, I can also make a group of 8 in the whole section and move 5 to 1 part and 3 to the other. So I did the same thing each time.”

Lesson 84

Standard: 1.OA.8

Objective 5. Students will write addition problems with unknowns as subtraction problems.

Materials: Counters
Determining the Unknown (Resource Pack)

Whole and Parts Mat (Resource Pack)
Unknowns 1.OA.8-2 sheet

Teaching 5.

Read the Determining the Unknown section in the Resource Pack. Use the Whole and Parts Mat with counters to find the unknowns on the Solve for the Unknown sheet. Emphasize that the sum of the addition problem becomes the minuend (first number) in the subtraction problem. The known addend becomes the subtrahend (number subtracted) in the subtraction problem.

Lesson 85

Standard: 1.OA.8

Objective 5. Students will write subtraction problems with unknowns as addition problems.

Materials: Counters
Determining the Unknown (Resource Pack)
Whole and Parts Mat (Resource Pack)
Unknowns 1.OA.8-3 sheet

Teaching 5.

Read the Determining the Unknown section in the Resource Pack. Use the Whole and Parts Mat with counters to find the unknowns on the Solve for the Unknown sheet. Emphasize that the subtrahend (number subtracted) and the difference (answer) of the subtraction problems are the addends for the
addition problems.

Lesson 100

Standard: 1.OA.8

Objective 5. Students will find unknowns in number sentences.

Materials: Counters
Determining the Unknown (Resource Pack)
Whole and Parts Mat (Resource Pack)
Solve for the Unknown 1.OA.8-4 sheet

Teaching 5.

Read the Determining the Unknown section in the Resource Pack. Use the Whole and Parts Mat with counters to find the unknowns on the Solve for the Unknown sheet. Review identifying the whole (minuend) and the parts that the minuend is broken into (the subtrahend and the difference) in a number sentence.

Adding or Subtracting 10 (1.NBT.5)

Lesson 46

Standard: 1.NBT.5

Objective 4. Students will add and subtract ten.

Materials: 1-100 Number Chart and 3 transparent chips
Adding or Subtracting 10 (1.NBT.5) teaching section (Resource Pack)

Teaching 4.

Use the Adding or Subtracting 10 (1.NBT.1) teaching sheet in the Resource Pack. Students should learn the concept that adding 10 to any two-digit number, increases the tens place value by 1. Subtracting 10 to any two-digit number decreases the tens place value by 1. The goal is for students to be able to do this task using mental math.

Lesson 47

Standard: 1.NBT.5

Objective 5. Students will add and subtract ten.

Materials: More and Less Blocks sheet (Resource Pack)
Adding or Subtracting 10 (1.NBT.5) teaching section (Resource Pack)
Optional: rods and cubes

Teaching 5.

Refer to the Adding and Subtracting 10 teaching section from the Resource Pack. Check students' ability to add or subtract 10 to two-digit numbers using mental math (not using any manipulatives or paper resources).

If students can successfully add and subtract ten mentally, introduce the More and Less Block sheet. Say two-digit numbers for the middle boxes.

If students need more concrete help, use the rods and cubes.

Lesson 48

Standard: 1.NBT.5

Objective 5. Students will add and subtract ten.

Teaching 5.

Say two-digit numbers such as 49, 35, 86, and 22. Have students use mental math skills to add and subtract ten from each number.

Ask word problems involving adding and subtracting 10. Such as: 18 birds were in a tree. 10 more came. How many birds are in the tree?

57 students were at the school. Ten left. How many students are at the school?

Subtracting Multiples of 10 From 10's (1.NBT.6)

Lesson 111

Standard: 1.NBT.6

Objective 5. Students will subtract multiples of ten from multiples of tens.

Materials: Subtracting Multiple of 10 from 10's teaching section (Resource Pack)

Teaching 5.

Use the Subtracting Multiples of 10 From 10's teaching section from the Resource Pack to introduce the concept. You may repeat this activity with different materials in lessons 112 and 113. Lesson 114 will have an auditory exercise for this concept.

First Grade Teaching Sections

Following are teaching sections referred to in the Teacher's Manual.

Word Problems (1.OA.1 and 1.OA.2)

Practice solving various word problems at least once a week. This section details how to create word problems in a variety of common formats.

At the first grade level, word problems are reading independent in that they are read to the student by the teacher. So, giving students ways to remember and organize information is important. Three word problem mats help students act out the word problems to think through the process to choose the numbers used in the problem. The **Playground Word Problem Mat**, **Birthday Party Word Problem Mat**, and **Comparison Word Problem Mat** follow the narratives of the word problems and provide a space for students to collect counters.

The first grade curriculum has two other resources (tools) that can be used to help solve word problems in place of or along with the word problem mats. The tools help model and organize

the information in the word problem.

The 1 to 20 Number Line can be used with a counter to mark a starting position. Begin with a starting number from the problem. Move a counter right to add or place additional counters to the right. Move a counter to the left or place additional counters to the left to subtract.

The **Ten Frame Mat** helps teach the concept of place value by group numbers as tens and ones. Use counters on the ten frame to organize a group of tens. The counters in the ten frame are represented by the digit 1 in the tens place. The counters that don't fit on the ten frame are the ones when working with groups of 11 to 19. When subtracting, the counters outside the frame are subtracted first, then if needed, counters are removed from the ten frame. If the frame isn't full of 10 counters, the counters in the frame are counted as ones.

Two Ten Frame mats are printed per page, so the page can be cut in half on the dashed line. The mats are printed on plain paper. A PDF of this form is available in the Resource Center at www.McRuffy.com. A direct link is here: https://mcruffy.com/pages/first-grade-math-form-worksheets

Word Problem Planning Sheet

The Word Problem Planning Sheet can be used to plan word problems for a lesson. Write numbers to be used in problems in the various categories that you want to use in a lesson. You may want to do 4 or 5 problems in a lesson. Choose different types. Keep the sheet as a record and create problems of other types in other lessons.

A PDF of this form is available in the Resource Center at www.McRuffy.com. A direct link is here: https://mcruffy.com/pages/first-grade-math-form-worksheets

Create a Word Problem Activity

Add to and Subtract From Problems

Following are Word Problem Mat addition scripts with bear counters. These are the types that will likely be used on standardized testing. The examples are given using the Playground Mat. For variety, you can also use the Birthday Party mat and substitute the words *birthday party* for *playground*. Use the teaching scripts for initial instruction or if students can't model the

problems independently. Work toward having students explain how they solved or will solve the problems.

Choose a variety of problem types in each word problem activity. Sample numbers will be used, but, substitute numbers create more problems. Work with no more than 20 counters. You may have students write problems including symbols for unknowns. Sometimes it's helpful to use a meaningful symbol for unknown such as t for total or b for bears, so at some point, you may encourage students to use meaningful symbols for unknowns. We will use question marks for unknowns in these scripts for the different problem types.

Add to a group with an unknown result problem type: 7 bears were at the playground. 8 more bears arrived. How many bears are at the playground?

Teaching this type: **What is known from the word problem?** (The number of bears and the start and the number of bears that came.) **What is unknown, what are you trying to find out?** (The total number of bears.)
How can you do that? (Count all the bears or add 7 and 8) **How would you show that as a number sentence with an unknown?** 7 + 8 = ? **What is the answer for the unknown?** ? = 15

Add an unknown change to a group: 6 bears were at the playground. **Some** more bears arrived. Then there were 14 bears at the playground. How many more bears arrived at the playground?

Teaching this type: **What is known from the word problem?** (The number of bears at the start and the number of bears at the end) **What is unknown, what are you trying to find out?** (The number of bears that arrived) **How can you do that?** (Make a group of 14 and take out the 6 bears that were there at the beginning. Count the rest of the bears.) **How would you show that as an addition number sentence with an unknown?** 6 + ? = 14 **What is the answer for the unknown?** (? = 8)

If students are working with subtraction problems you may also ask: **How could you show this as a subtraction problem with an unknown?** 14 - 6 = ? **Will the unknown in the subtraction problem equal the unknown in the addition problem?** (Yes, in both problems the answer is 8).

Add to an unknown starting number: Some bears were at the playground. **3** more bears arrived. Then there were 12 bears at the playground. How many more bears were at the playground before the others arrived?

Teaching this type: **What is known from the word problem?** (The number of bears that arrived and the number of bears at the end.) **What is unknown, what are you trying to find out?** (The number of bears that were at the playground before the others arrived) **How can you do that?** (Make a group of 12 and take out the 3 bears that arrived. Count the rest of the bears.) **How would you show that as an addition number sentence with an unknown?** ? + 3 = 12 **What is the answer for the unknown?** (? = 9)

If students are working with subtraction problems you may also ask: **How could you show this as a subtraction problem with an unknown?** 12 - 3 = ? **Will the unknown in the subtraction problem equal the unknown in the addition problem?** (Yes, in both problems the answer is 9).

Subtract from a group with an unknown result problem type: 17 bears were at the playground. 3 bears left. How many bears are now the playground?

Teaching this type: **What is known from the word problem?** (The number of bears and the start and the number of bears that left.) **What is unknown, what are you trying to find out?** (The number of bears at the playground after some left.)
How can you do that? (Make a group of 17 bears. Take 3 away and count the rest of the bears.) **How would you show that as a number sentence with an unknown?** 17 - 3 = ? **What is the answer for the unknown?** ? = 14

Subtract an unknown change to a group: 16 bears were at the playground. **Some** bears left. Then there were 9 bears at the playground. How many bears left the playground?

Teaching this type: **What is known from the word problem?** (The number of bears at the start and the number of bears at the end) **What is unknown, what are you trying to find out?** (The number of bears that left) **How can you do that?** (Make a group of 16 and take out the 9 bears that stayed at the playground. Count the rest of the bears.) **How would you show that as a**

subtraction number sentence with an unknown? 16 - 9 = ? **What is the answer for the unknown?** (? = 7)

You may also ask: **How could you show this as an addition problem with an unknown?** 9 + ? = 16

Subtract from an unknown starting number: Some bears were at the playground. **5** more bears left. Then there were 10 bears at the playground. How many bears were at the playground before the bears left?

Teaching this type: **What is known from the word problem?** (The number of bears that left and the number of bears at the end.) **What is unknown, what are you trying to find out?** (The number of bears that were at the playground before the others left) **How can you do that?** (Make a group of 10 bears for the ones that stayed and add the 5 bears that left. Count the bears.) **How would you show that as a subtraction number sentence with an unknown?** ? - 5 = 15 **What is the answer for the unknown?** (? = 10)

If students are working with subtraction problems you may also ask: **How could you show this as an addition problem with an unknown?** 5 + 10 = 15 **Will the unknown in the addition problem equal the unknown in the subtraction problem?** (Yes, in both problems the answer is 10).

Put Together/Take Apart Problems

Rather than adding or taking away from groups, put together/take apart word problems combine or divide groups. The examples use the Comparison Word Problem Mat for creating groups of bears at a playground and a birthday party.

Put together groups with a total unknown: 12 bears were at the playground. 6 bears were at a birthday party. How many bears are on the mat?

Teaching this type: **What is known from the word problem?** (The number of bears at the playground and birthday party.) **What is unknown, what are you trying to find out?** (The total number of bears) **How can you do that?** (Count the bears at the playground and birthday party together.) **How would you show that as a number sentence with an unknown?** 12 + 6 = ? **What is the answer for the unknown?** (? = 18)

Take apart a group because of an unknown addend: 14 bears left home. 5 went to the playground. The rest went to a birthday party. How many went to a birthday party?

Teaching this type: **What is known from the word problem?** (The number of bears at the playground and the total number of bears) **What is unknown, what are you trying to find out?** (The number of bears at the playground) **How can you do that?** (Make a group of 14 bears. Put 5 on the playground. Put the rest at the birthday party. Count the number of bears at the birthday party.) **How would you show that as an addition number sentence with an unknown?** 5 + ? = 14 **How would you show that as a subtraction number sentence with an unknown?** 14 - 5 = ? **What is the answer for the unknown?** (? = 9)

Take apart with both addends unknown: 8 bears left home. Some went to the playground. The rest went to a birthday party. How many went to the playground and, how many went to the birthday party?

Teaching this type: **There are lots of different ways this can be answered. How could you show different answers?** (Make a group of 8 counters. Put some of them at the playground and put some of them at the birthday party.) **What number sentences can you make showing that the two groups equal 8?** (1 + 7 = 8, 2 + 6 = 8, 3 + 5 = 8, 4 + 4 = 8, 5 + 3 = 8, 6 + 2 = 8, 7 + 1 = 8) You could also add 8 + 0, but the word problem does say *some* went to each place.

If is best to limit these problems to sums equal to 10 or less.

Comparison Story Problems

Rather than adding or taking away from groups, comparison story problems compare groups. The examples use the Comparison Word Problem Mat for comparing groups of bears at a playground and a birthday party.

Unknown difference problem type (more version): 10 bears were at the playground. 6 bears were at a birthday party. How many more bears are at the playground?

Unknown difference problem type (fewer version): 10 bears were at the playground. 6 bears were at a birthday party. How many fewer bears are at the birthday party?

Teaching this type: **What is known from the word problem?** (The number of bears at the playground and at the birthday party.) **What is unknown, what are you trying to find out?** (The difference between the number of bears and the playground and birthday party.) **How can you do that? (**This could be done several ways such as:

Put a group of 10 on the playground. Put a group of 6 bears at the birthday party. Match bears in both groups up until no more match and count the bears that don't match. You could also place 6 bears in each place and then add more bears to the playground counting from 6 to 10 and then count the bears that were added to make 10.) **How would you show that as a number sentence subtracting?** 10 - 6 = ? **What is the answer for the unknown?** ? = 4 **How would you show that as a number sentence adding?** 6 + ? = 10

Unknown larger number problem type (more version): 7 more bears were at the birthday party than the playground. 9 bears were at a playground. How many bears are at the birthday party?

Unknown larger number problem type (fewer version): 7 fewer bears were at the playground than the birthday party. 9 bears were at a playground. How many bears are at the birthday party?

Teaching this type: **What is known from the word problem?** (The number of bears at the playground and that 7 more than that number were birthday party.) **What is unknown, what are you trying to find out?** (The number of bears at the birthday party.)

How can you do that? (Many possible answers, such as: Make a group of 9 bears at the birthday to match the playground total. Add 7 more bears to the birthday party and then count

the bears.) **How would you show that as a number sentence?** 9 + 7 = ? **What is the answer for the unknown?** ? = 16

Unknown smaller number problem type (more version):17 bears were at the birthday party. There were 6 more bears at the birthday party than the playground. How many bears are at the playground?

Unknown larger number problem type (fewer version): 17 bears were at the birthday party. There were 6 fewer bears at the playground. How many bears are at the playground?

Teaching this type: **What is known from the word problem?** (The number of bears at the birthday and that 6 fewer bears were at the playground.) **What is unknown, what are you trying to find out?** (The number of bears at the playground.)

How can you do that? (Many possible answers, such as: Make a group of 17 bears at the birthday and remove 6 bears to match the playground total.) **How would you show that as a number sentence?** 17 - 6 = ? **What is the answer for the unknown?** ? = 11

Add To Problems with 3 addends (1.OA.2)

Add to a group with an unknown result problem type: 7 bears were at the playground. 3 more came. Then another group of 4 came. How many bears were at the playground?

Alternative script with times: 7 bears were at a birthday party at 12:00 pm. At 12:30 pm 3 more bears came. Then another group of 4 came at 1:00 pm. What was the total number of bears at the birthday party at 1:00 pm?

Teaching this type: **What is known from the word problem?** (The number of bears and the start and the number of bears that came.) **What is unknown, what are you trying to find out?** (The total number of bears.)
How can you do that? (Count all the bears or add 7, 3 and 4) **How would you show that as a number sentence with an unknown?** 7 + 3 + 4 = ? **What is the answer for the unknown?** ? = 17

Put Together Problems with 3 addends (1.OA.2)

Rather than adding or taking away from groups, put together/take apart word problems combine or divide groups. The examples use the Comparison Word Problem Mat for creating groups of bears at a playground and a birthday party.

Put together groups with a total unknown: 9 bears were at the playground. 6 bears were at a birthday party. 3 bears stayed home. What is the total number of bears?

Teaching this type: **What is known from the word problem?** (The number of bears at the playground, birthday party, and the number of bears that stayed home.) **What is unknown, what are you trying to find out?** (The total number of bears) **How can you do that?** (Count the bears at the playground, birthday party, and home together.) **How would you show that as a number sentence with an unknown?** 9 + 6 + 3 = ? **What is the answer for the unknown?** (? = 18)

Adding and Subtracting Zero (1.OA.3)

Adding zero is introduced in Lesson 3.
Subtracting zero is introduced in Less 98

You can create unlimited practice sheets in the Resource Center at www.McRuffy.com. A direct link can be found here: https://mcruffy.com/pages/basic-facts-worksheet-generators

Understanding the Meaning of the Equal Sign (1.OA.7)

Understand the meaning of the equal sign, and determine whether equations involving addition and subtraction are true or false.

Number Line activities: If comparing two problems, solve each problem on a number line with 2 different markers (counters, or game pawns). If the problems are equal, the markers will end up on the same space.

Worksheets:

Lesson 32 True or False Addition 1.OA.7-1 Answers: 1. T, 2. F, 3. T, 4. T, 5. F, 6. F, 7. F, 8. T, 9. T, 10. T

Lesson 102 True or False Subtraction 1.OA.7-2 Answers: 1. F, 2. T, 3. T, 3. T, 4. T, 5. F, 6. T, 7. T, 8. F, 9. T, 10. F

Lesson 126 True or False Mix 1.OA.7-3 Answers: 1. F, 2. F, 3. T, 4. T, 5. T, 6. F, 7. T, 8. T, 9. F, 10. F

Determining the Unknown (1.OA.8)

Students will determine unknown numbers in addition and subtraction equations. Counters and other resources can be used to find unknowns in problems. A number line can be used or ten frames, but the Whole and Parts Mat was created for this concept.

If the whole is known, place counters in that space. Then move then known part into that space from the whole part and the rest of the counters into the other part. If the minuend in a subtraction problem is unknown, put the known parts into the boxes and then move both groups to the Whole space and count the total.

To do this, students should recognize the wholes and parts in problem formats. In a subtraction problem the whole is the minuend. The parts are the subtrahend and difference. Whole - Part 1 = Part 2

In an addition problem the whole is the sum. The addends are the parts. Part 1 + Part 2 = Whole

The whole is the whole group. The parts are parts of the whole group.

Worksheet Answers:

Lesson 81 1.OA.8-1: 1. a=3, 2. b = 7, 3. c = 6, 4. d = 8, 5. e = 9
Lesson 84 1.OA.8-2: 1. a = 7, 16 -9 = a, 2. b = 6, 11 - 5 = b, 3. c = 4, 12 - 8 = c, 4. d = 9, 13 - 4 = 9, 5. e = 5, 14 - 9 = e
Lesson 85 1.OA.8-3: 1. a = 9, 6 + 3 or 3 + 6, 2. b = 10, 5 + 5, 3. c = 11 9 = 2 or 2 + 9, 4. d = 14, 8 + 6 or 6 + 8,

5. e = 16, 7 + 9 or 9 + 7

Lesson 100 1.OA.8-4: 1. 6, 2. 11, 3. 15, 4. 5, 5. 2, 6. 13, 7. 1, 8. 6, 9. 14, 10. 10

Adding or Subtracting 10 (1.NBT.5)

Given a two-digit number, students will mentally find 10 more of 10 less.

Practice this concept in lessons 46 to 48. Lessons 49 to 51 will also cover this concept. Use the lesson below to introduce adding and subtracting ten. Review the concept occasionally by stating two-digit numbers and having students say numbers that are 10 more or 10 less. “What is 71 plus 10?” or, “What is 86 minus 10?” Students understanding this concept should be able to quickly answer questions such as these without having to count or use other materials.

Materials: 1-100 Number Chart, Transparent chips (2-3), More and Less Blocks sheet

Teaching: Use 1-100 Number Chart and transparent chips. **Find 25 on the number chart. Place a chip on it. Now place a chip on the number above it. What number is that?** (15) **Is 15 more or less than 25?** (Less) **How much less?** Students can count spaces to verify it is ten less. **What place value changed between 15 and 25?** (Tens place) **How did it change?** (The tens place became one less. It changes to 1)

Move the chip to the number below it. What number is that? (35) **Is 35 more or less than 25?** (More) **How much more?** Students can count spaces to verify it is ten more. **What place value changed between 25 and 35?** (Tens place) **How did it change?** (The tens place became one more. It changes to 3)

Let’s summarize what number does 25 become when 10 is subtracted? (15) **What number does 25 become when 10 is added?** (35) **Did the ones place change?** (No). **The ones place does not change when ten is added or subtracted.**

Repeat with other numbers. Progress to finding numbers that are ten more and less than the given number without moving the chip. Then, have students find 10 more and less than numbers without looking at the chart. Include the instructions to add 10 or subtract 10.

The concept can also be modeled using **rods and cubes** from the base ten sets by having students show a number such as 53 with 5 rods and 3 cubes. Add 10 (1 rod) to 53 to make 63. Remove a rod from the group of 53 to make 43.

Students should be able to answer word problems quickly using mental math such as:

64 cookies were on a tray. 10 were eaten. How many are left?
38 marbles are in a jar. 10 more were placed in it. How many are in the jar now?
Students should be able to explain how they applied this concept to solve problems like these.

Paper practice: Use the **More and Less Blocks sheet**. Say numbers for the center box. Work with two-digit numbers with 2 to 9 in the ones place and 1 to 8 in the tens place. Looking at the 1-100 Number Chart, don't give students numbers that are on the outside of the chart.

The blocks on the More and Less Blocks sheet highlight numbers to the left, right, above, and below the given numbers. Students will fill in the other numbers using mental math.

A PDF version is available on the McRuffy Press website, www.McRuffy.com. A direct link is here: https://mcruffy.com/pages/first-grade-math-form-worksheets

Subtracting Multiples of 10 From 10's (1.NBT.6)

Lesson 111

Base ten rods, Tens Number Line and game pawn or counter, or Filled Ten Frames Cards

Subtract multiples of 10 in the range of 10 to 90 from multiples of 10 from 10 to 90 using concrete models or drawings.

Students will subtract problems such as 80 - 50 using other materials:

Tens Number Line: Students can use the number line by placing a pawn on the starting number (minuend) and moving backwards count by tens. Students can find the answer to a problem such as 80 - 50 by placing the counter on 80 and counting back 5 spaces to 30.

Base Ten Rods: Form a group for the starting number (minuend) and remove rods for each ten that is subtracted. For 80 - 50, form a group of 8 rods. Remove 5 rods and count the remaining (3) rods by 10 to represent 30.

Filled Tens Frame Cards: Cut apart the cards on the sheet. Form a group of cards for the starting number (minuend) and remove cards for each ten that is subtracted. For 80 - 50, form a group of 8 cards. Remove 5 cards and count the remaining (3) cards by 10 to represent 30.

Students should be able to use materials such as the Tens Number Line, Base Ten Rods, or Filled Ten Frames Cards to solve word problems such as:

60 children were at the park. 40 left the park. How many children stayed at the park?
80 ducks were on the pond. Ten flew away. How many were still at the pond?
30 cupcakes were on a tray. 20 were eaten. How many were left?
Joe had 90 pennies. He spent 50. How many pennies does he have left?

Students should be able to explain how they found the answer. Examples for a problem with the numbers 70 - 60:

I used the number line. I started at 70 and moved back 6 times.

I made a group of 7 rods. I took 6 rods away and counted the 1 rod left by 10.

I thought about a group of 7 Tens Frame cards. I imagined taking 6 cards away. That left 1 card that I counted as a ten.

I subtracted 6 from 7, and put a zero after the difference, because they are tens.

Put Three Objects in Order by Length (1.MD.1)

Lessons 12, 26, 36

Order three objects by length and compare the lengths to two objects indirectly by using a third object.

Student will use terms such as longest, longer, shorter, shortest, taller, tallest to describe lengths in sets of 3 objects. Length can include the concept of height, too.

Our example is a set of 3 crayons arranged by length from shortest to longest: red, green, blue.

Crayons may be compared: the red crayon is the shortest, the blue crayon is the longest.

Using the green crayon as the third object: The red crayon is shorter than the green crayon. The blue crayon is longer than the green crayon.

Ideas of things to compare 3:

People
Ribbons, strings, yarn, or paper cut to different lengths
Trees
Spaghetti
Build bars with centimeter cubes or inch cubes
Place tape on the floor and compare objects to it.

Measure Longer Using Smaller Objects (1.MD.2)

Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object end to end without gaps or overlapping.

This concept is used in lessons 21 to 25 and lesson 36. It can be repeated with other objects in other lessons.

Small objects used to measure might include: craft sticks, paper clips, small candy bars, new objects that would all have the same length such as pencils or crayons.
Cut equal lengths of string, paper, or ribbons to use as the unit.

Tell Time Using Digital and Analog Clocks (1.MD.3)

Lesson 21+. Two sheets of **Digital Clock Cards** can be cut apart to practice reading digital clocks. You may also have students match the digital clocks to the analog clock cards in the pre-cut card deck.

Have students read the times aloud on the clocks.

The cards are introduced in Lesson 21, but can be included in any other lesson with analog clocks.

Partition Circles and Rectangles Into Halves and Fourths (1.G.3)

Partition circles and rectangle into two and four equal shares. Use the words halves, fourths and quarters and the phrases half of, fourth of, and quarter of. Describe the whole as two or four of the shares. Understand that decomposing into more equal shares creates smaller shares.

Halves are taught in Lessons 123, 124, 125, 138, 143, 158. In addition to those activities include the following to teach fourths and compare to halves. Be sure to teach and encourage students to use the words halves, fourths and quarters and the phrases half of, fourth of, and quarter of.

Ask students how many fourths are in the whole. (4) Ask students how many halves are in a whole. (2)

Introducing fourths: **When something is divided into two equal parts, what are those parts called?** (Halves) Write the word *fourth*. **When something is divided into 4 equal parts, we call each part of whole as a fourth. Look at the word. It is the word four with the letters t-h at the end. It can also be called a quarter, like the name of the coin. The coin called a quarter is a fourth of the value of a dollar. So if something is divided into four equal parts, we can say it was divided into quarters or fourths. Both mean the same.**

After dividing things into fourths, students should be able to reason through questions such as:

If 2 cookies were the same size and one is divided into halves and the other is divided into fourths, what would be bigger, a half of a cookie or a fourth of a cookie? (The half of a cookie) **Why?** (Because when it was divided into fourths the pieces have to be smaller.)

Activities:

Fourth Cards: Sort cards that are divided by and not divided by fourths. Cards 1, 3, 4, 5, 9, 15, and 16 are divided by fourths. Cards 2, 6, 7, 8, 10, 11, 12, 13, and 14 are not divided into fourths. Have students explain why these cards are not fourths. Some have more or less than 4 equal parts. Some have four parts that are not equal.

Geoboards: Have students make rectangles divided into halves and fourths with rubber bands. You may have students make rectangles in several ways, including squares and non-squares. After dividing into fourths, have students remove rubber bands to divide the same rectangles into halves.

Cubes (Inch cubes or centimeter cubes): Start by having students make rectangles with 4 cubes. Students should understand that each cube is a fourth of the rectangle. Have students repeat making larger rectangles with sets of cubes that are multiples of 4 (8 cubes, 12 cubes, 16 cubes). Have students divide the larger rectangles into 4 fourths (quarters) and count the number of cubes in each fourth. You may also divide into halves and count pieces. You could even have students divide a fourth in half when starting with 8 or 16 cubes (and other multiples of 8).

Play dough shapes: Have students mold rectangles and circles and divide them into halves and fourths. Round or square cookie cutters may be used, or cups, boxes, etc. to stamp out shapes.

Food: Have students divide food such as pizza, cookies, or brownies into quarters and halves.

Paper: Students can cut paper rectangles and circles (trace round things such as lids or bowls) into halves and fourths. You may have students fold into even portions before cutting by folding the paper in half and then folding the half in half to make fourths. You may also want to cut various rectangles (including squares) before having students divide the shapes into fourths.