Unit 17 Number Sense: Money

Introduction

In this unit, students will develop an understanding of place value and three-digit numbers. Students will review Canadian coins and add and subtract money amounts up to 100 cents. Students will also be introduced to the concepts of spending and saving.

Meeting Your Curriculum

Alberta—All the lessons in this unit are required except NS2-68, which is recommended as it prepares students to count coins including quarters, and NS2-67, which is optional. Students will cover the material from NS2-67 in Grade 3.

British Columbia—Lessons NS2-68 to NS2-74 are required, including Extension 1 in NS2-72 and Extension 1 in NS2-74. Lesson NS2-67 is optional. Students will cover the material from this lesson in Grade 3.

Manitoba—All the lessons in this unit are required except NS2-68, which is recommended as it prepares students to count coins including quarters, and NS2-67, which is optional. Students will cover the material from NS2-67 in Grade 3.

Ontario—All the lessons in this unit are required except for NS2-70, which is recommended as it reviews the names and values of Canadian coins that students learned in Grade 1.

Recurring Games

I Have ____, Who Has ____? Each student needs one card to play. You can make the cards or have students make them using BLM Game Cards (p U-40). The blank spaces at the top and bottom of each card can be filled with different representations of three-digit numbers (see the sample card in the margin). The student with the card shown would start by saying, “I have 145. Who has 123?” The student who has 123 on top would respond, “I have 123. Who has [number on the bottom of the card]?” and so on.

Picking pairs. Use cards from BLM Money Memory (pp U-53–54). Students can play in teams or individually. Place a $3 \times 4$ array of cards face up on the table. Students take turns picking pairs of matching cards and placing them into a common discard pile. When the array has no more pairs, add more cards to it. The goal is to place all the cards into the discard pile. If students have any non-matching cards left at the end, then some of their cards must have been matched incorrectly.

Memory. Use cards from BLM Money Memory. Place a $3 \times 4$ array of cards (six pairs) face down on the table. Students turn over two cards at a time. If the cards match, students set these cards aside; otherwise, they turn them face down again and continue playing. Play this first as a whole class, with volunteers taking turns. Students can then play individually or cooperatively in pairs. In either case, the goal is to pair all the cards. If playing with a partner, Player 1 leads by choosing and turning over a card and Player 2 follows by choosing and turning over another card. After all pairs
are found, players switch roles and play again. Players can help each other by asking questions or making suggestions (for example, “I think I know where both cards showing 5 cents are; should I turn one of them over?”) but they are not allowed to tell each other where specific cards are.

(NOTE: It is a good idea for students to play Picking Pairs—to practise making and recognizing matches—before they play Memory.)

Materials

When teaching money, it will sometimes be useful to have large paper coins that can be taped to the board. You can use cut-outs from BLM Enlarged Coins (p U-46). Students will also require play money. If unavailable, you can use the cut-out coins from BLM Coins to Cut Out (p U-45) and laminate them to make them more durable.

In addition to the BLMs found at the end of this unit, the following Generic BLM, found in section Z, is also used in this unit:

BLM Pattern Blocks (p Z-6)

Assessment. The assessment checklist for this unit can be found in section AA. The following table indicates the lessons covered by a quiz or test, which can be found in section BB.

<table>
<thead>
<tr>
<th>Quiz</th>
<th>Lessons NS2-67 and 68</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quiz</td>
<td>Lessons NS2-69 to 74</td>
</tr>
<tr>
<td>Test</td>
<td>Lessons NS2-67 to 74</td>
</tr>
</tbody>
</table>
Goals
Students will identify Canadian coins by name and value.

PRIOR KNOWLEDGE REQUIRED
Can compare and order numbers to 100

MATERIALS
a set of real coins
play coins or cut-outs from BLM Coins to Cut Out (p U-45)
cut-outs from BLM Enlarged Coins (p U-46)
BLM Coins on a Chart (p U-47)
BLM Coins on a Number Line (p U-48)
BLM Fake Coins (p U-49)
BLM Fake Money Game (p U-50) with tokens, a die, and play money

NOTE: There are many suggestions for games and activities in this lesson. Students are trying to learn three things simultaneously—the appearance, name, and value of each coin. It is important that they have plenty of opportunities to handle and work with coins. Students can use play money when completing AP Book 2.2 p 121.

Introduce the name and value of each coin. SAY: We have two kinds of money—paper and coins. These are the coins. Hold up a real set of coins. SAY: We will use play coins that look real. Give each student play coins (or coins cut out from BLM Coins to Cut Out)—start with a penny, nickel, dime, and quarter—and have students refer to these coins as they answer your questions.

ASK: What do all coins have in common? (a picture of a head on one side of the coin) You might want to point out that the picture of the head shows the queen, and the picture of the queen has been updated several times as she has gotten older. So, if you look at the coins in a piggybank or in a wallet, you may see Canadian coins that have slightly different pictures of the queen. SAY: Every coin is worth a different amount. Hold up the quarter. ASK: What pictures are on this coin? (a caribou and a head) SAY: This coin is called a “quarter.” Affix a quarter from BLM Enlarged Coins to the board, and write the name above the coin.

SAY: The value of a coin is how much it is worth. We count how much coins are worth in cents. The value of the coin is written on it. ASK: What is the value of the quarter? (25 cents) Write “25 cents” underneath the coin.

Introduce the dime (the smallest coin), the penny (the coin not silver in colour), and the nickel (the thicker coin) and their values. For pennies, explain that we have this coin in our collection of play money, but we do
not use this coin in real life anymore because there is nothing you can buy for 1 cent. Place the coins on the board from largest to smallest by value, but leave room for the loonie and the toonie.

Exercises
1. Complete BLM Coins on a Chart.
2. Complete BLM Coins on a Number Line.

Give each student a loonie and a toonie. Repeat the introduction as for the other coins. Emphasize that a loonie is worth a dollar, which is 100 cents, and a toonie is worth 2 dollars, which is 200 cents. Do not use the dollar sign, but spell out the values, as shown in the margin.

Show students pairs of coins of different denominations and ask them to say which coin is worth more.

ACTIVITY 1 (Optional)
1. Player 1 thinks of a coin. Player 2 has to identify the coin using only questions that can be answered by “yes” or “no.” Player 2 can ask up to three questions, such as “is it worth more than a nickel?” As an easier variation, if Player 1 is thinking of a nickel, he could answer “it is a nickel” instead of “no” to the above question.

Introduce the cent symbol (¢). Review the meaning of the equal sign (is the same as, is the same number as). Explain that the equal sign can also mean “is worth as much as,” and this is the meaning we use when working with money. ASK: Why do we use the symbol instead of writing the words? (we use these words a lot and the symbol takes up less space) Have students look at the list on the board. ASK: What word do you think we use the most when talking about coins? Is there a word that is used more often than the others? (cents) Do you think there should be a symbol for that word like there is for “equals” so that we don’t have to keep writing it? Does anyone already know what symbol people invented for cents? If there are no volunteers, write the symbol on the board yourself. Then write:

\[
\begin{align*}
\text{penny} & = 1¢ \\
\text{nickel} & = 5¢ \\
\text{dime} & = 10¢ \\
\text{loonie} & = 1 \text{ dollar} = 100 \text{ cents} \\
\text{toonie} & = 2 \text{ dollars} = 200 \text{ cents}
\end{align*}
\]

ASK: How could I write 8 cents using the cents symbol? (8¢)

Exercises: Write the money amounts using the cents symbol.

a) 12 cents  
 b) 7 cents  
 c) 46 cents  
 d) 39 cents  
 e) 100 cents  
 f) 200 cents

**Answer:** a) 12¢, b) 7¢, c) 46¢, d) 39¢, Bonus: e) 100¢, f) 200¢
ACTIVITIES 2–3 (Optional)

2. **BLM Fake Coins.** Students find things that are wrong on each coin (e.g., numbers, words, geometric shapes). Note that the last bonus question on this BLM has two possible answers—either the picture or the value.

3. Students can play a game using the board on **BLM Fake Money Game**, tokens, a die, and play money. Students can play individually or co-operatively in pairs. Each cell has the picture of either a real coin or a fake coin. The goal is to fill the board with real coins.

   To start, players place their tokens on any real coin and put all the play money in the centre of the game board. Players take turns rolling a die and moving, according to the number rolled, around the board in whichever direction they wish. Two players cannot be in the same cell at the same time, so if the number rolled takes a player to a cell that is already occupied, the player must go in the other direction. When a player’s token lands on a fake coin, the player puts any real coin in the cell.

Extensions

1. **Ordering coins according to value and size.** Have pairs of students order all the coins (be sure to include the penny, loonie, and toonie) from smallest value to largest value. Then have them order them from smallest size to largest size by moving only one coin. ASK: Which coin did you move? (the dime)

2. Have students do **BLM Identifying Coins** (p U-51–52).

   **Selected answers:** (1) these values should be crossed out: 12¢, 6¢, 8¢, 20¢; (2) the finished chart should be:

<table>
<thead>
<tr>
<th>Coin</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>nickel</td>
<td>5¢</td>
</tr>
<tr>
<td>quarter</td>
<td>25¢</td>
</tr>
<tr>
<td>loonie</td>
<td>100¢  = 1 dollar</td>
</tr>
<tr>
<td>dime</td>
<td>10¢</td>
</tr>
<tr>
<td>penny</td>
<td>1¢</td>
</tr>
<tr>
<td>toonie</td>
<td>200¢  = 2 dollars</td>
</tr>
</tbody>
</table>

**AT HOME**

Variations of Fake Money Game and another activity, which are helpful for learning concepts in this unit, appear in the Letter to Parents (pp 61–63).
Goals
Students will count coins of different values by arranging them from greatest to least value.

PRIOR KNOWLEDGE REQUIRED
Can count by 25s, 10s, and 5s to 100
Knows the value of a penny, nickel, dime, and quarter

MATERIALS
cut-outs from BLM Enlarged Coins (p U-46)
play coins or cut-outs from BLM Coins to Cut Out (p U-45)
cut-outs from BLM Money Memory (pp U-53–54)

Counting money with two different kinds of coins. ASK: What do we count by to find the value of some nickels? (5s) What do we count by if we have some pennies? (1s) How do we count if we have both nickels and pennies? (count by 5s, then by 1s) Use cut-outs from BLM Enlarged Coins to display coins on the board. Affix 2 nickels and 4 pennies to the board. ASK: What do we start counting by? (5s) Ask a volunteer to count by 5s for the nickels, as shown below:

5 10

ASK: What do we count by now? (1s) Where do we start? (at 10)
SAY: We add 1 to the 10¢ that we already have to get 11. Write “11.” Have a volunteer continue counting. Write the total and the cent sign, as shown below:

5 10 11 12 13 14 14¢

Repeat with 3 nickels and 2 pennies.
SAY: When we do the exercises, we sometimes draw the coins like this. Draw on the board:

5¢ 1¢
SAY: They don’t look very much like a nickel or a penny, but you can tell what they are by the numbers in them. You can write the value and then put a circle around it, or draw a circle and then write the value inside—whichever you find easier.

For the following exercises, have students write the counting numbers without copying the coins.

**Exercises:** Count the money by coin value.

a) ![Illustration of coins: 5¢, 1¢, 1¢, 1¢, 1¢, 1¢]

b) ![Illustration of coins: 1¢, 1¢, 1¢, 1¢, 1¢, 1¢]

**Answers:** a) 5, 6, 7, 8, 9, 9¢; b) 5, 10, 15, 20, 21, 22, 22¢

ASK: What do we count by when we count dimes? (10s) Affix to the board 3 dimes and 2 nickels. ASK: Where do we stop counting by 10? Have a volunteer draw a line on the board separating dimes from nickels, as shown below:

![Illustration of coins: 10¢, 10¢, 10¢, 5¢, 5¢]

Ask a volunteer to count the dimes, then ask another volunteer to count the nickels. Write the total as before.

**Exercises:** Count the money by coin value.

a) ![Illustration of coins: 10¢, 10¢, 5¢, 5¢, 5¢, 5¢]

b) ![Illustration of coins: 1¢, 1¢, 1¢, 1¢, 1¢, 1¢]

**Answers:** a) 10, 20, 25, 30, 35, 40, 45, 45¢; b) 10, 20, 30, 40, 41, 42, 43, 43¢

ASK: What do we count by when we count quarters? (25s) As a class, practise counting by 25s to 100, then count the money following the same procedure as above, using 3 quarters and 2 dimes (95¢) and 2 quarters and 2 nickels (60¢).
Exercises: Count the money by coin value.

a) 

\[25\ c\ 10\ c\ 10\ c\ 10\ c\]

\[\_\_\_\_\_\_\_\_\ c\]

b) 

\[\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\ c\]

Answers: a) 25, 35, 45, 55, 55¢; b) 25, 50, 75, 76, 77, 77¢

Counting money with many different kinds of coins. SAY: This time we will use three kinds of coins. Affix to the board, in order, 2 quarters, 3 dimes, and 1 nickel. Have volunteers draw the vertical lines where the coins change. Have students find the total value in their notebooks, and then ask a volunteer to write the answer on the board. The picture should look like this:

\[25\ c\ 25\ c\ 10\ c\ 10\ c\ 10\ c\ 5\ c\]

\[25\ 50\ 60\ 70\ 80\ 85\ 85\ c\]

Repeat for 1 quarter, 2 dimes, and 6 pennies. (51¢)

SAY: Now we will use all four kinds of coins. Affix to the board 1 quarter, 2 dimes, 3 nickels, and 4 pennies. Have students find the total value. Ask a volunteer to write the answer on the board. (64¢)

Arranging coins in order of value to count. SAY: In real life, people do not tape their coins to a board. Coins are usually kept mixed up in a pocket or change purse. One way to count coins is to arrange them, starting with quarters, then dimes, then nickels, and then pennies. Affix the coins to the board as shown in the margin.

Draw a line on the board to help students line up the coins. ASK: Are there any quarters in this pile? (yes) Move the quarter to the line. SAY: I will start by counting quarters, so I put the quarters at the beginning of the line. ASK: What do we count next? (dimes) Are there any dimes? (yes) Move it to the line. SAY: All we have left is a penny. Move it to the end of the line. Have students count the total value of the coins and record it in their notebooks, and then ask a volunteer to write the answer on the board, as shown below:

\[25\ 35\ 36\]

\[36\ c\]
Repeat with 1 quarter and 2 nickels grouped together, but this time have volunteers move coins to the line.

**ACTIVITY 1 (Essential)**

1. Distribute a variety of play coins or cut-outs from BLM Coins to Cut Out (adding up to less than a dollar) to each student. Students sort and then count their coins. They record the sequence in their notebooks. When they are done, have them trade coins with a partner. When both are done, have them check their work.

   **Bonus:** A pair that finishes early can count both piles of coins together.

**Exercises:** Draw the coins in order from largest to smallest value. Add to find the total value.

a) ![Image](25¢, 10¢, 1¢, 10¢)

   **Bonus:** Lily has 2 quarters, 3 nickels, and 2 pennies. How many cents does she have?

   **Answers:** a) 46¢, b) 66¢, Bonus: 67¢

**ACTIVITY 2 (Optional)**

2. Have students play Picking Pairs and then Memory with the cards from BLM Money Memory (see unit introduction).

**Extensions**

1. Ray has coins in his pocket. He takes out all but one coin. What coin is left in his pocket?

<table>
<thead>
<tr>
<th>Coins in Pocket</th>
<th>Coins That Ray Takes Out</th>
<th>Coin Left in Pocket</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) 55¢</td>
<td>25¢ 5¢ 10¢</td>
<td></td>
</tr>
<tr>
<td>b) 65¢</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c) 95¢ 2 quarters, 3 nickels, 1 dime, 10 pennies</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   **Answers:** a) nickel, b) quarter, c) dime
2. Distribute a large number of play coins to individual or pairs of students.

   a) Sort your coins by type. Count how many coins you have of each type. Then find the total value of each type of coin. Fill in the table to keep track.

<table>
<thead>
<tr>
<th>Type of Coin</th>
<th>Number of Coins</th>
<th>Total Value of Coins</th>
</tr>
</thead>
<tbody>
<tr>
<td>quarter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>dime</td>
<td></td>
<td></td>
</tr>
<tr>
<td>nickel</td>
<td></td>
<td></td>
</tr>
<tr>
<td>penny</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

   b) Which type of coin do you have the most of? Do these coins have the greatest total value? If not, why not? If so, give an example where more coins have less value.

   **Selected sample answer:** b) Fewer coins may be worth more because each coin is worth more. For example, 1 quarter is worth more than 10 pennies.

3. Amir has 8 pennies, 3 nickels, 4 dimes, and 1 quarter. Starting with the pennies, he trades groups of smaller value coins for coins of greater value. **EXAMPLE:** He trades 2 nickels for 1 dime.

   When he has finished, how many of each type of coin does he have?

   **Bonus:** How many coins did he have before trading any? How many coins does he have after trading? How many fewer coins will he have after trading?

   **Answers:** 3 pennies, 1 dime, and 3 quarters; Bonus: He starts with 16 coins. Now he has 7. Amir has $16 - 7 = 9$ fewer coins after trading.

4. Use at least two types of coins to make a growing or a shrinking pattern with coins. Make four terms in the pattern. How much money do you have in each term of your pattern?

   **Sample answer:** 25¢, 45¢, 65¢, 85¢
**Goals**

Students will count money up to 100¢ by grouping amounts up to 25¢.
Students will estimate money amounts.
Students will represent numbers to 100 with coins.

**PRIOR KNOWLEDGE REQUIRED**

Can skip count by 5s, 10s, and 25s

**MATERIALS**

- play coins or cut-outs from *BLM Coins to Cut Out* (p U-45)
- cut-outs from *BLM Enlarged Coins* (p U-46)
- *BLM Smallest Number of Coins Chart* (p U-55)

**Review counting coins.** Give each student a pile of play coins (pennies, nickels, dimes, and quarters). Have students sort the coins according to value. Students might find it easier to first separate the pennies from the other coins, then the nickels, and then the dimes.

**Representing numbers with coins of the same value.** SAY: I want to buy a sticker that costs 8¢. How many pennies do I need to buy the sticker? (8) How do you know? (each penny is 1¢, so 8 pennies is 8¢) SAY: Another sticker costs 15¢. How many nickels do I need to make 15¢? (3) Have students take a few nickels (play money or cut-outs from *BLM Coins to Cut Out*) and start counting the money as a class. Use cut-outs from *BLM Enlarged Coins* to display coins on the board. Affix nickels to the board at the same time as the class is counting, until you reach 15¢. SAY: We can make 15¢ with 3 nickels. Repeat with 30¢ in nickels. For the exercises below, have volunteers demonstrate answers on the board. Keep the answers to the exercises on the board for reference.

**Exercises:** Make the amount of money using nickels.

- a) 45¢  
- b) 50¢  
- c) 60¢  
- **Bonus:** 100¢

**Answers:** a) 9 nickels, b) 10 nickels, c) 12 nickels, Bonus: 20 nickels

For the following exercises, do part a) of each question as a class, and have students do the rest individually with play money. Have volunteers show answers on the board, and keep the answers on the board for reference.

**Exercises**

1. Make the amount of money using dimes.

- a) 50¢  
- b) 30¢  
- c) 70¢  
- **Bonus:** 100¢

**Answers:** a) 5 dimes, b) 3 dimes, c) 7 dimes, Bonus: 10 dimes
2. Make the amount of money using quarters.
   a) 100¢  b) 50¢  c) 75¢

   **Answers:** a) 4 quarters, b) 2 quarters, c) 3 quarters

**Trading coins.** Show pennies on one side of the board and a nickel on the other. Point to the pennies and ASK: How much money is this? Count together: 1 cent, 2 cents, 3 cents, 4 cents, 5 cents. Then point to the nickel and ASK: How much money is this? (5¢) Which is more? (they are the same amount) Add 5 more pennies to the pennies side and another nickel to the other side. ASK: What is worth more—10 pennies or 2 nickels? (they are the same) Verify this by counting together as a class.

ASK: What are the different ways to make 50¢ using only one type of coin? (10 nickels, 5 dimes, 2 quarters, 50 pennies) Verify that all of these amounts show 50¢ by putting the coins on the board and counting. (Since it’s too time consuming, don’t do this with the pennies.) ASK: How many nickels do you need to make 10¢? (2) SAY: This means you can trade a dime for 2 nickels. ASK: How many nickels can you trade for a quarter? (5) PROMPT: How many nickels make 25¢? (5) ASK: How many pennies can you trade for a dime? (10) Can you trade a quarter for dimes only? (no) Can you make 25¢ with dimes only? (no) Do you say 25 when you count by 10s? (no)

**Counting coins by grouping.** SAY: Two nickels make a dime. If we group the nickels into groups of two, we can count them by 10s. Affix 6 nickels on the board in a row. Circle the first 2 nickels, and ASK: What is the value of these two coins? (10¢) Circle two more pairs. SAY: Each group is worth 10¢. So we have 10, 20, 30¢. The picture should look like this:

```
10 20 30¢
```

SAY: This is a good way to count coins if you have mostly dimes and nickels. Affix to the board coins in the arrangement shown below, but do not circle anything yet. Have a volunteer circle groups of 10¢. Then have a second volunteer count the money. The picture should look like this:

```
10 20 30 40 50 55¢
```
In the exercises below, have a volunteer circle the groups and all students count the money.

**Exercises:** Circle groups of 10¢. Count the money.

a) ![Circle groups of 10¢](image)

b) ![Circle groups of 10¢](image)

**Answers:** a) 10, 20, 30, 40, 50¢; b) 10, 20, 30, 40, 50, 55¢

**Grouping coins in 25s.** SAY: Another way to count money is to make groups of 25¢.

**ACTIVITY 1 (Essential)**

1. Distribute 5 nickels, 2 dimes, and 1 quarter (using play money or BLM Coins to Cut Out) to each pair of students. SAY: There are four different ways to make exactly 25¢ using nickels, dimes, and quarters; find all four ways. Have students draw their answers. Make sure they understand that they will need to reuse the coins. Have volunteers draw the possible combinations on the board and circle each combination. The final picture will look like this:
Exercise: Circle the groups of 25¢. Count the money.

Answer: 25, 50, 60, 61¢

Affix the arrangements of coins below to the board, but do not circle anything yet. SAY: This time, let’s do both. Let’s count the coins by 25¢, and when we can’t continue, let’s count by 10s. We will start by circling as many groups of 25¢ as we can. Then, we will circle groups of 10¢. Starting from the left, have volunteers circle groups of 25¢ using one colour. Then, have volunteers circle groups of 10¢ using a different colour. The picture should look like this:

Finally, count the money as a class, and then record the total. (73¢)

ACTIVITY 2 (Essential)

2. Distribute a variety of play coins or cut-outs from BLM Coins to Cut Out (less than a dollar) to each pair of students. Students sort the money and make as many groups of 25¢ as possible. Then, they make as many groups of 10¢ as possible with the remainder. Finally, they count the money.

Estimating money. Review the various ways of making 10¢ (10 pennies, 2 nickels, 1 nickel and 5 pennies, or 1 dime). Affix to the board 4 dimes, 7 nickels, and 23 pennies in a loose arrangement. Have students look at the board for a few seconds and then turn around and face the other direction. Ask them to guess how much money is on the board. After several people have volunteered guesses, have them turn around again and move groups of 10¢ to a different part of the board. Then, have students revise their guesses after the first three groups of 10 have been moved.

Repeat the process, this time making groups of 25¢, including quarters. Again, first review the different ways of making 25¢.

SAY: In the next exercise, when you estimate, use tens. Do not say “21 cents” or “18 cents”; say “20 cents” instead. You can also use numbers that have 5 as a ones digit in your estimates, such as 15.
For the exercises below, affix the coins in a loose arrangement and have students estimate the amount of money shown to the closest 5¢ or 10¢. Have a volunteer say the estimate, and have the other students signal thumbs up if they agree with the estimate, hands up if they think the estimate is too high, and hands down (flat on the desk) if they think the estimate is too low. Then, have students count the money as a class.

**Exercises:** Estimate the amount of money to the closest 5¢ or 10¢. Count the coins.

a) 2 quarters, 1 dime, and 3 pennies
b) 4 dimes, 7 nickels
c) 3 quarters, 2 dimes, 1 nickel

**Bonus:** 2 quarters, 3 dimes, 3 nickels, and 1 penny

**Sample answers:**
a) estimate: 60¢, actual: 63¢; b) estimate: 75¢, actual 75¢; c) estimate 90¢, actual 100¢; Bonus: estimate: 90¢, actual: 96¢

**Demonstrate making a purchase.** Draw a baseball bat on the board with a ticket price of 65¢. Then draw 2 quarters, 1 nickel, and 5 pennies. SAY: I have this much money in my pocket. ASK: Can I buy the bat? (no) How much money do I have? (60¢) Repeat with other examples; ensure that some purchases are possible.

**Making an amount using the fewest coins.** Write “21¢” on the board. SAY: I want to make exactly 21¢ using the fewest coins possible. ASK: Why might I want to do this? (it’s easier to carry fewer coins) SAY: I will use fewer coins if I use coins that are worth more. ASK: Can I use any quarters to make 21¢? (no) Can I use dimes? (yes) What is the greatest number of dimes I can use? (2) Draw two dimes on the board. ASK: What is the value of two dimes? (20¢) Write “10, 20” below the dimes as if you were counting each coin. ASK: How much more do I need? (1¢) Draw the extra penny, and write “21¢.” Repeat with 28¢. (1 quarter and 3 pennies)

**Exercises:** Draw coins to make the amount using the fewest coins.

a) 13¢ b) 16¢ c) 45¢

**Answers:** a) 1 dime and 3 pennies; b) 1 dime, 1 nickel, and 1 penny; c) 1 quarter and 2 dimes

**Making amounts with exact numbers of coins.** Write “17¢” on the board. One at a time, invite four volunteers to make different combinations of nickels and pennies that add to 17¢. (17 pennies; 1 nickel and 12 pennies; 2 nickels and 7 pennies; 3 nickels and 2 pennies) Draw a table on the board and record the combinations, as shown in the margin. Point out that we can keep organized by keeping the number of nickels in order, from 0 to the largest number (3) to make sure we did not miss any combination.

SAY: This table shows all the combinations we came up with so far. Let’s add dimes. Add a column for dimes. SAY: We have not used any dimes yet. Fill in zeros in the dimes column. Add two blank rows to the table.
ASK: What other combinations can we make using dimes? (1 dime and 7 pennies; 1 dime, 1 nickel, and 2 pennies) The completed table is shown in the margin.

ASK: What’s the smallest number of coins we can use to make 17¢? (4: 1 dime, 1 nickel, and 2 pennies) Can we make 17¢ using exactly 5 coins? (yes: 3 nickels, 2 pennies) SAY: If we exchange a dime for 2 nickels, we will use 1 more coin. ASK: Can we make 17¢ using exactly 6 coins? (no) 7 coins? (no) 8 coins? (yes: 1 dime, 7 pennies) Allow students time to think through each question.

Encourage students to work with play coins for the following exercises.

**Exercises:** How can you make 32¢ using the given number of coins?

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>a) 4 coins b) 5 coins c) 6 coins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonus: 15 coins</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Answers:** a) 1 quarter, 1 nickel, and 2 pennies; b) 3 dimes and 2 pennies; c) 2 dimes, 2 nickels, and 2 pennies; Bonus: 1 dime, 2 nickels, and 12 pennies

**NOTE:** Extension 1 is required to meet the British Columbia curriculum.

**Extensions**

1. When students are practising making a purchase, discuss what can be done if there is not enough money to make a purchase. SAY: When you want to buy something and you do not have enough money, you can wait and buy it later, when you have saved enough money. Discuss how students can put some of their allowance aside to save money for something they want to buy. SAY: For example, if you want to buy a toy that costs 10 dollars, and your allowance is 5 dollars a month, you can keep the money and not spend it this month and buy the toy you want the following month, when you next get your allowance.

Students can use patterns to see how long it will take them to save for an item. Demonstrate with this problem: Jayden wants to buy a toy car for 20 dollars. His allowance is 5 dollars each month. He saves all of his allowance each month for the toy car. How many months does he need to save his allowance? Have students help you write the pattern of Jayden’s savings: 5, 10, 15, 20 dollars. ASK: How many terms in the pattern have we written? (4) How many months does Jayden need to save for? (4 months)

Have students use the same method to find out how many weeks they need to save to get each item if they each get 2 dollars each week:

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>a) board game for 12 dollars b) stuffed toy for 6 dollars c) computer game for 10 dollars</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Answers:** a) 6 weeks, b) 3 weeks, c) 5 weeks
2. Give students 3 quarters, 3 dimes, 3 nickels, and 3 pennies (play coins or cut-outs from BLM Coins to Cut Out). Have students make the given amount, using 6 of these coins.

a) 43¢

b) 42¢

c) 72¢

d) 86¢

Answers

a) 1 quarter, 1 dime, 1 nickel, 3 pennies

b) 1 quarter, 3 nickels, 2 pennies

c) 2 quarters, 2 dimes, 2 pennies

d) 3 quarters, 2 nickels, 1 penny

3. Individual Counting Money Game. Each student will need the board game on BLM Counting Money Game (p U-56), play coins or cut-outs from BLM Coins to Cut Out (pennies, nickels, dimes, and quarters), a die, and a token. The player rolls the die, moves forward the correct number of squares, and receives the coin shown on the board. When the player is at the end of the board (not necessarily by the exact amount shown on the die), the player counts the total money collected.

4. Play Picking Pairs and Money Memory (see unit introduction). Start with cards from BLM Money Memory (1) (p U-53) and then include cards from BLM Money Memory (2) (p U-54). Cards form a pair if the money amounts are the same.

5. Create a design with play pennies and nickels. How much money is in your design?
### Goals

Students will add money amounts up to 100¢ using skip counting and addition.
Students will make story problems for sums up to 100.

### Prior Knowledge Required

- Can skip count by 5s, 10s, and 25s
- Can count money amounts up to 100¢
- Can add by counting up
- Can add using the standard algorithm

### Materials

- cut-outs from BLM Enlarged Coins (p U-46)
- play money or cut-outs from BLM Coins to Cut Out (p U-45)
- base ten materials or BLM Base Ten Blocks (p U-43)

Review skip counting by different amounts and counting money.
Remind students that quarters tell you to count by 25s, dimes tell you to count by 10s, nickels by 5s, and pennies by 1s. Using cut-outs from BLM Enlarged Coins, show students 2 quarters, 3 dimes, 2 nickels, and 2 pennies randomly taped to the board, and have a volunteer rearrange the coins so that they are easy to count (i.e., quarters first, then dimes, then nickels, then pennies). Count the money in unison. (25, 50, 60, 70, 80, 85, 90, 91, 92¢)

Adding coins to a starting amount. Draw the picture below on the board and explain that the square shows somebody’s wallet or bag with 53¢ in it.
ASK: Altogether, how much money is on the board?

![Diagram showing 53¢: 5 quarters, 3 dimes, 2 nickels, and 1 penny.]

Have students write the amounts in the blanks as they count on. (63¢, 73¢, 83¢, 88¢, 93¢, 94¢, 95¢) If students have trouble counting on by 5s from 83 and 88, remind them that they are actually adding 5, so they can just count on from the number until they raise 5 fingers.

Repeat with 45¢ in the bag and 2 dimes, 3 nickels, and 1 penny outside the bag (81¢), and with 50¢ in the bag and 1 quarter and 2 nickels outside (85¢). Present the exercises on the next page in the same way, using a square for the purse and paper coins. Students can write the counting numbers and do not need to copy the coins. Have a volunteer demonstrate the counting after each exercise.
Exercises: Add the money to the bag. How much money is there in total?

a) 65¢

b) 25¢

c) 37¢

Bonus: 39¢

Answers: a) 75, 85, 90, 95, 96¢; b) 50, 75, 80, 85, 86¢; c) 47, 57, 58, 59¢; Bonus: 40, 50, 75, 85, 90, 91¢

Review adding using the standard algorithm. Demonstrate 42 + 35 to review adding ones and tens separately in a vertical addition. Then show 47 + 28 to review the standard algorithm. At each step, have students remind you what to do.

Adding money using the standard algorithm for addition. Show an amount of money inside the bag and coins outside the bag, as above: 46¢ in the bag and 2 dimes, 3 nickels, and 2 pennies outside the bag. Have students count how much money is outside the bag (37¢). Then write an addition sentence vertically on the board:

\[
\begin{align*}
46 & \\
+37 & \\
\end{align*}
\]

Have students solve this problem using the standard algorithm, and then again by counting on from 46 as was done previously. ASK: Did you get the same answer? If not, try to find your mistake. Was your mistake in counting on or in the adding? Encourage students to ask you if they can’t find their mistake, or to check with another student who did get the same answer both ways. PROMPT: Where does the other student’s counting on become different from yours? Present the following exercises as before, but this time, place the coins outside the bag in a random arrangement. Have students add using the standard algorithm.
Exercises: Count the money outside the bag. Add the money.

a) 35¢

b) 46¢

c) 26¢

d) 32¢

Answers: a) 45¢, 80¢; b) 41¢, 87¢; c) 70¢, 96¢; d) 67¢, 99¢

Adding quarters when the amount in the bag is not a multiple of 25.

Show students a bag with 29¢ in coins and 2 quarters, a dime, a nickel, and a penny placed in this order in a row outside it. Have students try to find the total amount of money by counting on. Give students some time to try filling in the first blank, then ASK: Why is this harder than before? (we don’t say 29 when counting by 25s, so it is harder to add 25 to it) Have students solve the problem by adding the amounts inside the bag and outside the bag. (29 + 66 = 95) Have students check with two others to make sure they all got the same answer. Wait until everyone agrees on the answer with at least two classmates. Then ask someone to give the answer and ask if any group got a different answer.

Compare the two methods. Discuss the advantages of counting the money outside the bag and adding rather than counting on. For example, when using addition, you only have to count the money outside the bag, so you can always start counting by 25s, then 10s, then 5s, then 1s. Also, the total outside the bag is smaller than amounts you get if you count on from the amount in the bag.

Making word problems. SAY: In all the problems that we solved today, there were coins inside the bag or purse and coins outside it. Try to think of a situation when some coins are in the bag and some outside. How can that happen? (you get some coins out of the bag to buy something, you get some coins as allowance and add them to your bag, you get change and return it to your bag, and so on) Have students use different suggestions to make a story problem for each problem in the previous exercises. Sample problem for part a): Emma took a quarter and 2 dimes out of her bag to pay for stickers. She now has 35¢ left in her bag. How much money did she have in the beginning?

NOTE: Some students might notice that adding a penny first gives them an easy way to count up the rest of the money: 30, 55, 80, 90, 95¢. Point out that this is a very clever way to solve this problem, but it would not work if there were, say, 28¢ in the bag. See Extension 2 for more examples.
Connecting dimes and pennies to tens and ones. Give each student 5 dimes and 10 pennies (play coins or cut-outs from BLM Coins to Cut Out). Ask them to make 23¢ using as many dimes as they can. ASK: How many dimes did you use? (2) How many pennies? (3) Have students draw a table with the column headings “Amount of Money,” “Dimes,” and “Pennies,” and with 8 rows. Show students how to record this information in the table:

<table>
<thead>
<tr>
<th>Amount of Money</th>
<th>Dimes</th>
<th>Pennies</th>
</tr>
</thead>
<tbody>
<tr>
<td>23¢</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

Repeat with 19¢ and have them record the information in their tables. They will fill in more rows when they do the exercises below.

ASK: How much money do you have in total? (60¢) SAY: Suppose I ask you to make different amounts of money and each amount is less than 60¢. For each amount, you have to use as many dimes as you can. ASK: Will you ever use all 10 pennies for an amount? (no) Why not? (because 10 pennies make a dime, and so you would use another dime instead)

Exercises: Make the given amount using as many dimes as you can. Record your answer in your table.

a) 24¢    b) 36¢    c) 58¢    d) 5¢    e) 47¢    f) 53¢

Answers:

<table>
<thead>
<tr>
<th>Amount of Money</th>
<th>Dimes</th>
<th>Pennies</th>
</tr>
</thead>
<tbody>
<tr>
<td>24¢</td>
<td>2</td>
<td>4</td>
</tr>
<tr>
<td>36¢</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>58¢</td>
<td>5</td>
<td>8</td>
</tr>
<tr>
<td>5¢</td>
<td>0</td>
<td>5</td>
</tr>
<tr>
<td>47¢</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>53¢</td>
<td>5</td>
<td>3</td>
</tr>
</tbody>
</table>

ASK: What digit are you looking at to see how many dimes you need? (tens digits) Show students tens and ones blocks and have them make the same numbers as in the exercises above from tens and ones blocks. ASK: Are dimes more like tens blocks or ones blocks? (tens blocks) What are pennies like? (ones blocks) Explain that just as a tens block can be traded for 10 ones blocks, a dime can be traded for 10 pennies.

Bonus

Show students a hundreds block. ASK: What coin is like a hundreds block? (a loonie)
Extensions

1. Have students do BLM Trading for Dimes and Pennies (p U-57).

   \textbf{Answers:} 25, 50, 55, 56, 57, 58, 59, 60\text{¢} = 6 \text{ dimes} + 0 \text{ pennies};
   25, 30, 35, 40, 45, 50, 51\text{¢} = 5 \text{ dimes} + 1 \text{ penny};
   25, 50, 60, 65, 70, 71, 72, 73\text{¢} = 7 \text{ dimes} + 3 \text{ pennies}

2. Show a bag with 53\text{¢} inside and use paper coins in a loose arrangement to show 3 dimes, 2 nickels, and 3 pennies outside. Count the total money together as a class using addition, getting 96\text{¢} altogether. Then, rearrange the paper coins as shown below:

   \begin{center}
   \begin{array}{cccc}
   \includegraphics{dime} & \includegraphics{dime} & \includegraphics{dime} & \includegraphics{nickel} \\
   \includegraphics{nickel} & \includegraphics{penny} & \includegraphics{penny} & \includegraphics{penny} \\
   \includegraphics{penny} & \includegraphics{penny} & \includegraphics{penny} & \includegraphics{penny} \\
   \end{array}
   \end{center}

   Count the money by counting on, starting at the 53\text{¢} in the bag and following the order above: 53, 54, 55, 60, 70, 80, 90, 95, 96\text{¢}.

   \textbf{ASK:} Which method to count on was easier? (the new method) Why? (we counted up by the numbers it’s easy to count from)

   For the following exercises, challenge students to rearrange coins to make them easier to count and to count the money. Some students might count by dimes first, because counting by 10s is easy from any number.

   a) a bag with 39\text{¢}, with the following coins outside: 2 dimes, 1 nickel, 2 pennies
   b) a bag with 64\text{¢}, with the following coins outside: 1 dime, 3 nickels, 3 pennies
   c) a bag with 47\text{¢}, with the following coins outside: a quarter, 2 dimes, and 3 pennies

   \textbf{Sample answers:}
   a) 1 penny, 2 dimes, 1 nickel, 1 penny, 66\text{¢};
   b) 1 penny, 1 nickel, 1 dime, 2 nickels, 2 pennies, 92\text{¢};
   c) 3 pennies, 1 quarter, 2 dimes, 95\text{¢}

3. Nora has 6 nickels and Jane has only quarters. Jane has more money than Nora. What is the smallest number of quarters that Jane can have? How do you know?

   \textbf{Answer:} Nora has 30\text{¢}. The smallest number of quarters Jane can have is 2 quarters because 50\text{¢} is more than 30\text{¢} but 25\text{¢} is not.

4. One dollar = 100\text{¢}. Add extra coins to make a dollar. Use as few coins as possible.

   a) Start with 3 quarters, 1 dime, and 2 pennies.
   b) Start with 3 quarters, 3 nickels, and 3 pennies
   c) Start with 2 quarters, 6 pennies, and 1 dime.

   \textbf{Answers:}
   a) 3 pennies and 1 dime; b) 2 pennies and 1 nickel;
   c) 4 pennies, 1 nickel, and 1 quarter
**Goals**

Students will subtract money amounts by making change for small purchases.

**Prior Knowledge Required**

- Can subtract two-digit numbers
- Can subtract by counting up
- Can count money up to 100¢
- Can add money amounts

**Materials**

- Cut-outs from *BLM Enlarged Coins* (p U-46)
- *BLM Food Sale* (pp U-58–59)
- Play money or cut-outs from *BLM Coins to Cut Out* (p U-45)
- *BLM Money Memory* (pp U-53–54)
- *BLM Counting Money Game* (p U-56)
- A die and a token for each student

**Introduce making change.** SAY: Imagine you have a dime to spend and you want to buy a sticker that costs 4¢. Draw on the board a sticker with a 4¢ label. ASK: What happens when you give a dime to the cashier? (the cashier gives you some money back) SAY: The money that you get back when you give too much money is called “change.” ASK: How much change would you get back if you bought the sticker using your dime? (6¢) Choose a few more items with prices under 10¢, and ASK: How much change will you get back? How do you find the answer? (we subtract)

**Making change by counting on.** SAY: Suppose you have a quarter to spend. Show a quarter on the board and draw an item that costs 19¢. ASK: What subtraction will help find how much change you should get? (25 − 19) Write the subtraction on the board. Have a volunteer count on to subtract. (6¢) The final picture should look like this:

```
25 − 19 = 6¢
```

Repeat for an item that costs 3¢. (25 − 3 = 22¢) You might want to discuss various ways students use to subtract at this point. For example, students can subtract by counting back or by subtracting ones only.
Using cut-outs from **BLM Enlarged Coins**, tape a quarter and a dime to the board. SAY: Suppose we have a quarter and a dime. ASK: How much money do we have? (35¢) Do two more subtractions for prices of 31¢ and 27¢. (35 − 31 = 4¢ and 35 − 27 = 8¢)

**Exercises:** How much change do you get back? Count on to find the answer.

a)    b)    

```
+ 22¢ 43¢
```

c)    Bonus:    

```
+ 65¢ 96¢
```

**Answers:** a) 3¢, b) 7¢, c) 5¢, Bonus: 4¢

**Making change by subtracting using place value.** SAY: We can also find how much change we get by subtracting, in the same way we do for other numbers. Draw a ball with a price tag of 32¢ on the board and affix two quarters to the board.

SAY: We can line up the amounts and do the subtraction. We have 2 quarters. ASK: How much is that worth? (50¢) SAY: We subtract how much we spent. Write the subtraction on the board as shown in the margin. Have a volunteer subtract. Prompt the volunteer to take apart a ten.

SAY: You need to write the cent sign too. Make sure it is there. ASK: How much change will we get back? (18¢) Write the final answer as shown in the margin.

Repeat with 3 quarters and a 59¢ ball. (16¢ change)

**Exercises:** Clara pays for a fish. Subtract to find her change. Write the answer as a sentence.

a)    b)    

```
+ 17¢ 61¢
```

**NOTE:** Remind students that a loonie is worth 100¢.
Answers: a) She will get back 3¢. b) She will get back 14¢. c) She will get back 16¢. Bonus: She will get back 38¢.

How much more money? Draw two large circles on the board. Place 1 quarter, 2 dimes, 1 nickel, and 3 pennies into one circle, and 9 nickels and 4 pennies into the other circle. ASK: How much money is in each circle? (53¢ and 49¢) Write the answers beside the circles. ASK: Where is there more money? How much more? (4¢) How did you find how much more? (53 − 49 = 4) Repeat with:

- Group 1: 2 quarters, 1 dime, 3 pennies
- Group 2: 1 quarter, 3 dimes, 2 nickels
- Group 1: 5 dimes, 3 nickels, 2 pennies
- Group 2: 3 quarters

How much money altogether? Again, draw two groups of coins, but instead of asking how much more, ask how much is in both groups altogether. Use amounts that total less than $1. EXAMPLES:

- Group 1: 3 dimes, 3 nickels, 1 penny
- Group 2: 1 quarter, 2 pennies
- Group 1: 1 quarter, 2 dimes, 3 nickels, 6 pennies
- Group 2: 6 nickels

For a challenge, use 3 groups:

- Group 1: 1 quarter, 1 dime, 3 nickels, 4 pennies
- Group 2: 3 dimes
- Group 3: 2 nickels, 5 pennies

Add or subtract? As a class, solve the first two problems in the following exercises, and then have students solve the rest of the problems individually. You can help students visualize the money by showing the coins in each problem.

Exercises: Solve.

a) I have 2 quarters, 3 dimes, and a nickel. How much more money do I need if I want to buy something worth 93¢?

b) Amy has 60¢. She found 2 dimes and another nickel. How much money does she have now?
c) Evan wants to buy a sticker that costs 35¢. He pays with 2 quarters. How much change does he get?

d) Jen has 27¢. Eric has 34¢. How much money do they have together?

e) Alice has 78¢. Josh has 1 quarter and 3 dimes. Who has more money? How much more?

f) I have a quarter, a dime, and 3 nickels. How much more money do I need if I want to buy something worth a dollar? Worth 60¢? Worth 84¢?

Bonus: Cathy has 55¢. She gave a quarter to her brother. She has two coins left. Which coins does she have left?

Answers: a) 8¢; b) 85¢; c) 15¢; d) 61¢; e) Alice, 23¢; f) 50¢, 10¢, 34¢; Bonus: Cathy has 30¢ left, so she has a quarter and a nickel.

**ACTIVITY 1 (Essential), ACTIVITIES 2–3 (Optional)**

1. **Food Sale.** Divide the class into pairs and give each pair a copy of **BLM Food Sale**. Provide dimes, nickels, and pennies (play money or coins from **BLM Coins to Cut Out**). Students cut out the items for sale and the receipts and take turns being the cashier and the customer. The cashier writes out a receipt for each item the customer buys. Each customer has 10 dimes ($1) and should buy as many items as possible with that money. The cashier has 10 nickels and 20 pennies to make change.

   *Variation:* If students are familiar with food groups, they can try to buy a balanced meal (one item from each of the four food groups).

2. Give each pair of students the cards from **BLM Money Memory**. Have students write the amounts 0¢, 10¢, 20¢, 30¢, … , up to 100¢ in order on a separate sheet of paper. Students should shuffle the cards and deal out half the cards to each player. Each player places their half of the deck face down in front of them. Players each pick a card from the top of their deck and turn it over at the same time. Players take turns writing subtraction sentences to find out how much more money is on one card than on the other, and cross out the result in their list. If there are no more cards left in the pile, collect all the cards, shuffle the two decks together, and deal again. The goal is to cross out all the numbers.

3. Students each need **BLM Counting Money Game**, play money or coins from BLM Coins to Cut Out, a die, and a token. The player begins with 1 quarter and 4 pennies. The player rolls the die and moves forward the corresponding number of places. When players land on a quarter or nickel, they get what they landed on; when they land on a dime or penny, they lose what they landed on (players may need to trade a nickel for 5 pennies or a quarter for 2 dimes and 1 nickel in order to give the money they landed on). At the end, students count their money.
NOTE: Extension 1 is required to meet the British Columbia curriculum.

Extensions

1. **Needs and wants.** Discuss with students the kinds of things people need to survive. (air, food, water, shelter, clothing) ASK: What other things do people in the community need? (EXAMPLES: education, roads, transportation, and medicine) Concentrate on one of the needs, such as food. ASK: What different things might you eat? Which of these are things you cannot live without, and which are good, but optional? For example, if you only have a limited amount of money, what foods should you concentrate on, the food you need to stay healthy or the food you want to eat, such as candy? Explain that things you want to buy but do not have to buy, such as chocolate or toys, are wants, whereas things you have to have to survive are needs. Have students name different things that are needs and other things that are wants.

Explain that you only buy your wants when you have enough money for your needs and some money left over. Write different prices within 100¢ on a variety of items (you can also use items from BLM Food Sale (1)), but include distinct wants, such as a candy bar, a toy, and so on. Tell students that they have 1 dollar, or 100 cents, at their disposal. Have them decide what they can buy, and explain their choices in terms of needs and wants.

2. **Counting on past 10 to make change.** SAY: We already used counting on to make change. Now we will count on using number lines to make change. Suppose that Zack buys a happy-face sticker that costs 37¢ and he has 2 quarters. Draw on the board a happy face and affix two quarters to the board.

Draw a number line with a single tick mark between the end ticks as shown in the margin, but do not add any arrows or labels yet. SAY: We start at 37¢. That goes on the left end. Mark the left endpoint as 37. ASK: What are we subtracting from? (50¢) Where do we write 50? (on the right end) Label the right end of the picture.

SAY: We count on to the nearest ten. ASK: What is the next ten after 37¢? (40¢) PROMPT: If you count by 10s, what two numbers is 37 between? (30 and 40) Write “40¢” at the tick mark in the middle. Count up as a class to 40 and then by tens to 50. Draw arrows as shown in the margin. Add the distances and write the final answer.

Repeat with a 54¢ item and a loonie. Remind students that $1 = 100¢. The final picture should look like this:

Zack will get back 46¢.
Have students find the change in the questions below.

What change will Zack get back?

a) 38¢
b) 87¢
c) 56¢

Answers: a) 12¢, b) 13¢, Bonus: 19¢

3. A trick for subtracting from a dollar. ASK: How does 100 – 36 compare to 99 – 36? Write on the board: 100 – 36 is one ___ than 99 – 36. Ask a volunteer to write the correct word—more or less—in the blank. Discuss how the volunteer knew the answer. ASK: Which problem is easier to do: 100 – 36 or 99 – 36? Why? Prompt students by showing the two questions written vertically. Emphasize that you need to regroup to solve 100 – 36, but no regrouping is necessary for 99 – 36.

Have students use this trick to solve the questions below:

a) 99 – 45 = ___ so 100 – 45 = ___
b) 99 – 78 = ___ so 100 – 78 = ___
c) 99 – 63 = ___ so 100 – 63 = ___

Have students check their answers using another method of their choice.

Answers: a) 54, 55, b) 21, 22, c) 36, 37

4. Make word problems. Draw pictures on the board like those on AP Book 2.2 p 132. Have students make story problems for each picture. Start by using examples where the price is less than the amount of money shown, so that the problem will ask for the amount of change, then give examples where the price is more than the amount of money shown, so that the problem will ask for how much more money is needed to purchase the item.
Base Ten Blocks
Coins to Cut Out

1 CENT CANADA
5 CENTS CANADA
CANADA 10 CENTS
CANADA 25 CENTS

1 CENT CANADA
5 CENTS CANADA
CANADA 10 CENTS
CANADA 25 CENTS

1 CENT CANADA
5 CENTS CANADA
CANADA 10 CENTS
CANADA 25 CENTS

1 CENT CANADA
5 CENTS CANADA
CANADA DOLLAR
CANADA 2 DOLLARS

1 CENT CANADA
5 CENTS CANADA
CANADA DOLLAR
CANADA 2 DOLLARS
Enlarged Coins

- 2 DOLLARS (Polar Bear)
- 25 CENTS (Deer)
- 10 CENTS (Sailboat)
- DOLLAR (Loon)
- 5 CENTS (Beaver)
- 1 CENT (Maple Leaf)
## Coins on a Chart

Cut out the coins.

Glue them to the chart where they belong.

<table>
<thead>
<tr>
<th></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
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</tbody>
</table>
Coins on a Number Line

☐ Cut out the coins.
☐ Glue them to the line to show their value.
Fake Coins

☐ ✗ what is wrong on the coin.

Bonus

Blackline Master — Number Sense — Teacher’s Guide for Grade 2  U-49
### Fake Money Game

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1 CENT</td>
<td>5 CENTS</td>
<td>CANADA 2 DOLLARS</td>
<td>5 CENTS</td>
</tr>
<tr>
<td>CANADA</td>
<td>CANADA</td>
<td>CANADA DOLLAR</td>
<td>CANADA</td>
</tr>
<tr>
<td>CANADA</td>
<td>CANADA 2 DOLLARS</td>
<td>CANADA</td>
<td>CANADA</td>
</tr>
<tr>
<td>CANADA 35 CENTS</td>
<td>5 CENTS</td>
<td>25 CENTS</td>
<td>CANADA 10 CENTS</td>
</tr>
<tr>
<td>3 CENTS</td>
<td>CANADA</td>
<td>CANADA</td>
<td>CANADA 10 CENTS</td>
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<td>CANADA</td>
<td>CANADA 2 DOLLARS</td>
<td>CANADA</td>
<td>CANADA</td>
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<td>5 CENTS</td>
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<td>7 CENTS</td>
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<td>CANADA</td>
<td>CANADA</td>
<td>CANADA</td>
<td>CANADA 10 CENTS</td>
</tr>
</tbody>
</table>
Identifying Coins (I)

Match the coin with its value.

Cross out the coin values that do not exist in Canada.
## Identifying Coins (2)

☐ Finish the chart.

<table>
<thead>
<tr>
<th>Coin</th>
<th>Value</th>
<th>Picture</th>
</tr>
</thead>
<tbody>
<tr>
<td>nickel</td>
<td>25¢</td>
<td><img src="image" alt="Nickel" /></td>
</tr>
<tr>
<td></td>
<td>100¢</td>
<td><img src="image" alt="Toonie" /> = 1 dollar</td>
</tr>
<tr>
<td>dime</td>
<td>1¢</td>
<td><img src="image" alt="Dime" /></td>
</tr>
<tr>
<td>toonie</td>
<td></td>
<td><img src="image" alt="Toonie" /></td>
</tr>
</tbody>
</table>

☐ Circle the coin that is worth more.
Money Memory (I)
Money Memory (2)
## Smallest Number of Coins Chart

Use the smallest number of coins to make the amount.

<table>
<thead>
<tr>
<th></th>
<th>25¢</th>
<th>10¢</th>
<th>5¢</th>
<th>1¢</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>12¢</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>8¢</td>
<td></td>
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<td>3</td>
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<tr>
<td>35¢</td>
<td></td>
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<tr>
<td>30¢</td>
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<td>26¢</td>
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<tr>
<td>52¢</td>
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<tr>
<td>61¢</td>
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<tr>
<td>71¢</td>
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Counting Money Game

<table>
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<tr>
<th>Start</th>
<th>5¢</th>
<th>10¢</th>
<th>1¢</th>
<th>25¢</th>
<th>10¢</th>
<th>1¢</th>
<th>1¢</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td>5¢</td>
<td>25¢</td>
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<td>10¢</td>
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<td>25¢</td>
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<td>1¢</td>
<td>25¢</td>
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<td>5¢</td>
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<td>10¢</td>
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<td></td>
<td>1¢</td>
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<td>10¢</td>
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</table>

End

U-56
Trading for Dimes and Pennies

☐ Add the coins.
☐ Trade the coins for dimes and pennies.
Use as many dimes as you can.

25¢  5¢  5¢  5¢  1¢  1¢  1¢
25  30  35  40  41  42  43¢
=   dimes +   pennies

25¢  25¢  5¢  1¢  1¢  1¢  1¢
=   dimes +   pennies

=   dimes +   pennies

=   dimes +   pennies

25¢  5¢  6¢  6¢  6¢  6¢  7¢  7¢  7¢
=   dimes +   pennies

25¢  5¢  6¢  6¢  6¢  7¢  7¢  7¢
=   dimes +   pennies
Food Sale (I)

14¢  
MACARONI

9¢  
CARROTS

11¢  
CELERY

12¢  
BREAD

15¢  
EGGS

10¢  
MILK

12¢  
FISH

13¢  
CHEESE
## Food Sale (2)

<table>
<thead>
<tr>
<th>Item:</th>
<th>Price:</th>
<th>Money Given:</th>
<th>Change Received:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marla’s Market</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Item:</td>
<td>Price:</td>
<td>Money Given:</td>
<td>Change Received:</td>
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<tr>
<td>Marla’s Market</td>
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<tr>
<td>Item:</td>
<td>Price:</td>
<td>Money Given:</td>
<td>Change Received:</td>
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<td>Marla’s Market</td>
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<td>Item:</td>
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<td>Money Given:</td>
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<td>Marla’s Market</td>
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<tr>
<td>Item:</td>
<td>Price:</td>
<td>Money Given:</td>
<td>Change Received:</td>
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<tr>
<td>Marla’s Market</td>
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Dear Parent/Guardian,

re: JUMP Math program
Grade 2 Number Sense
Lesson NS2-70

In mathematics, your child has been learning about the values and designs of Canadian coins. Students are also counting the value of coins totalling up to 100¢. In this letter are a game and an activity to do with your child to reinforce what we are learning in class.

The Fake Money Game
The game board for the Fake Money Game is attached on p U-63. In addition to the game board, you will need tokens, a die, and coins or play coins (about $7 worth, in several different denominations). Your child can play individually or you can play co-operatively. Each cell on the game board has the picture of either a real coin or a fake coin. The goal is to fill the board with real coins.

To start, players place their tokens on any real coin and put all the coins in the centre of the game board. Players take turns rolling a die and moving around the board according to the number rolled, in whichever direction they wish. Two players cannot be in the same cell at the same time, so if the number rolled takes a player to a cell that is already occupied, the player must go in the other direction. When a player’s token lands on a fake coin, the player puts any real coin of their choice in the cell. When your child is comfortable playing the game, get them to replace the fake coins with real coins of the correct amount, when that is possible. If the amount is impossible, such as 7¢, have your child place a coin that is close in value, such as a dime or a nickel.

Each of the following variations is more complicated than the previous one. Children should master a variation before trying the next one.

**Variation 1:** Pairs will need a die, the game board (draw a clockwise arrow on it), and four tokens—one for each player and two of a third colour. Players do not need play money for this variation. Players are police officers chasing the “money fakers” (makers of fake money) represented by the tokens of the third colour. To start, the players position themselves on two opposite corners of the board, and the money fakers are placed on the other two corners of the board. Players take turns rolling a die. The player who rolls moves his or her token in any direction by the number of cells rolled. The other player then moves each money faker one cell clockwise (using the arrow as a guide). The object of the game is to catch both money fakers. If a player’s token and a money faker happen to be on the same fake coin, the faker is caught “red-handed” and the faker token is “jailed” (removed). If the player and faker both land on a real coin, the faker cannot be caught.

**Variation 2:** This is a combination of the original game and Variation 1. You will need play money and two extra tokens of a third colour to represent the fakers. Police officers put real money in a cell when they land on a fake coin, but fakers steal money when they land on a cell that has money in it. The fakers keep their money with them as they move along the
board. The goal is to replace all fake coins with real coins and catch both fakers. When a faker is caught, the police officer takes all of the faker’s money and can use it to replace fake money with real money.

**Variation 3:** This is Variation 2 with one difference: instead of going to jail forever, the fakers only go to jail for a set term, say 5 turns. Players can place returning money fakers—who continue stealing money—on any unoccupied cell.

**Variation 4:** In this variation, money fakers can go to rehabilitation. A faker returning from rehabilitation becomes a police officer. This police officer moves the same way as a faker (one place clockwise). This police officer cannot catch fakers, but can replace fake money with real money.

**Variation 5:** Make up your own rules. Be creative!

**What coin values do other countries have?**
If your child is interested, choose a country and check what coin values are used in that country. What is the largest coin value? What is the smallest coin value?
Fake Money Game
Pattern Blocks