

Grade Band: 3-5

Lesson Length: Approximately 2 days

NCTM Standard and Expectation

Number and Operations

1. Understand numbers, ways of representing numbers, relationships among numbers, and number systems.

Learning Objectives

1. The student will identify various ways to represent the same dollar amount using coins.
2. The student will pay for items using coins of various denominations and in multiple combinations to arrive at the same total amount.
3. The student will propose purchase options given an allotted amount of money (budget) to make those purchases.

Connection to Bloom's Taxonomy

- ✓ Comprehension
- ✓ Application
- ✓ Analysis
- ✓ Synthesis

RG's Literary Connection



The Case of the Shrunken Allowance by Joanne Rocklin and Marilyn Burns is an excellent story that introduces the reader to the basic concepts of money. The story is about a young boy named P. B., who as you would expect, loves peanut butter sandwiches. P.B. can not understand why the money he is saving in a jar continues to go down. Mike and Maria, two of P.B.'s friends plan a stake out to catch the person stealing from the money jar. They eventually catch Jill, P.B.'s sister making change with the money in the jar. This is a well written book that includes a section of lesson activities, and makes a nice addition to any classroom book library.

Word Origin by Hannie



Coin is from the Latin word *cuneus* which means “a wedge” In the late 1300’s a wedge-shaped die was used to stamp metal and the word coin became associated with “things that were stamped” or more familiar “a piece of money.” A die is a device used for stamping materials such as metals. A coin became known as any flat, circular piece of metal that was used as money.

Vocabulary Words



1. Currency – coins, paper money, or anything used as a medium of exchange
2. Coins – form of money usually made of metal and in a flat, rounded shape
3. Denomination – the face value of money
4. Budget – a plan for saving or spending money

Learning Model Component

- ✓ Making Connections
- ✓ Exploring and Learning
- ✓ Extended Learning and Practice
- ✓ Assessment
- ✓ Closure

Teaching Strategies

- ✓ Brainstorming
- ✓ Guided Practice
- ✓ Paired Learning
- ✓ Active Learning

Materials List

- ✓ Geddes Kit List
- ✓ Paying with Coins-Guided Practice
- ✓ Paying with Coins – Sample Key
- ✓ Kindergarten Customers Worksheet
- ✓ Kindergarten Customers - Sample Key
- ✓ Assessment of Student Progress
- ✓ Item cards created from Geddes Kit List
- ✓ Dice
- ✓ Bags of Coins (real or play money) for each team consisting of at least 12 quarters, 10 dimes, 10 nickels, and 10 pennies
- ✓ Pencils
- ✓ Calculator
- ✓ Index Cards
- ✓ Crayons or colored pencils

Paying with Coins

Making Connections

Start this lesson by asking how many students receive a weekly allowance. Next, ask how they are usually paid – in one dollar bills, coins, or a combination of both. Students are most likely paid with whatever their parents might have handy. Explain that it does not matter how they receive their allowance, as long as the total is the same. The same is true when purchasing an item from a school store. Have students consider the following:

- Does it matter if you receive a \$3.00 allowance as three \$1.00 bills, or as a \$1.00 bill and eight quarters?
- Would a storekeeper mind if you paid for a \$5.00 book with five \$1.00 bills rather than a single \$5.00 bill?

Explain that when making purchases as a customer or giving back change to a customer, we often have to work with the money that is available. Your lunch money may consist of coins and/or paper bills in certain denominations. The cash register in the cafeteria or school store may have a limited number of coins and paper money available for making change. Fortunately, our government currency provides numerous ways of coming up with the same total amount of money. This would be a good time to discuss *Word Origins* by Hannie and review the vocabulary words used in this lesson.

Ask students to think about situations where coins are used in different combinations in order to pay for an item or service. Have students brainstorm a list of responses. Some possibilities may include:

- To purchase beverages in a vending machine
- To pay for parking using a meter
- To leave a tip for a restaurant server
- To buy a pencil from the school store
- To make small purchases at a store for gum, candy or soda
- To buy a newspaper out of a box
- To pay for your school lunch
- To make a phone call at a pay phone
- To ride public transportation (bus or subway)
- To buy a stamp out of a machine

Exploring and Learning

1. Explain to students that the United States monetary system offers various denominations or face values for coins and bills. For example, U.S. coins come in the following denominations: cent, nickel, dime, quarter, half-dollar, and dollar. Currently, U.S. paper currency is produced in the following denominations: \$1, \$2, \$5, \$10, \$20, \$50, and \$100 bills.
2. Ask students to complete the following: How many different ways can you represent the value of \$1.00 using coins only? There will be many variations to achieve the same answer. Brainstorm and record student responses on the board. The idea is to get students thinking about the fact that there are many ways of making change. The following is a sample of possible combinations:
 - 4 quarters
 - 3 quarters, 2 dimes, and 1 nickel
 - 2 quarters and 5 dimes
 - 2 quarters, 4 dimes, and 2 nickels
 - 2 quarters, 3 dimes, and 4 nickels
 - 1 quarter, 7 dimes, 1 nickel
 - 1 quarter, 7 dimes, 5 pennies
3. Provide students with practice paying for school store items using coins of various denominations and in multiple combinations to arrive at the same amount. To complete the activity, pair students together and provide each group with the following:
 - Item cards - To create the 20 item cards, use index cards and the Geddes Kit List. Each item card will have a school store item and its corresponding retail price. For example, one card will state "Retro Pencil \$.20 each". Repeat this for all 20 items on the Geddes Kit List.
 - Paying with Coins-Guided Practice
 - Die
 - Bag of coins
 - Pencils
 - Calculator
4. Guide students on the board or with an overhead transparency through the following example:

The most expensive item on the Geddes Kit List is the 6- Color Pen with a retail price of 75 cents. Assume the number six is rolled on the die. Determine the total cost of six 6-Color Pens times the number 6 from the die.

Next, using coins only, what are two ways a school store customer could pay for the six pens?

Answer: *The total cost of the six 6- Color Pens is \$4.50 (6 x .75). A school store customer could pay using*

18 quarters = \$4.50

10 quarters + 20 dimes = \$4.50

5. Using the Paying with Coins-Guided Practice as a transparency guide students through another example using the following instructions:
 - Draw an item card (note: remove the 6-Color Pen item card since this was used as the in-class example).
 - Roll the die.
 - Calculate the total purchase price by multiplying the item card's retail price by the quantity rolled on the die.
 - Provide two options for school customers to pay for their purchases using coins only.
 - Record results and answers on the Paying with Coins Worksheet transparency.
6. Review several options as a class. Refer to Paying with Coins– Sample Key for examples.
7. Present students with the following scenario:



RG and Hannie are working at the Raymond Geddes Elementary School Store. The kindergarten class is scheduled to visit the store today. RG and Hannie will need to help the younger students make purchases. Can you help RG and Hannie determine what the kindergarten customers can buy based on how much money they bring to the store? Remember, the kindergarten customers have a limited amount of money and must stay within their individual budgets.

8. To help complete the scenario pair students together and provide each group with a copy of Kindergarten Customers Worksheet, bag of coins, and a copy Geddes Kit List. Explain and list on the board or as a transparency the following instructions:
 - Randomly pull five coins from a bag of coins and list them on your worksheet.
 - Find the sum of the five coins.
 - What can the kindergarten customers purchase from the school store with their six coins? Select items from the Geddes Kit List.
 - Encourage students to spend as much as possible using the six coins.
 - Ask students to offer two purchase options to the kindergarten customers and list them on the Kindergarten Customers Worksheet.
9. As a class, review some of the results. Use the Kindergarten Customers - Sample Key for sample answers. How well did students advise the kindergarten customers and stay within budget? Discuss how useful it is to come up with various combinations when using coins to make a purchase or to make change. There are endless combinations to making change work for the same value amount of money!

Extended Learning and Practice

1. As a community service project, begin a coin collecting fund raiser effort with your class by starting your own school store. Operating a school store is an excellent opportunity for inquiry based/hands-on learning that is both fun and rewarding. A school store will allow opportunity for raising money, provides a service to students, and creates an atmosphere of responsibility while building valuable team working skills. Identify an organization that would benefit from the class fundraiser. Some possible organizations include the following:
 - Habitat for Humanity's "Making Change for Katrina"
(<http://www.makingchangeforkatrina.org/>).
 - March of Dimes Coin Collection Centers
(<http://www.marchofdimes.com/pad/centers.asp>)
 - Coinstar's "Coins that Count Donation Program"
<http://www.coinstar.com/us/html/A2>

Open up your own school store using the Geddes School Store Kit and a copy of the *School Store: An Operating Manual*. Create an instant real life business in your classroom by using the merchandise in the Geddes Kit and following the school store operations manual.

2. Visit the United States Department of the Treasury Learning Vault - <http://www.ustreas.gov/education/>. The teacher link offers a variety of activities, resources, and projects.
3. Ask students to use the Internet to identify the term for the study of money. (numismatics). Have children visit the United States Mint H.I.P. Pocket Change website - <http://www.usmint.gov/kids/games/>. The "Camp Coin" link has information about collecting coins as a hobby.

Assessment

The lesson objectives can be assessed by evaluating the Paying with Coins – Guided Practice and the Kindergarten Customers Worksheet with the Paying with Coins Sample Key and the Kindergarten Customers Sample Key. Use the Assessment of Student Progress to assess students' overall abilities to meet the lessons learning objectives which include using coins of various denominations and in multiple combinations to arrive at the same amount and making purchases within a budget.

Closure

Provide each student with an index card and have them answer the following questions on one side of the index card:

1. Describe two new things that you have learned.
2. What else would you like to learn about this topic?

On the back side of the index card, instruct the students to draw a picture of something they learned about during this lesson. The index cards can be whole punched and held together with a simple shower curtain ring



Paying with Coins Geddes Kit List

	Item Name	RG Item #	Retail Price
1	Retro Pencils	67176	.20
2	Pet Silhouettes Pencils	67175	.20
3	Astral Wonders Pencils	67124	.20
4	Munchin Mike Sharpener	67183	.50
5	Piranha Sharpener	67037	.50
6	Mouse Sharpener	65627	.50
7	Erasing Grip	67137	.35
8	Criss Cross Critters	67036	.14
9	Happy Cap Erasers	64259	.05
10	Dessert Erasers	66993	.15
11	Twister Erasers	67027	.35
12	Mini Fish Erasers	67099	.50
13	G Mechanical Pencils	67039	.35
14	Traction Mechanical Pencils	67013	.35
15	Cushion Click Mechanical Pencils	66315	.35
16	.7mm Value Lead	61152	.40
17	Study Buddy Inferno	66967	.50
18	6-Color Pens	66685	.75
19	Bracelet Pens	65581	.40
20	Twister Pens	66921	.35



Paying with Coins Guided Practice

1. **Item Card Drawn:** _____ **Item Retail Price:** \$ _____
Quantity Rolled: _____ **Total Purchase Price:** \$ _____

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Option #2

Qty x Value = Amount

Qty x Value = Amount

Quarters ___ x \$.25 = \$ _____
Dimes ___ x \$.10 = \$ _____
Nickels ___ x \$.05 = \$ _____
Pennies ___ x \$.01 = \$ _____

Quarters ___ x \$.25 = \$ _____
Dimes ___ x \$.10 = \$ _____
Nickels ___ x \$.05 = \$ _____
Pennies ___ x \$.01 = \$ _____

Total Purchase Price = \$ _____

Total Purchase Price = \$ _____

2. **Item Card Drawn:** _____ **Item Retail Price:** \$ _____
Quantity Rolled: _____ **Total Purchase Price:** \$ _____

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Option #2

Qty x Value = Amount

Qty x Value = Amount

Quarters ___ x \$.25 = \$ _____
Dimes ___ x \$.10 = \$ _____
Nickels ___ x \$.05 = \$ _____
Pennies ___ x \$.01 = \$ _____

Quarters ___ x \$.25 = \$ _____
Dimes ___ x \$.10 = \$ _____
Nickels ___ x \$.05 = \$ _____
Pennies ___ x \$.01 = \$ _____

Total Purchase Price = \$ _____

Total Purchase Price = \$ _____



Paying with Coins Guided Practice

3. Item Card Drawn: _____ **Item Retail Price:** \$ _____
Quantity Rolled: _____ **Total Purchase Price:** \$ _____

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Option #2

Qty x Value = Amount

Qty x Value = Amount

Quarters ___ x \$.25 = ___
 Dimes ___ x \$.10 = ___
 Nickels ___ x \$.05 = ___
 Pennies ___ x \$.01 = ___

Quarters ___ x \$.25 = ___
 Dimes ___ x \$.10 = ___
 Nickels ___ x \$.05 = ___
 Pennies ___ x \$.01 = ___

Total Purchase Price = _____

Total Purchase Price = _____

4. Item Card Drawn: _____ **Item Retail Price:** \$ _____
Quantity Rolled: _____ **Total Purchase Price:** \$ _____

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Option #2

Qty x Value = Amount

Qty x Value = Amount

Quarters ___ x \$.25 = \$_____
 Dimes ___ x \$.10 = \$_____
 Nickels ___ x \$.05 = \$_____
 Pennies ___ x \$.01 = \$_____

Quarters ___ x \$.25 = \$_____
 Dimes ___ x \$.10 = \$_____
 Nickels ___ x \$.05 = \$_____
 Pennies ___ x \$.01 = \$_____

Total Purchase Price = \$_____

Total Purchase Price = \$_____

Paying with Coins

Sample Key

1. **Item Card Drawn:** Twister Eraser **Item Retail Price:** \$.35
Quantity Rolloed: 4 **Total Purchase Price:** \$1.40

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Option #2

Qty x Value = Amount

Qty x Value = Amount

Quarters 4 x \$.25 = \$1.00
Dimes 4 x \$.10 = \$.40
Nickels ___ x \$.05 = \$ ___
Pennies ___ x \$.01 = \$ ___

Quarters 2 x \$.25 = \$.50
Dimes 6 x \$.10 = \$.60
Nickels 5 x \$.05 = \$.25
Pennies 5 x \$.01 = \$.05

Total Purchase Price = \$1.40

Total Purchase Price = \$1.40

2. **Item Card Drawn:** Study Buddy Inferno **Item Retail Price:** \$.50
Quantity Rolloed: 2 **Total Purchase Price:** \$1.00

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Option #2

Qty x Value = Amount

Qty x Value = Amount

Quarters 2 x \$.25 = \$.50
Dimes 4 x \$.10 = \$.40
Nickels 1 x \$.05 = \$.05
Pennies 5 x \$.01 = \$.05

Quarters 3 x \$.25 = \$.75
Dimes 1 x \$.10 = \$.10
Nickels 2 x \$.05 = \$.10
Pennies 5 x \$.01 = \$.05

Total Purchase Price = \$1.00

Total Purchase Price = \$1.00

Paying with Coins Sample Key

3. **Item Card Drawn:** Dessert Eraser **Item Retail Price:** \$.15
Quantity Rolled: 3 **Total Purchase Price:** \$.45

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Qty x Value = Amount

Quarters	1	x	\$.25	=	\$.25
Dimes	2	x	\$.10	=	\$.20
Nickels	0	x	\$.05	=	\$ 0
Pennies	0	x	\$.01	=	\$ 0

Total Purchase Price = \$.45

Option #2

Qty x Value = Amount

Quarters	0	x	\$.25	=	\$0
Dimes	2	x	\$.10	=	\$.20
Nickels	4	x	\$.05	=	\$.20
Pennies	5	x	\$.01	=	\$.05

Total Purchase Price = \$.45

4. **Item Card Drawn:** Bracelet Pen **Item Retail Price:** \$.40
Quantity Rolled: 6 **Total Purchase Price:** \$2.40

Using coins only, show two ways a school store customer could pay for the total purchase price.

Option #1

Qty x Value = Amount

Quarters	6	x	\$.25	=	\$1.50
Dimes	4	x	\$.40	=	\$.40
Nickels	9	x	\$.05	=	\$.45
Pennies	5	x	\$.01	=	\$.05

Total Purchase Price = \$2.40

Option #2

Qty x Value = Amount

Quarters	7	x	\$.25	=	\$1.75
Dimes	5	x	\$.10	=	\$.50
Nickels	2	x	\$.05	=	\$.10
Pennies	5	x	\$.01	=	\$.05

Total Purchase Price = \$2.40



Paying with Coins Kindergarten Customers Worksheet

What can the kindergarten customers purchase from the school store with their six coins? Select items from the Geddes Kit List. Spend as much as possible using the six coins as a budget.

1. List six coins pulled:

	<u>Qty</u>	x	<u>Value</u>	=	<u>Amount</u>
Quarters =	_____	x	\$.25	=	\$_____
Dimes =	_____	x	\$.10	=	\$_____
Nickels =	_____	x	\$.05	=	\$_____
Pennies =	_____	x	\$.01	=	\$_____
Total Amount				=	\$_____

Offer 2 purchase options to the kindergarten customers:

Option #1:

<u>Items to Purchase</u>	Retail Price	x	Qty =	Total
_____	\$_____	x	____ =	\$_____
_____	\$_____	x	____ =	\$_____
_____	\$_____	x	____ =	\$_____
_____	\$_____	x	____ =	\$_____
Total Purchase				\$_____
How much change will customer get back?				\$_____

Option #2:

<u>Items to Purchase</u>	Retail Price	x	Qty =	Total
_____	\$_____	x	____ =	\$_____
_____	\$_____	x	____ =	\$_____
_____	\$_____	x	____ =	\$_____
_____	\$_____	x	____ =	\$_____
Total Purchase				\$_____
How much change will customer get back?				\$_____



Paying with Coins Kindergarten Customers Worksheet

2. List six coins pulled:

	<u>Qty</u>	x	<u>Value</u>	=	<u>Amount</u>
Quarters =	_____	x	\$.25	=	\$_____
Dimes =	_____	x	\$.10	=	\$_____
Nickels =	_____	x	\$.05	=	\$_____
Pennies =	_____	x	\$.01	=	\$_____
 Total Amount				=	\$_____

Offer 2 purchase options to the kindergarten customers:

Option #1:

<u>Items to Purchase</u>	<u>Retail Price</u>	x	<u>Qty</u>	=	<u>Total</u>
_____	\$_____	x	_____	=	\$_____
_____	\$_____	x	_____	=	\$_____
_____	\$_____	x	_____	=	\$_____
_____	\$_____	x	_____	=	\$_____
			Total Purchase		\$_____
			How much change will customer get back?		\$_____

Option #2:

<u>Items to Purchase</u>	<u>Retail Price</u>	x	<u>Qty</u>	=	<u>Total</u>
_____	\$_____	x	_____	=	\$_____
_____	\$_____	x	_____	=	\$_____
_____	\$_____	x	_____	=	\$_____
_____	\$_____	x	_____	=	\$_____
			Total Purchase		\$_____
			How much change will customer get back?		\$_____

Paying with Coins

Kindergarten Customers

Sample Key

What can the kindergarten customers purchase from the school store with the six coins? Select items from the Geddes Kit List. Spend as much as possible using the six coins as a budget.

1. List six coins pulled:

	<u>Qty</u>	x	<u>Value</u>	=	<u>Amount</u>	
Quarters =	2	x	\$.25	=	\$.50	
Dimes =	2	x	\$.10	=	\$.20	
Nickels =	1	x	\$.05	=	\$.05	
Pennies =	1	x	\$.01	=	\$.01	
Total Amount					=	\$.76

Offer 2 purchase options to the kindergarten customers:

Option #1:

<u>Items to Purchase</u>	<u>Retail Price</u>	x	<u>Qty</u>	=	<u>Total</u>
Munchin Mike Sharpener	\$.50	x	1	=	\$.50
Pet Silhouettes Pencil	\$.20	x	1	=	\$.20
Happy Cap Eraser	\$.05	x	1	=	\$.05
_____	\$_____	x	___	=	\$_____
Total Purchase					\$.75
How much change will customer get back?					\$.01

Option #2:

<u>Items to Purchase</u>	<u>Retail Price</u>	x	<u>Qty</u>	=	<u>Total</u>
Twister Eraser	\$.35	x	1	=	\$.35
Happy Cap Erasers	\$.05	x	2	=	\$.10
Dessert Erasers	\$.15	x	2	=	\$.30
_____	\$_____	x	___	=	\$_____
Total Purchase					\$.75
How much change will customer get back?					\$.01

Paying with Coins

Kindergarten Customers

Sample Key

2. List six coins pulled:

	<u>Qty</u>	x	<u>Value</u>	=	<u>Amount</u>
Quarters =	_3_	x	\$.25	=	\$.75
Dimes =	_1_	x	\$.10	=	\$.10
Nickels =	_1_	x	\$.05	=	\$.05
Pennies =	_1_	x	\$.01	=	\$.01
Total Amount				=	\$.91

Offer 2 purchase options to the kindergarten customers:

Option #1:

<u>Items to Purchase</u>	<u>Retail Price</u>	x	<u>Qty</u>	=	<u>Total</u>
Dessert Eraser	\$.15	x	3	=	\$.45
Astral Wonders Pencil	\$.20	x	2	=	\$.40
Happy Cap Eraser	\$.05	x	1	=	\$.05
_____	\$_____	x	___	=	\$_____
Total Purchase					\$.90
How much change will customer get back?					\$.01

Option #2:

<u>Items to Purchase</u>	<u>Retail Price</u>	x	<u>Qty</u>	=	<u>Total</u>
Piranha Sharpener	\$.50	x	1	=	\$.50
Retro Pencil	\$.20	x	1	=	\$.20
Dessert Eraser	\$.15	x	1	=	\$.15
_____	\$_____	x	___	=	\$_____
Total Purchase					\$.85
How much change will customer get back?					\$.06

Paying with Coins Assessment

Use the following summary to assess a student's abilities and performance throughout the lesson. Share this assessment with students at the start of the lesson so that students will understand how they will be assessed prior to beginning the Exploring and Learning section. The tool can be used as a basis for providing feedback to the student. Use the scale below to score each of the following items:

Making Connections:

_____ Student participates in discussion by offering answers to one or more of the questions asked by the teacher.

Exploring and Learning

_____ Student participates in discussion by identifying several ways to represent the value of \$1.00 using coins only.

_____ Student works with partner to calculate total purchase prices (based on retail prices and quantities), and to provide two options to pay for those items using coins only.

_____ Student works with partner to help customers purchase items given an allotted amount of money (budget) to make purchases.

_____ Each worksheet contains accurate calculations.

SCALE

4 – Excellent

Student completes the activity, task or assignment with no errors and demonstrates mastery of concepts and/or lesson objectives.

3 – Good

Student completes the activity, task, or assignment with few major errors and demonstrates an understanding of the concepts and/or lesson objectives.

2 – Fair

Student completes the activity, task, or assignment with some major errors and demonstrates difficulty with the concepts and lesson objectives.

1 – Poor

Student does not complete the activity, task, or assignment and demonstrates no understanding of the concepts and/or lesson objectives.