

Level B, Lesson 108 (Presentation Book)

Materials

A primary ruler for each child, a penny for each pair of children and an object that weighs about 1 pound, for example a 6" × 9" softcover book of 250 pages.

Objectives

- Practice mental arithmetic by adding and subtracting 10. (Exercise 1)
- **Complete an equality or inequality sign for pound/ounce designations.** (Exercise 2)
Note: Children learn that there are 16 ounces in 1 pound.
- Write column problems for number families that have 2-digit numerals. (Exercise 3)
- **Figure out the perimeter of a rectangle.** (Exercise 4)
- Count coins to reach specified amounts. (Exercise 5)
- Write answers to subtraction problems, some of which require borrowing. (Exercise 6)
- Play the fact game that requires saying subtraction problems and answers for families with missing small numbers. (Exercise 7)
Note: The fact game may take too much time to complete within the regular lesson. If so, schedule the game for some other period before lesson 109 is scheduled.

EXERCISE 1 MENTAL ARITHMETIC

Adding and Subtracting 10

- Get ready to add 10 and subtract 10 from different numbers.
- Listen: 50 plus 10. What's the answer? (Signal.) 60.
 - Listen: 60 minus 10. What's the answer? (Signal.) 50.
 - Listen: 50 minus 10. What's the answer? (Signal.) 40.
 - Listen: 40 minus 10. What's the answer? (Signal.) 30.
 - Listen: 40 plus 10. What's the answer? (Signal.) 50.
(Repeat step.b until firm.)

EXERCISE 2 MEASUREMENT

Ounces and Pounds

Note: You will need an object that weighs 1 pound.

- You're going to learn about units of weight. A pound is a unit of weight. The more pounds you weigh, the heavier you are.
 - Raise your hand if you know how many pounds you weigh.
(Call on individual children. Ask each child:)
How much do you weigh? _____ pounds.

- (Present an object that weighs 1 pound.)
This _____ weighs about 1 pound. If I piled 10 of these _____, I'd have 10 pounds. How many pounds would I have with a pile of 100 _____? (Signal.) 100 pounds.
- Listen: An ounce is much lighter than a pound. Here's the rule about an ounce: It takes 16 ounces to make 1 pound. Once more: It takes 16 ounces to make 1 pound. How many ounces are in 1 pound? (Signal.) 16.
- Your ruler weighs a little over an ounce. Pick up your ruler and feel how much it weighs.
 - You would need about 16 of those rulers to have 1 pound of rulers.

Workbook Practice

- Open your workbook to lesson 108 and find part 1.
 - You're going to complete the sign for each item. Everybody, how many ounces are in 1 pound? (Signal.) 16.
 - Yes, 16 ounces. Remember that.
- Item A has **17 ounces** on 1 side and **1 pound** on the other side. Everybody, which is heavier, 17 ounces or 1 pound? (Signal.) 17 ounces.
 - Yes, 17 ounces is more than 16 ounces. And a pound is 16 ounces. Circle **17 ounces**. That's the side that's heavier.
- Item B has **15 ounces** on 1 side and **1 pound** on the other side. Everybody, which is heavier? (Signal.) 1 pound.

- Yes, 1 pound is 16 ounces, and that's more than 15 ounces. Circle **1 pound**. ✓
- d. Item C has 16 ounces on 1 side and 1 pound on the other side.
(Call on a student:) Which is heavier?
(Ideas: *Neither; they are the same.*)
- Right, they're the same. So don't circle anything.
- e. Your turn: Circle the side that is heavier in item D. Then complete the signs for all the items. Raise your hand when you're finished.
(Observe children and give feedback.)
- f. (Write on the board:)

- a. 17 ounces $>$ 1 pound
- b. 15 ounces $<$ 1 pound
- c. 16 ounces $=$ 1 pound
- d. 1 pound $<$ 19 ounces

- Check your work. Here's the sign you should have for each problem.
- g. Raise your hand if you got all the problems right.

EXERCISE 3 NUMBER FAMILIES

Writing Column Problems

- Find part 2.
These are number families with 2-digit numerals. Remember, if you go forward along the arrow, you add. If you go backwards along the arrow, you subtract.
- Touch family A.
Do you go forward along the arrow or backwards along the arrow for this problem? (Signal.)
Forward.
 - Say the problem. (Signal.)
26 plus 56 equals how many.
- Touch family B.
Do you go forward along the arrow or backwards along the arrow for this problem? (Signal.)
Backwards.
 - Say the problem. (Signal.)
79 minus 59 equals how many.
- Touch family C.
Do you go forward along the arrow or backwards along the arrow for this problem? (Signal.)
Backwards.
 - Say the problem. (Signal.)
80 minus 51 equals how many.
- Touch family D.
Do you go forward along the arrow or backwards along the arrow for this problem? (Signal.)
Forward.
 - Say the problem. (Signal.)
75 plus 73 equals how many.
(Repeat step b until firm.)

- Your turn: Write the column problem for family A. Remember the sign and the equal line. Raise your hand when you're finished. ✓
- (Write on the board:)

$$\begin{array}{r} \text{a. } 26 \\ + 56 \\ \hline \end{array}$$

- Check your work. Here's what you should have for problem A. Raise your hand if you got it right.
- Your turn: Write the column problems for the rest of the families in part 3. Raise your hand when you're finished.
(Observe children and give feedback.)
- (Write on the board:)

$$\begin{array}{r} \text{b. } 79 \\ - 59 \\ \hline \end{array} \qquad \begin{array}{r} \text{c. } 80 \\ - 51 \\ \hline \end{array} \qquad \begin{array}{r} \text{d. } 75 \\ + 73 \\ \hline \end{array}$$

- Check your work. Here's what you should have for the problems.
- Make sure all your column problems are right. Then write the answer to each problem. Raise your hand when you're finished.
(Observe children and give feedback.)
- Check your work. Read each problem and the answer.
 - Problem A. (Signal.) *26 plus 56 equals 82.*
 - Problem B. (Signal.) *79 minus 59 equals 20.*
 - Problem C. (Signal.) *80 minus 51 equals 29.*
 - Problem D. (Signal.) *75 plus 73 equals 148.*
- Raise your hand if you got all the problems right.

EXERCISE 4 GEOMETRY

Perimeter of a Rectangle

Note: Each child will need a primary ruler.

- Find part 3.
You learned a rule about rectangles. The sides that are across from each other are the same length. Two of the sides on the rectangle have circled letters. What sides are those? (Signal.)
B and C.
- Touch side B.
Which side is the same length as side B? (Signal.) *Side D.*
 - Touch side C.
Which side is the same length as side C? (Signal.) *Side A.*
(Repeat step b until firm.)
- Your turn: Measure the sides with circled letters. Then write the lengths of **all 4** sides. Remember, don't measure sides A and D. You'll know how long they are when you measure sides B and C.

Raise your hand when you're finished.

(Observe children and give feedback.)

- d. Check your work. Tell me the length of each side.
- Side A. (Signal.) 2 inches.
 - Side B. (Signal.) 1 inch.
 - Side C. (Signal.) 2 inches.
 - Side D. (Signal.) 1 inch.
- e. Raise your hand if you got all the sides right.
- f. Below the rectangle is a line that shows the total distance around the rectangle. That's the distance something would have to go if it went around all 4 sides of the rectangle. The first part of the line is side A, the next part is side B, the next part is side C, and the last part is side D.
- g. Your turn: Measure the whole line and write the number at the end of the line. Raise your hand when you're finished.
- (Observe children and give feedback.)
- Check your work. Everybody, how long is the distance around the whole rectangle? (Signal.) 6 inches.
- h. You can get the same answer by adding up the length of each side. You've written those numbers in the box. Write a plus sign. Then add up all the numbers. You should get the same answer you got when you measured the line that shows the distance around the rectangle. Raise your hand when you're finished. (Observe children and give feedback.)
- Check your work. Everybody, what does 2 plus 1 plus 2 plus 1 equal? (Signal.) 6.
- i. You figured out the distance around the whole rectangle. Remember how to do it. You just add up the lengths of all the sides.

EXERCISE 5 COUNTING MONEY

Specific Amounts

- a. Find part 4.
Each problem has 2 rows of coins. The number of cents at the end of each problem shows the number of cents that should be shown, but there are too many coins.
- b. Touch the number for problem A.
Everybody, how many cents should be in problem A? (Signal.) 45.
- So you start with the top row. Count the cents. Cross out any coins that take you past 45 cents. Raise your hand when you've fixed up the top row. ✓
 - Everybody, how many quarters did you cross out? (Signal.) 2.
 - Raise your hand when you know how many cents are left in the quarter row.
- c. Touch the number for problem B.
Everybody, how many cents should be in problem B? (Signal.) 40.
- So you start with the top row. Count the cents. Cross out any coins that take you past 40 cents. Raise your hand when you've fixed up the top row. ✓
 - Everybody, how many quarters did you cross out? (Signal.) 2.
 - Raise your hand when you know how many cents are left in the quarter row.
 - Everybody, how many cents? (Signal.) 25.
 - You're at 25. Count for the dimes to 45. Cross out any dimes that take you past 45. Raise your hand when you're finished. ✓
 - Listen: How many dimes did you cross out? (Signal.) 2.
 - Count the cents for the coins that are not crossed out. Start with the quarters. Get ready. (Signal.) 25, 35, 45.
 - So you fixed up problem A to have 45 cents.
- d. Touch the number for problem C.
Everybody, how many cents should be in problem C? (Signal.) 40.
- So you start with the top row. Count the cents. Cross out any coins that take you past 40 cents. Raise your hand when you've fixed up the top row. ✓
 - Everybody, how many quarters did you cross out? (Signal.) 2.
 - Raise your hand when you know how many cents are left in the quarter row.
 - Everybody, how many cents? (Signal.) 25.
 - You're at 25. Count for the nickels to 40. Cross out any nickels that take you past 40. Raise your hand when you're finished. ✓
 - Listen: How many nickels did you cross out? (Signal.) 1.
 - Count the cents for the coins that are not crossed out. Start with the quarters. Get ready. (Signal.) 25, 30, 35, 40.
 - So you fixed up problem B to have 40 cents.
- e. Touch the number for problem D.
Everybody, how many cents should be in problem D? (Signal.) 34.
- So you start with the top row. Count the cents. Cross out any coins that take you past 34 cents. Raise your hand when you've fixed up the top row. ✓
 - Everybody, how many dimes did you cross out? (Signal.) 1.
 - Raise your hand when you know how many cents are left in the dime row.
 - Everybody, how many cents? (Signal.) 30.
 - You're at 30. Count for the pennies to 34. Cross out any pennies that take you past 34. Raise your hand when you're finished. ✓
 - Listen: How many pennies did you cross out? (Signal.) 1.
 - Count the cents for the coins that are not crossed out. Start with the dimes. Get ready. (Signal.) 10, 20, 30, 31, 32, 33, 34.
 - So you fixed up problem C to have 34 cents.

EXERCISE 6 SUBTRACTION

Borrowing Discrimination

a. Find part 5.

You have to borrow to work some of these subtraction problems. Remember, you read the problem in the ones column. If the problem in the ones column does not start with the big number, rewrite the top number. Then you work the problem. But if the problem in the ones column starts with the big number, you just work the problem.

- b. Work problem A. Raise your hand when you're finished. (Observe children and give feedback.)
- (Write on the board:)

$$\begin{array}{r} 8 \\ \cancel{9} \ 16 \\ - 7 \ 7 \\ \hline 1 \ 9 \end{array}$$

- Check your work. Here's what you should have for problem A.
- c. Your turn: Work the rest of the problems in part 5. Raise your hand when you're finished. (Observe children and give feedback.)
- d. (Write on the board:)

$$\begin{array}{r} \text{b. } 9 \ 6 \\ - 2 \ 5 \\ \hline 7 \ 1 \end{array} \quad \begin{array}{r} \text{c. } \overset{4}{\cancel{5}} \ 14 \\ - 3 \ 9 \\ \hline 1 \ 5 \end{array} \quad \begin{array}{r} \text{d. } \overset{2}{\cancel{3}} \ 18 \\ - 2 \ 9 \\ \hline 9 \end{array}$$

$$\begin{array}{r} \text{e. } \overset{5}{\cancel{8}} \ 16 \\ - 3 \ 9 \\ \hline 2 \ 7 \end{array} \quad \begin{array}{r} \text{f. } 9 \ 4 \\ - 2 \ 4 \\ \hline 7 \ 0 \end{array}$$

- Check your work. Here's what you should have for each problem.
- e. Raise your hand if you got all of them right.

EXERCISE 7 FACT GAME

Subtraction

Note: For this game, each pair of children will need a penny.

a. (Draw on the board:)

	Superstars	Stars	Totals
A			
B			

- We're going to play the fact game. Everybody, sit with your partner.

- b. A team, raise your hand. ✓
- B team, raise your hand. ✓
- Everybody, find the game sheet on page 110 of your workbook. B team, put your penny in the start box.
- A team, circle the number **3** in scorebox 3. You'll make your tally marks in the part of that scorebox that is not shaded.
- B team, you'll move your penny and say the subtraction fact that starts with the big number. Everybody, ready? Here we go.
- c. (Roll the die and tell the class the number.)
- B team, go. A team, raise your hand when you're ready for the answer.
- Here's the fact: _____. A team, make a tally mark if the answer is wrong. (Repeat step c until you've completed the table.)
- d. That's the end of the first game. B team, find scorebox 3. Then circle the number **3** in the scorebox.
- A team, count the tally marks you made. Then tell your partner the number. B team, write that number in **the shaded part of your** scorebox 3. B team, raise your hand when you're finished. (Observe children and give feedback.)
- B team, raise your hand if you made no mistakes. Those are superstars! (Count children with hands raised and write the number in row **B** under **Superstars**.)
- B team, raise your hand if you made only 1 mistake. Those are stars. (Count children with hands raised and write the number in row **B** under **Stars**.)
- e. Now it's the A team's turn. A team, put your penny in the start box. B team, you'll make tally marks in the part of box 3 that's not shaded. Remember, A team, move the penny and say the subtraction fact. B team, make a tally mark in box 3 if the answer is wrong. Everybody, ready? Here we go.
- f. (Roll the die and tell the class the number.)
- A team, go. B team, raise your hand when you're ready for the answer.
- Here's the fact: _____. B team, make a tally mark if the answer is wrong. (Repeat step f until you've completed the table.)
- g. B team, count the tally marks you made. Then tell your partner the number. A team, write that number in **the shaded part of your** scorebox 3. Raise your hand when you're finished. (Observe children and give feedback.)
- A team, raise your hand if you made no mistakes. Those are superstars! (Count children with hands raised and write the number in row **A** under **Superstars**.)

- A team, raise your hand if you made only 1 mistake.
Those are stars.
(Count children with hands raised and write the number in row B under **Stars**.)
- h. I'll write the totals of superstars and stars for each team.
(Write the totals in the **Totals** boxes.)
- Which team has the larger total of superstars and stars? (Signal.)
- But anybody who is a star or a superstar is really learning a lot of math.

EXERCISE 8 INDEPENDENT WORK

- Finish the rest of the worksheet on your own.
- (Assign **Connecting Math Concepts Independent Worksheet 80** and **Math Facts Worksheet 88** as classwork or homework. Before beginning the next lesson, check the students' independent work.)

Estimation Activity

- Materials: Cards, each with a question, such as:
Would a man weigh 150 pounds or 150 ounces?
Would a candy bar weigh 6 pounds or 6 ounces?
Would a cup weigh 12 pounds or 12 ounces?
Would a dog weigh 9 pounds or 9 ounces?
- Activity: A child (or teacher) draws a card and reads the question. The child answers the question.

Level B, Lesson 108 (Workbook)

For **part 1**, students complete each statement with the sign $>$, $<$, or $=$. In lessons 11 and 12, students used the signs to complete statements with numerals. In lessons 19 and 20, they also used the signs with groups of lines and with groups of coins. Prior to lesson 108 they also completed signs shown between two lengths. In the final application (introduced in lesson 116) students complete the sign between pairs of numbers that are added or subtracted (e.g., $7 + 7$ _____ $5 + 10$).

Lesson 108

Part 1

- 17 ounces _____ 1 pound
- 15 ounces _____ 1 pound
- 16 ounces _____ 1 pound
- 1 pound _____ 19 ounces

Part 2

a. 26 56 \rightarrow \square c. \square 51 \rightarrow 80

b. \square 59 \rightarrow 79 d. 75 73 \rightarrow \square

Part 3

Part 4

a. 45 cents c. 34 cents

b. 40 cents

For **part 2**, students translate the number families into addition/subtraction statements. For item a, the "big number" (total) is missing,

$$\begin{array}{r} 26 \\ + 56 \\ \hline \square \end{array}$$

For item b, a "small number" is missing, so

$$\begin{array}{r} 79 \\ - 59 \\ \hline \square \end{array}$$

Number families are introduced in the context of addition/subtraction facts (see the fact game, page 40). Students have worked with number families in various forms since lesson 18. Lesson 108 is the second consecutive day of the problem type shown in **part 2**. After five consecutive lessons, students will construct similar number families from written descriptions.

Part 3 introduces the concept of perimeter. Students measure two sides of the rectangle, deduce the length of the other two sides, and work the addition problem. Students confirm their answer by measuring the perimeter shown below the rectangle. Perimeter exercises continue through the end of the program.

Area is introduced in lesson 110. By the end of the program, students figure out the area and perimeter of rectangles and squares and the perimeter of triangles.

The task in **part 4** is the culmination of many prerequisites taught in Level B. In order to correctly represent the number of cents for each item, students must: a) know the value of coins (lessons 13, 14); b) skip-count by 5, 10 and 25 (in over 30 previous lessons); c) count on from a multiple of 5 (lessons 62, 63); and d) count to reach a specified amount (introduced in lesson 107). Problems of the type in part 4 appear for six consecutive lessons. In later lessons (113, 114), students count out different combinations of coins to reach a specified amount.

Part 5 requires students to discriminate subtraction problems that call for regrouping and problems that do not. Column problems were introduced in lessons 65–67. Discrimination tasks and component tasks for renaming appeared in lessons 92–98. Renaming problems were introduced in lessons 96–98. Mixed sets such as **part 5** have appeared since lesson 99.

Part 7 reviews related addition facts that start with 3 or plus 3. These facts were introduced in lesson 81 and practiced in lessons 86 through 88.

Parts 6 through 10 are worked independently. These parts review problem types that were practiced in a structured form in earlier lessons.



Part 6 reviews related facts that have 9 or 10 as one of the “small” numbers. The sequence of introduction for these facts was: a) minus 10 or end up with 10 (lessons 72, 73); b) minus 9 (lessons 87–90, 93–94); c) minus 9 or end up with 9 (lessons 102–104).

The items in **part 8** review addition with problems carrying to the tens column. Some result in a 3-digit answer. Column addition was introduced in lesson 32 and appeared in over a dozen lessons before carrying to the tens column was introduced in lesson 74.

Students write “digital” times (3:00, 11:45) for the clocks in **part 9**. Prerequisites for telling time to the 5 minutes (count by 5, identify hour/minute hands and the number of minutes for numbers on the clock face) were taught in lessons 39–63, after which time-telling occurred for five more consecutive lessons.

Part 10 reviews two sets of related multiplication facts (times 3 and times 2).

Students translate each problem in order to solve it. For example, for item a students read: “Count by 5 three times.” This type of problem is introduced in lesson 71 and appeared in 19 lessons prior to lesson 108.

<p>Part 5</p> <p>a. $\begin{array}{r} 96 \\ -77 \\ \hline \end{array}$ b. $\begin{array}{r} 96 \\ -25 \\ \hline \end{array}$ c. $\begin{array}{r} 54 \\ -39 \\ \hline \end{array}$ d. $\begin{array}{r} 38 \\ -29 \\ \hline \end{array}$ e. $\begin{array}{r} 66 \\ -39 \\ \hline \end{array}$ f. $\begin{array}{r} 94 \\ -24 \\ \hline \end{array}$</p>					
<p>Part 6</p> <p>a. $\begin{array}{r} 15 \\ -9 \\ \hline \end{array}$ b. $\begin{array}{r} 15 \\ -6 \\ \hline \end{array}$ c. $\begin{array}{r} 15 \\ -5 \\ \hline \end{array}$ d. $\begin{array}{r} 17 \\ -8 \\ \hline \end{array}$ e. $\begin{array}{r} 12 \\ -9 \\ \hline \end{array}$</p> <p>f. $\begin{array}{r} 12 \\ -2 \\ \hline \end{array}$ g. $\begin{array}{r} 16 \\ -6 \\ \hline \end{array}$ h. $\begin{array}{r} 16 \\ -7 \\ \hline \end{array}$ i. $\begin{array}{r} 16 \\ -9 \\ \hline \end{array}$ j. $\begin{array}{r} 18 \\ -9 \\ \hline \end{array}$</p>			<p>Part 7</p> <p>a. $\begin{array}{r} 3 \\ +4 \\ \hline \end{array}$ b. $\begin{array}{r} 3 \\ +8 \\ \hline \end{array}$ c. $\begin{array}{r} 3 \\ +3 \\ \hline \end{array}$</p> <p>d. $\begin{array}{r} 3 \\ +6 \\ \hline \end{array}$ e. $\begin{array}{r} 3 \\ +5 \\ \hline \end{array}$ f. $\begin{array}{r} 3 \\ +9 \\ \hline \end{array}$</p>		
<p>Part 8</p> <p>a. $\begin{array}{r} 57 \\ +67 \\ \hline \end{array}$</p> <p>b. $\begin{array}{r} 85 \\ +85 \\ \hline \end{array}$</p> <p>c. $\begin{array}{r} 98 \\ +88 \\ \hline \end{array}$</p> <p>d. $\begin{array}{r} 58 \\ +38 \\ \hline \end{array}$</p>		<p>Part 9</p> <p>Write the time shown on each clock.</p> <p>a.  <input type="text"/></p> <p>b.  <input type="text"/></p>		<p>Part 10</p> <p>a. $5 \times 3 = \underline{\quad}$</p> <p>b. $4 \times 3 = \underline{\quad}$</p> <p>c. $2 \times 3 = \underline{\quad}$</p> <p>d. $9 \times 3 = \underline{\quad}$</p> <p>e. $10 \times 3 = \underline{\quad}$</p> <p>f. $5 \times 2 = \underline{\quad}$</p> <p>g. $4 \times 2 = \underline{\quad}$</p> <p>h. $2 \times 2 = \underline{\quad}$</p> <p>i. $9 \times 2 = \underline{\quad}$</p> <p>j. $10 \times 2 = \underline{\quad}$</p>	
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