

Working with Money

About the Math

Recognizing coins is not a mathematical skill but rather a convention of our society. Our coins do not follow any mathematical logic: we have nickels that are larger and thicker than dimes even though the smaller dimes have greater value. Children learn to identify and name coins through exposure and repetition. For children to really understand the values of coins, they must have an understanding of the quantities 5, 10, and 25, and understand those quantities even without seeing countable objects to represent them.

Second-grade students are challenged to use their problem-solving skills to solve problems related to money. Explorations with coins at the first-grade level provide a foundation for those problem-solving experiences.

The key ideas focused on in this module include:

- recognizing coins
- knowing the value of each coin
- counting sets of like coins (pennies, nickels, dimes).

Recognizing coins has become tricky in recent years because coins have a variety of images imprinted on them. Experiences in which students observe the shape, color, and weight of coins help them see the characteristics shared by each coin (e.g., pennies are small and copper but dimes are even smaller and silver).

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Although recognizing and counting coins does not appear in some standards documents at this level, addressing these skills reinforces counting and place value and provides a foundation for second-grade standards.

The recognition that coins do not have the same value is foundational. Having a quarter means you have more money than if you have a nickel. Each coin has a distinct value. Students might sort coins and label them by value or match coins and values.

The ability to count the value of like coins reflects back on students' skip counting experiences in kindergarten. Kindergarten students routinely count by ones and tens, so counting to find the value of five pennies or four dimes is an application of their skip counting skills. Exposure to and practice with counting by fives supports students as they count nickels. Touching five frames to represent nickels as they count or visualizing the process with hundred charts helps make the task more understandable, and, with practice, it becomes more automatic.

As with all math skills, posing story problems provides a context for students to see situations when we count money. Posing problems like the following allows students to see times they might need to count coins and provides yet another experience solving math problems.

Kellen had 4 dimes in his pocket. How much money was in his pocket?

Bailey had 7 nickels in her piggy bank. How much money was in her bank?

Blake had 4 dimes and found 3 more. How many dimes did she have? How much money did she have?

At this level, students might be asked to figure out what the problem is asking, select coins to show it or draw simple coin representations, and then count the coins to find the answer (see Figure 12.1).

Molly had 4 nickels.

How much money did she have?

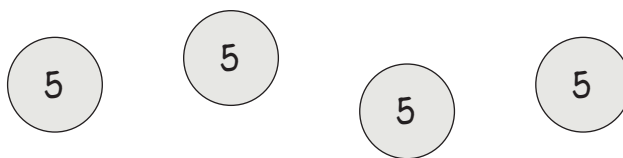


Figure 12.1 This student draws the coins and then skip counts to find the total.

Learning Goals

I can tell which coin is a penny, nickel, dime, or quarter.

I can tell how many cents are in a penny, nickel, dime, or quarter.

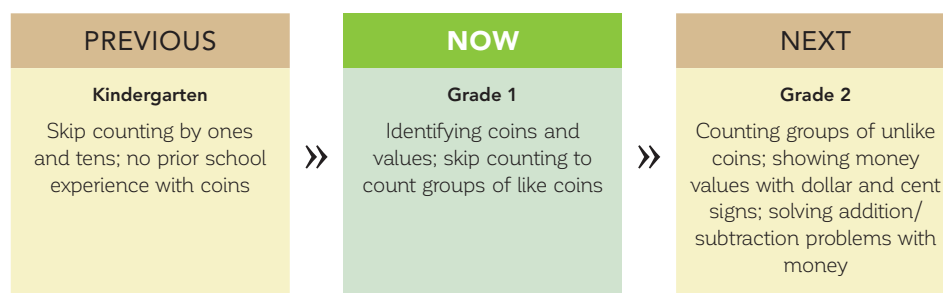
I can count groups of pennies, nickels, or dimes and tell how much money it is.

Coin-counting skills are best taught with brief experiences for counting coins scattered throughout the year. Many teachers make this a part of their calendar math time, have coins (or tickets with the same denominations) as a part of a class incentive program, or periodically pose a quick counting task at the start of math lessons throughout the year.

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Exploring the Progression



Ideas for Instruction and Assessment

IDENTIFYING COINS

Initial experiences with coins have students sorting, describing, and naming pennies, nickels, dimes, and quarters.

Coins Up Close

Students use magnifying lenses to examine coin features and use them to create an anchor chart about each coin.

Have students use magnifying lenses to examine coins.

They should make a drawing or take a photo of what they see and label the features they notice.

What features did you notice about a penny?

What can you say about the features of a penny that no other coin has?

Through this examination, create an anchor chart of the defining attributes of each coin: penny, nickel, dime, and quarter.

Sorting Coins

Student pairs sort coins based on the attributes they notice and explain how they sorted.

Materials: set of mixed coins for each pair of students

Ask students to spread the coins out so they can see them.

How could you and your partner sort the coins into groups?

Be ready to explain how you sorted them.

Give students time to sort and discuss their coins.

How did you and your partner sort your coins?

How are the coins in one group the same?

How are the groups of coins different?

Lessons in This Module

Identifying Coins

Coins Up Close
Sorting Coins
Coin in My Pocket

Identifying the Value of Coins

Comparing Values
Coin Posters

Counting Like Coins

Predict and Count
Counting Pennies and Dimes
Counting Nickels
What Is in the Purse?

Common Error or Misconception

Many students initially confuse all of the silver coins—understandably! Giving students more time to carefully examine the features and feel of each coin is essential. Students should participate in building an anchor chart for each coin that includes pictures of the front and back, sensory features such as ridges, and values.

It is fine, though not necessary, to include discussions of value in these early activities as you introduce students to various coins. Values are explored in more detail in subsequent activities.

What could you name each of your groups of coins?

If you mix your coins back together, is there another way you could sort them?



This student is sorting her coins into four groups: pennies, nickels, dimes, and quarters.

Coin in My Pocket

Students use their knowledge about coin attributes to ask yes-or-no questions that will help them identify a hidden coin.

Tell students that you have a coin in your pocket and to find out what it is, they can ask you questions about its attributes, but you will answer only with yes or no. Some good questions students may ask are these:

Is it silver?

Is it copper?

Is Abraham Lincoln on it?

Is George Washington on it?

Does it have ridges on the edge?

Does it have a smooth edge?

Record information on the board as it becomes known so that students can refer back to it as they work toward an answer.

Once students have become successful at this activity, students can play in pairs.



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Differentiation

Students could be given one of each coin to refer to as they think about the clues.

Additional Ideas for Support and Practice

The following ideas extend students' skills at identifying coins and provide meaningful practice.

SORTING AND COMPARING COINS

Students sort a mixed bag of coins and tally the number of each type of coin.

Materials: bag of 15–20 mixed coins, plain sheet of paper

Students fold their paper into fourths and label each with the name of a coin: penny, nickel, dime, quarter.

Students sort the coins in their bag by placing them in the appropriate category on their paper.

Students use tally marks to record the number of each coin they have as they remove the coins from the work mat.

What coin did you have the most of?

What coin did you have the fewest of?

How do you know?

Did your partner have more quarters than you?

How many more or fewer did your partner have?

Although plastic coin manipulatives are made to look very realistic, using real coins is preferable whenever possible. Because identifying coins is largely a tactile skill, real coins provide the weight and feel that plastic coins cannot replicate.

HIDDEN COINS GAME

Students use mathematical language and understanding of coins to play a game.

Materials: bag of mixed coins, two Hidden Coins game boards, and a file folder or book to use as a divider for each pair of students

Partners put a divider between them.

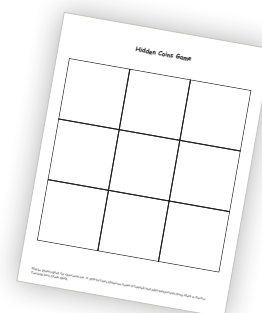
Player A puts coins on each block on her grid, being sure not to let her partner see the game board.

She gives instructions to her partner on how to place the coins on his game board to match, using coin names and positional language to describe where her partner should place coins to match her sheet (e.g., "Put a nickel in the top row, in the box on the left").

Player A continues giving directions until Player B has completed his game board.

Partners remove the barrier and compare game boards, seeing how many of their coins match in the correct spaces.

Partners swap roles and play again.



You may want to provide a word bank with the following words: center, between, first row, above, below, next to, second row, third row.

Differentiation

For a challenge, have students use clues about the features of the coins instead of their names (e.g., "Put the coin worth 5 cents in the center box").

IDENTIFYING THE VALUE OF COINS

Students explore the values of the penny, nickel, dime, and quarter through manipulatives, drawings, and discussions.

Comparing Values SHOW IT!

Students use pennies to compare the value of a nickel, dime, and quarter.

Materials: pictures of a penny to cut out or a rubber penny stamp with an ink pad to use for stamping

Show students a nickel. If available, show a nickel under a document camera and zoom in so that students can clearly see features and words written on the coin.

How many cents are labeled on the coin?

How could we show the value of a nickel using pennies?

Show students the chart.

How can we show the value of each coin using pennies?	
Nickel	
Dime	
Quarter	

Ask a student to stamp or glue 5 pictures of pennies in a row next to the nickel.

Repeat, examining labels and discussing the values of a dime and a quarter, and then show the values in pennies on the data chart.

Partners work together to answer questions using data from the chart.

Which coin is worth the most? How much?

Which coin is worth the least? How much?

How many fewer cents is a nickel than a dime?

How many more cents is a quarter than a dime?

Post this data chart in the classroom as a resource for students.

Coin Posters

Student pairs create posters to show what they know about a coin and its value.

Assign a different coin to each group and then have each group share their completed poster with the class at the end.

Provide each pair with one of the following coins: penny, nickel, dime, or quarter.

What do you know about your coin?

You and a partner will work together to create a coin poster to show what you know about the coin and its value.

Provide students a sheet of drawing paper.

Students fold the drawing paper into fourths.

In each section, have pairs of students work together to show what they know about their coin:

Front of coin picture (What do you see?)	Name and value of coin
Show it in pennies	Back of coin picture (What do you see?)

Display posters in the classroom and have students share their completed poster with the rest of the class.

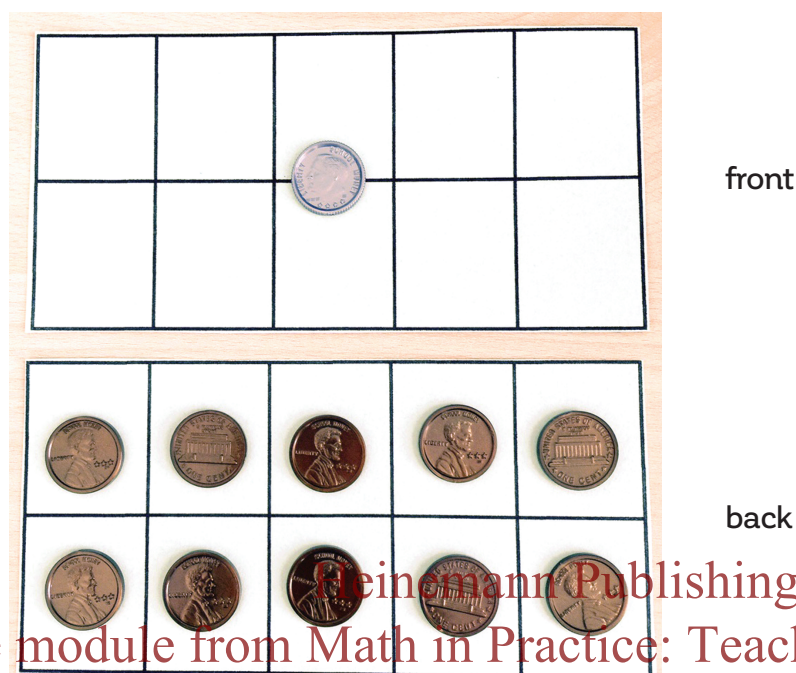
Additional Ideas for Support and Practice

The following ideas extend students' understanding of the value of coins and provide meaningful practice.

COIN FRAMES SHOW IT!

Students create models on familiar number frames to show the value of coins.

Have students work with partners or small groups to tape coins or attach coin stickers or paper coins to a one frame, five frame, ten frame, and twenty-five frame to show each coin's value. For the nickel, dime, and quarter, having them glue pennies on the back of the frame to show the value of the coin in cents reinforces each coin's value.



Students use these models to discuss questions such as:

Which coin has the greatest value?

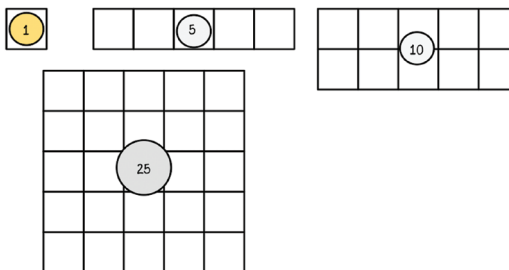
How many fewer cents is a penny than a nickel?

How many more cents is a dime than a nickel?

Posting a model of each coin in the classroom allows students to refer back to the models as needed.

Differentiation

Students who struggle to remember the values of coins benefit from making these representations and referring to them as they count collections of like coins.

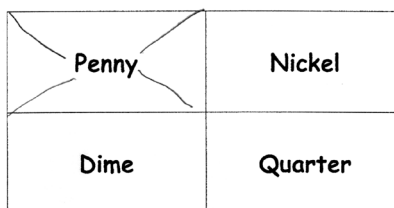


ELIMINATE IT 🤔💡

Students use their understanding of coins to discuss and decide which item does not belong in the set.

Put one coin in each quadrant of a rectangle and have students choose one coin that they think should be eliminated. Students need to defend their choice using reasoning about coin attributes or values and could choose any of the coins as long as their reasoning defends their choice.

Eliminate It



Which one would you eliminate?

Explain your choice using reasoning.

it's made of copper

This student eliminates the penny and explains his choice with, "It's made of copper." A next teaching point for this student may be to use mathematical language to also describe the rest of choices and how they are different. For example, the student may say that the nickel, dime, and quarter are all silver.

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MONEY MATCHING

Students sort coins into categories that match the value of the coins.

Materials: four-column chart labeled 1¢, 5¢, 10¢, 25¢; set of at least eight coin cards with a picture of a coin on each card (include front view of penny, back view of penny, front view of nickel, back view of nickel, front view of dime, back view of dime, front view of quarter, back view of quarter)

Coin cards can be made using coin stamps, stickers, or realistic coin clip art.

The student shuffles coin cards and picks a card.

The student places the card in the column that matches its value.

Play continues until all cards have been used.

MONEY WALLET

Students make a construction paper wallet with pictures of coins, labels, and values glued inside.

Materials: half sheet of construction paper, glue stick, crayons, pictures of coins

Have students fold the construction paper into thirds.

In the first third, have students glue a picture of a penny (and color it).

Have students label its name, and its value.

Students will repeat with nickels and dimes.

They fold the paper back into thirds like a wallet.

Students use crayons to design the front of the wallet.

COUNTING LIKE COINS

Students use counting patterns to count sets of like coins (pennies, nickels, and dimes). These hands-on lesson ideas and activities allow students to review counting patterns, connect them with counting coins, and explore different ways to use coins to make the same value.

Predict and Count

Students practice counting patterns that help them count sets of like coins.

Gather students in a circle and practice counting by ones, fives, and tens.

Stand behind one student to indicate who will begin the counting pattern.

We will start here and count by tens.

Who do you think will say the number 100? Why?

See Module 8 for more instructional ideas related to counting patterns.

Count around the circle and check the prediction.

We will start here and count by fives.

What number do you think ____ will say? Why?

Count around the circle and check the prediction.

Counting pennies and dimes will be easiest for students because of their experiences with skip counting in kindergarten.

It may be helpful for some students to see a dime attached to a ten frame, as in the Coin Frames activity on page 271, to help them connect the coin with its value.

Counting Pennies and Dimes

Students use counting patterns to count sets of pennies and sets of dimes, and then explain their strategies for counting a set of dimes.

Review counting pennies by ones.

What would our counting sound like if we had 3 pennies? Why?

Show a dime.

What is the value of a dime?

Show 3 dimes.

What if we had 3 dimes?

How could we use a counting pattern to count the value of 3 dimes?

Count by tens as you touch and slide each dime.

What is the value of 3 dimes?

Repeat with 5 dimes, 8 dimes, and 10 dimes.

Provide pairs with individual dry erase boards and markers (or drawing paper).

Turn and talk to a partner. How would you tell a friend how to find out the value of 7 dimes?

After you talk about it, explain it with a sentence and a picture.

Counting Nickels

SHOW IT

Students use counting patterns to count sets of nickels, and then explain their strategies for counting a set of nickels.

Show a nickel and 5 pennies.

Show a five frame to go with the nickel and another to go with 5 pennies.

Why can we use a five frame to show both a nickel and 5 pennies?

How could using five frames help us count nickels?

Show 2 nickels.

How could we represent the value of 2 nickels with five frames?

Count by fives touching a five frame for each nickel.

Provide each pair with a hundred chart and 20 nickels.

Let's count 2 nickels and keep track of the numbers we say on our hundred chart.

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One partner can lay the nickel on the number and the other partner can color it yellow so we know what numbers we've said.

Count 3 nickels together by fives on a hundred chart and color every fifth number yellow.

Turn and talk to your partner.

What do you notice?

Count 4 nickels, 5 nickels, 6 nickels.

Did the pattern you noticed continue?

Work with your partner to explain to a friend what you know about counting nickels. Write a sentence and draw a picture to explain your thinking.

Thinking Through a Lesson

SMP3, SMP4, SMP5, SMP7

What Is in the Purse?

Students will work with sets of like coins to gain insights about showing a money value in a variety of ways.

Show a picture of a coin purse.

My friend told me she had 20 cents in her coin purse.

She said that all of her coins were the same.

I wonder what coins she had in her coin purse?

Show a collection of pennies.

Have students discuss the following with partners.

Let's see, what if her coins were all pennies?

What would she have had in her coin purse?

How do you know?

How could we show her pennies in a picture?

Show a collection of dimes.

What if she had dimes?

How many dimes would make 20 cents?

How can you prove you are right? Would a hundred chart help you?

How could we show the dimes in a picture?

Start the lesson by engaging students in a problem that has an open-ended context.

By starting with pennies, you are starting with the most familiar way to access a solution. You are modeling an entry point for an open-ended task.

Students can show each solution with a simple picture, such as a circle for each coin with the value of the coin written in the center.

We want to encourage students to connect their understanding of place value to showing money values with dimes. The hundred chart reinforces this connection.

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Show a collection of nickels.

I wonder what her coins would look like if they were nickels.

What do you think 20 cents would look like with all nickels?

How could we show her nickels in a picture?

Give student pairs of coins (pennies, nickels, dimes) to make the same amount of money using a different set of like coins and draw their way on paper. Coins can be represented by writing the value inside a circle.

Some students may benefit from having access to a hundred chart to keep track of counting by fives to 20.

How could you use your dimes to show 30 cents?

How could you use your nickels to show 30 cents a different way?

How could you use your pennies to show 30 cents a different way?

Differentiation

While some pairs investigate ways to make 30 cents, others could explore ways to make 50 cents or 80 cents. Some students may be ready to work with counting unlike coins. You may want to observe and take notes during this part of the lesson for formative assessment purposes.

Are students accurately counting pennies, nickels, and dimes?
Are students accurately using different sets of coins to make the same value?
Are students applying their understanding of place value as they work with dimes?

FORMATIVE ASSESSMENT

Give students problems to solve and observe their strategies:

Aly has 6 nickels. How much money does she have? Show your thinking.

Andy has 4 dimes. How much money does he have? Show your thinking.

Listen for any skip counting errors or errors in identifying the value of the coins being counted. If students make skip counting errors, provide a hundred chart that students can use to record and keep track of counting patterns.

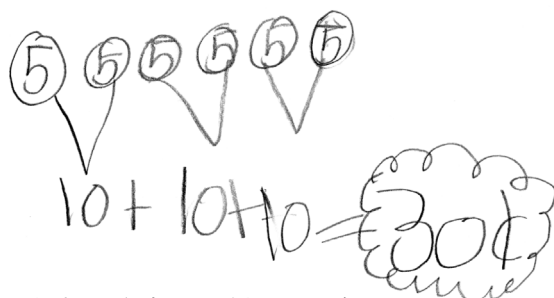
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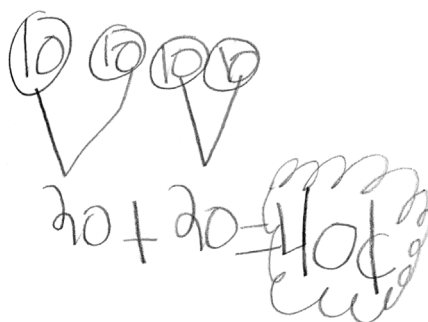
Aly has 6 nickels. How much money does she have?

Show your thinking.



Andy has 4 dimes. How much money does he have?

Show your thinking.



This student not only demonstrates a strong understanding of coin values but also applies fact strategies with partial sums to combine the numbers efficiently.

Additional Ideas for Support and Practice

The following ideas extend students' skills at counting like coins and provide meaningful practice.

RACE TO A DOLLAR (DIMS AND PENNIES)

Students play a partner game to practice counting dimes and pennies, trading 10 pennies for a dime whenever possible.

Materials: number cube, dimes, pennies, ten frames, hundred chart

Pairs of students play this partner game.

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Differentiation

Use a fifty chart for students who need extra support. For those who need a challenge, have them use nickels and trade 5 pennies for a nickel, 2 nickels for a dime, and so on.

Player A rolls the number cube and places that many pennies on his ten frame.

Then Player B does the same on her ten frame.

Play continues until a ten frame is full. When that happens, 10 pennies are traded for 1 dime, which is placed on 10 on the hundred chart.

Play continues in this way until the next ten frame is full. 10 pennies are traded for a dime, which is placed on 20 on the hundred chart.

Players take turns until someone places a dime on 100 and wins the game.

SPINNING FOR COINS

Students use a spinner and a number cube to play a game to practice counting sets of pennies, nickels, and dimes.

Students spin a coin spinner (with penny, nickel, dime).

Students roll a number cube to see how many of that coin they get.

Students take the number of the coin they spun (e.g., 3 dimes) and count to find the total amount of money they have.

Students record a picture of their coins and write the total amount of money.

Then, they spin again.

WHO HAS MORE CENTS?

Student pairs use a spinner and a number cube to each make a collection of coins, counting the value, and comparing each other's values.

Player A spins a coin spinner and rolls a number cube to tell how many of that coin she gets.

Player A shows the coins and counts the total amount of money she has.

Player B takes a turn.

Then, players compare the values of their coin sets to see who has more money (e.g., Player A has 5 pennies or 5 cents and Player B has 3 dimes or 30 cents).

Players talk together to decide who has more money.

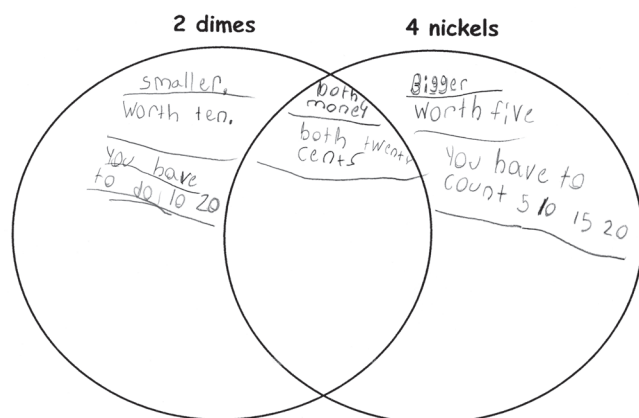
Then, players spin and play again.

COIN SETS ON A VENN DIAGRAM

Students compare two sets of coins using a Venn diagram, applying what they have learned about coin features, coin values, and counting sets of like coins.

Give pairs of students two sets of coins such as 2 dimes and 4 nickels.

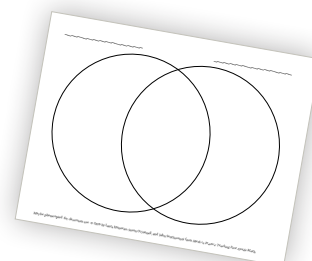
Pairs examine the coin sets and values looking for similarities and differences and record their findings on a Venn diagram to share.



This student compares 2 dimes with 4 nickels on a Venn diagram. The student explains, "Both (are) money and both (are) twenty cents." The student explains that 2 dimes are "smaller, worth ten" and "you have to do 10, 20." When describing 4 nickels, the student explains they are "bigger, worth five" and "you have to count 5, 10, 15, 20."

Differentiation

Some students may need to start with a simpler set, such as 2 nickels and 1 dime. For a challenge, give students three sets and have them use a triple Venn diagram to compare.



TALK ABOUT IT/WRITE ABOUT IT 🗣️✍️

Ruth has 3 dimes and Shawn has 4 nickels. Who has more money? Explain.

MYSTERY MONEY

Students use clues about coin features and values to figure out a mystery set of like coins.

Share with the class that you have a mystery amount of money and you will provide clues to help them figure out what your coins are.

I have two of the same coins.

Both are silver and both have ridged edges.

The total value of my two coins is 20 cents.

Repeat several times using a variety of like coin sets and numbers of coins in the set.

Doing this once a day could become a favorite activity for those five-minute chunks of time that often occur between activities.

MAKE IT THREE WAYS

Students use pennies, nickels, and dimes to find three different ways to show the same value.

Students work in pairs for this activity.

Each student gets an index card and writes a money amount that has a 0 in the ones place (10 cents, 20 cents, etc.).

Students exchange index cards with their partner and use pennies, nickels, and dimes to find three ways to make the amount of money on the card.

Students record their three ways on plain paper through drawings, coin stamps, or coin stickers.

Make it 3 Ways!

Show 3 different ways to make the same amount of money.

Amount	1 st Way	2 nd Way	3 rd Way
30 cents			
50 cents			

To show 50 cents, this student uses 5 dimes, 2 quarters, and 10 nickels. Because he demonstrates understanding of coin values, skip counting, and showing the same value in different ways, he may be ready for an extension, to work with counting sets of unlike coins.

PROBLEM SOLVING WITH COINS

Have students work with partners to solve coin problems.

Students use coins to show each problem and then work with partners to solve it.

- Ezariah had 3 nickels. He found 2 more. How much money did he have?
- Keisha had 4 dimes and Molly had 3 dimes. How much money did they have together?
- Maria had 5 dimes in her pocket. She spent 1 dime to buy candy. How much money does Maria have left?
- Liam had 6 nickels and he lost 1. How much money did he have left?

Students can use coins and put 3 nickels and 2 nickels together and then skip count to find the total.

For enrichment, challenge students with comparison problems:

Riley had 3 dimes and Trinity had 4 nickels. Who had more money? Justify.

Abby had 4 dimes and Alex had 6 nickels. Who had more money? Justify.

FOCUS ON THE QUESTION

Post data and ask a different question each day.

Snack Shack Menu	
Hot dog	80 cents
Chips	20 cents
Lemonade	40 cents
Ice cream	50 cents

1. How many dimes would I need to be able to buy a hot dog? Tell how you would solve it.
2. I have 4 nickels. What could I buy at the snack shack? Tell how you would solve it.
3. I have 9 dimes. What two snacks could I buy today? Tell how you would solve it.
4. I have 8 nickels. How many more nickels do I need to buy an ice cream? Tell how you would solve it.
5. I have dimes, nickels, and pennies in my coin purse. What are two different ways I could pay for a cup of lemonade? Tell how you would solve it.

LITERATURE CONNECTIONS

For additional opportunities to discuss coins, values, and counting coins, see the following:

- *Benny's Pennies* by Pat Brisson
- *Berenstain Bears Trouble with Money* by Stan and Jan Berenstain
- *Bunny Money* by Rosemary Wells
- *A Chair for My Mother* by Vera B. Williams
- *Jelly Beans for Sale* by Bruce McMillan
- *Monster Money* by Grace Maccarone
- *26 Letters and 99 Cents* by Tana Hoban

Vocabulary

¢	nickel
cents	penny
dime	quarter
money	value

General Resources

100 Chart
Additional Problems
Coin Spinner
Five Frame Mats
Ten Frame Mats

ONLINE RESOURCES

Resources for Specific Activities

50 Charts
Eliminate It Activity Sheet
Formative Assessment:
Problem Solving with
Nickels and Dimes
Hidden Coins Game
Make It Three Ways Activity
Sheet
Nickels and Dimes Venn
Diagram
Venn Diagram (blank)

These resources are
available at 