Calculating Sales Tax

Grade Band: 3-5

Lesson Length: Approximately 1 day

NCTM Standard and Expectation
Number and Operations
1. Understand meaning of operations and how they relate to one another.
2. Compute fluently and make reasonable estimates.

Learning Objectives
1. The student will understand and explain the role of state sales taxes.
2. The student will create a sales tax chart by calculating the sales tax amount and tax inclusive retail price for 20 school store items.
3. The student will calculate subtotals, sales tax amounts, and total purchase amounts for multi-item sales receipts.

Connection to Bloom's Taxonomy
- ✓ Comprehension
- ✓ Application
- ✓ Analysis
- ✓ Synthesis

RG's Literary Connection

Taxes, Taxes!: Where the Money Goes by Nancy Loewen is a narrative story about Ms. Colby's class and the meaning of taxes. The class learns some valuable facts about taxes when they receive a visit by Todd's mother who works for the IRS. She explains why taxes are needed and goes into detail about Uncle Sam and how our tax money is used. This short 24 page, well illustrated book is an excellent read aloud piece of literature that goes hand-in-hand with this math lesson.

Word Origin by Hannie

Tax is originally from the Old French language word *taxer* which means “impose a tax”. Also known in the 13th century as being from the Latin word *taxare,* which means “evaluate, estimate, assess, or value. Synonyms for the word tax include duty, impose, levy, and charge. The word tax also can mean a burden or an excessive demand. For example; *Hannie taxed her mother’s patience.* Have students create additional sentences using the word tax.

Clothing is a taxed item in Hannie’s home state.
After running the mile, Hannie was taxed.

Vocabulary Words

1. Tax – a required fee paid to the government to support the government.
2. Sales Tax - a state government tax charged for certain goods and services.
3. Revenue – income; income collected by the government through taxes.

Learning Model Component

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

Teaching Strategies

- ✓ Brainstorming
- ✓ Guided Practice
- ✓ Paired Learning

Materials List

- ✓ Sales receipts that include sales tax amounts
- ✓ Geddes Kit List
- ✓ Geddes Kit List Sales Tax Chart
- ✓ Geddes Kit List Sales Tax Chart – Sample Key
- ✓ Sales Receipt Worksheet
- ✓ Sales Receipt – Sample Key
- ✓ Assessment of Student Progress
- ✓ Pencils
- ✓ Calculators
- ✓ Index Cards
- ✓ Crayons or colored pencils

Calculating Sales Tax

Making Connections

Photocopy several store receipts to share with students. Receipts should not contain any personal information including such as credit card numbers, and items listed should be appropriate to share with students.

Pair students together and provide each pair with several photocopied receipts – one from a grocery store, one from a card shop, a clothing store, etc.... Ask students to look closely at the receipts, and ask them what type of information is included on the sales receipts? Create a list of student responses on the board. Some possible response may include the following information:

- Name of the store
- Address of the store
- Phone number of the store
- Store#
- Cashier# or name
- Date and time of transaction
- A list of items purchased
- Price of each item
- Subtotal
- Sales tax
- Total (including sales tax)
- Cash given
- Change received
- A tally of the number of items purchased
- Store director information
- Store hours
- Return policy

Discuss the fact that most of the information provided on a receipt is clear to understand – the date of purchase, the list of items purchased and prices for each, change received, and others. However, what does the term “sales tax” mean? Are any students able to explain the meaning of sales tax? Then have the students look at their receipts one more time. Ask if the receipts provide a percentage for the sales tax?

Explain to students that there is no nationwide sales tax in the United States. Each state determines if a sales tax exists and if certain items are exempt from the tax. In some states, there may be no sales tax on unprepared food, clothing, and prescription medications. The state of New Hampshire, for example, does not have a sales tax. As of January 1, 2007, state sales tax rates range from 0% to 7.25%. Refer to the Federation of Tax Administrators at http://www.taxadmin.org/fta/rate/sales.html for an up-to-date list of state sales tax rates. This would be a great time to read aloud the RG's Literary Connection for this lesson titled *Taxes, Taxes!: Where the Money Goes* by Nancy Loewen.

Exploring and Learning

1. Discuss with students the following basic points concerning taxes:
   - Taxes are collected at the federal (national), state, and local (city or town) levels.
   - Taxes are collected by the government to raise revenue (income) to provide services.
   - The police, fire, highway, and school departments are examples of public services provided by and paid with tax money.
   - A sales tax is one type of tax and is calculated and collected when people purchase items or receive certain services.

2. Explain that a sales tax is normally a percentage. It is calculated as a percentage of the price of a good or service and is added to the purchase price of those goods and services.

3. Provide students with the sales tax rate for your state or another state if a sales tax does not exist in your state. Refer to http://www.taxadmin.org/fta/rate/sales.html for an up-to-date list of state sales tax rates. If time allows, make a transparency of the State Sales Tax Rates from the site listed above. Discuss the difference between the states such as exemptions, and rate differential.

4. Next, demonstrate to students how to calculate the sales tax.
   - Identify the sales tax rate in your state.
     Ohio's State tax is 5.5 % which is .055
   - Multiply this percentage by the retail price of the item(s). This amount is the sales tax.
     .055 x cost of Twister Eraser .35 = .02
   - Add the sales tax to the retail price of the item(s) to determine the total price of the purchase.
     .02 = .35 = .37

5. If the sales tax is calculated and included in the price of an item, this is called tax inclusive pricing. The tax is already included in the price. If the sales tax is not included in the price, but is calculated at the end when all items are added, this is called tax exclusive.

6. In the United States, retailers in general use the tax exclusive approach and do not include the sales tax in the item's price. However, for a school store, an inclusive price might be easier for students and help to decrease calculation errors.

7. The Raymond Geddes School Store Operating Manual (http://www.raymondgeddes.com/about-school-stores.html) outlines some basic retail principles and states the following regarding the sales tax:

   "It is the responsibility of each school store to know and follow its state law regarding sales tax. Typically, states require a Retail Sales Tax License. Then taxes are collected on all sales and remitted to the state. Students can easily create a sales tax chart to avoid mistakes. The state will supply the necessary forms for remitting taxes. Contact your state comptroller's office for specific requirements."

8. Pair students together and ask students to work together to create a sales tax chart for the 20 items on the Geddes Kit List using the appropriate state tax rate. Instruct students to complete the Geddes Kit List Sales Tax Chart by calculating the sales tax amount for each item, and the new tax inclusive retail price for each item. Students should use calculators for this activity. This chart can be used if a customer purchases a single item only.

9. Use the Geddes Kit List Sales Tax Chart – Sample Key as a basis for review, assuming a 5% sales tax rate.

10. Explain that if a school store customer purchases several items, it is more accurate to calculate the sales tax on the total amount of the sale rather than at the individual item level. States may provide sales tax tables or the sales tax amount can be calculated. The state of Massachusetts, for example, provides a Massachusetts Sales/Use Tax Collection Schedule (refer to p. 35 of A Guide to Sales and Use Tax at http://www.mass.gov/Ador/docs/dor/Publ/PDFS/sales_use_07.pdf). The tables provide total sales ranges and the corresponding sales tax to charge. If a total purchase ranges between $1.10 - $1.29, the 5% sales tax is $.06. Therefore, a purchase of $1.15 must include the sales tax of $.06 for a total amount of $1.21.

11. Present students with the following scenario:

RG and Hannie are working at the Raymond Geddes Elementary School Store. Monica, Jack, Peter, Julia, and Marcus visited the school store during lunch and bought some items. Sniffer has asked RG and Hannie to calculate the sales tax for the five customers in order to complete their sales receipts. Can you help RG and Hannie calculate the purchase subtotal, the sales tax amount, and total purchase amount for each receipt?

12. To help complete the scenario, pair students together and provide each group with a Sales Receipt Worksheet. Explain and list on the board or as a transparency the following instructions:
    - Identify the appropriate sales tax rate percentage.
    - Convert the sales tax rate percentage to a decimal.
    - Compute the total prices for each item of the sales receipt by multiplying the quantity sold by the item's retail price.
    - Subtotal the items purchased.
    - Multiply the subtotal by the sales tax rate (as a decimal) to calculate the sales tax amount.
    - Add the sales tax amount to the subtotal to determine the total purchase amount.

13. Ask students the following question: What is the total amount to be reported to the state based on the five sales receipts? ($.91 based on a 5% sales tax rate)
14. As a class, review the five sales receipts. Use the Sales Receipt – Sample Key for sample answer. Did any team come up with the correct total sales tax amount to be reported to the state?

Extended Learning and Practice

1. Practice calculating sales tax amounts using various tax rates. Complete the RG Elementary School Store scenario using a different sales tax rate than the one used in class.
2. Using the Internet, look up "sales tax holiday". What is this event? Identify 5 states that offer a sales tax holiday. Refer to http://www.taxadmin.org/fta/rate/sales_holiday.html for the current 2007 listing.
3. Refer to The Internal Revenue Service's Understanding Taxes at http://www.irs.gov/app/understandingTaxes/jsp/s_student_home.jsp for on-line curriculum ideas and interactive programs.

Assessment

The lesson objectives can be assessed by evaluating the Sales Receipt Worksheet with the Sales Receipt Worksheet – Sample Key.

Use the Assessment of Student Progress to assess students' overall abilities to meet the lesson's learning objectives, which include understanding and explaining the role of state sales taxes; creating a sales tax chart; and calculating subtotals, sales tax amounts, and total purchase amounts for sales receipts.

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 hole punched and held together with a simple shower curtain ring

Calculating Sales Tax

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	.15
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

Calculating Sales Tax

Geddes Kit List
Sales Tax Chart

Use for single item purchases

State Sales Tax Rate: ___

Example for a 5% State Sales Tax

Retail Price x Tax Rate .20 x .05 = .01 is the tax rate
Retail Price + Tax Rate .20 + .01 = .21 is the inclusive retail price

	Item Name	RG Item #	Retail Price	Sales Tax Amount	Tax Inclusive Retail Price
1	Retro Pencils	67176	.20	.01	.21
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	.15		
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		

Calculating Sales Tax

Geddes Kit List
Sales Tax Chart – Sample Key

Use for single item purchases

State Sales Tax Rate: 5%

Example for a 5% State Sales Tax

Retail Price x Tax Rate .20 x .05 = .01 is the tax rate
Retail Price + Tax Rate .20 + .01 = .21 is the inclusive retail price

	Item Name	RG Item #	Retail Price	Sales Tax Amount	Tax Inclusive Retail Price
1	Retro Pencils	67176	.20	.01	.21
2	Pet Silhouettes Pencils	67175	.20	.01	.21
3	Astral Wonders Pencils	67124	.20	.01	.21
4	Munchin Mike Sharpener	67183	.50	.03	.53
5	Piranha Sharpener	67037	.50	.03	.53
6	Mouse Sharpener	65627	.50	.03	.53
7	Erasing Grip	67137	.35	.02	.37
8	Criss Cross Critters	67036	.15	.01	.16
9	Happy Cap Erasers	64259	.05	.00	.05
10	Dessert Erasers	66993	.15	.01	.16
11	Twister Erasers	67027	.35	.02	.37
12	Mini Fish Erasers	67099	.50	.03	.53
13	G Mechanical Pencils	67039	.35	.02	.37
14	Traction Mechanical Pencils	67013	.35	.02	.37
15	Cushion Click Mechanical Pencils	66315	.35	.02	.37
16	.7mm Value Lead	61152	.40	.02	.42
17	Study Buddy Inferno	66967	.50	.03	.53
18	6-Color Pens	66685	.75	.04	.79
19	Bracelet Pens	65581	.40	.02	.42
20	Twister Pens	66921	.35	.02	.37

Calculating Sales Tax

Sales Receipt Worksheet

Complete each sales receipt by calculating total prices for each item of the receipt, the subtotal amount, the sales tax amount, and the total purchase amount.

Sales Tax Rate: ____
Sales Tax Rate Converted to Decimal: ___

Receipt #1

Customer Name: Monica

Item Name	Retail Price	x	Quantity	=	Total Price
Retro Pencils	$.20		5		$
Piranha Sharpener	$.50		1		$
6-Color Pen	$.75		2		$
Dessert Eraser	$.15		2		$
					_____
				Subtotal	$
				Sales Tax Amount	$
					_____
				Total	$

Receipt #2

Customer Name: Jack

Item Name	Retail Price	x	Quantity	=	Total Price
Pet Silhouettes Pencil	$.20		4		$
Mouse Sharpener	$.50		3		$
Cushion Click Mechanical Pencil	$.35		1		$
Bracelet Pen	$.40		2		$
					_____
				Subtotal	$
				Sales Tax Amount	$
					_____
				Total	$

Calculating Sales Tax

Sales Receipt Worksheet

Complete each sales receipt by calculating total prices for each item of the receipt, the subtotal amount, the sales tax amount, and the total purchase amount.

Sales Tax Rate: ____
Sales Tax Rate Converted to Decimal: ___

Receipt #3

Customer Name: Peter

Item Name	Retail Price	x	Quantity	=	Total Price
Twister Pen	$.35		2		$
Mini Fish Eraser	$.50		1		$
Happy Cap Eraser	$.05		5		$
Erasing Grip	$.35		3		$
					_____
			Subtotal		$
			Sales Tax Amount		$
					_____
			Total		$

Receipt #4

Customer Name: Julia

Item Name	Retail Price	x	Quantity	=	Total Price
Twister Eraser	$.35		3		$
Astral Wonders Pencils	$.20		4		$
Criss Cross Critters	$.15		2		$
Traction Mechanical Pencil	$.35		2		$
Munchin Mike Sharpener	$.50		2		$
					_____
			Subtotal		$
			Sales Tax Amount		$
					_____
			Total		$

Calculating Sales Tax

Sales Receipt Worksheet

Complete each sales receipt by calculating total prices for each item of the receipt, the subtotal amount, the sales tax amount, and the total purchase amount.

Sales Tax Rate: _____
Sales Tax Rate Converted to Decimal: ___

Receipt #5
Customer Name: Marcus

Item Name	Retail Price	x	Quantity	=	Total Price
G Mechanical Pencil	$.35		4		$
.7mm Value Lead	$.40		2		$
Study Buddy Inferno	$.50		1		$
6-Color Pen	$.75		3		$
Happy Cap Eraser	$.05		2		$
					_____
			Subtotal		$
			Sales Tax Amount		$
					_____
			Total		$

Calculating Sales Tax

Sales Receipt Sample Key

Complete each sales receipt by calculating total prices for each item of the receipt, the subtotal amount, the sales tax amount, and the total purchase amount.

Sales Tax Rate: 5%
Sales Tax Rate Converted to Decimal: .05

Receipt #1
Customer Name: Monica

Item Name	Retail Price	x	Quantity	=	Total Price
Retro Pencils	$.20		5		$ 1.00
Piranha Sharpener	$.50		1		$ .50
6-Color Pen	$.75		2		$ 1.50
Dessert Eraser	$.15		2		$ .30
					_____
			Subtotal		$ 3.30
			Sales Tax Amount		$ .17
					_____
			Total		$ 3.47

Receipt #2
Customer Name: Jack

Item Name	Retail Price	x	Quantity	=	Total Price
Pet Silhouettes Pencil	$.20		4		$ .80
Mouse Sharpener	$.50		3		$ 1.50
Cushion Click Mechanical Pencil	$.35		1		$ .35
Bracelet Pen	$.40		2		$ .80
					_____
			Subtotal		$ 3.45
			Sales Tax Amount		$ .17
					_____
			Total		$ 3.62

Calculating Sales Tax

Sales Receipt Sample Key

Receipt #3
Customer Name: Peter

Item Name	Retail Price	x	Quantity	=	Total Price
Twister Pen	$.35		2		$ .70
Mini Fish Eraser	$.50		1		$ .50
Happy Cap Eraser	$.05		5		$ .25
Erasing Grip	$.35		3		$ 1.05
					_____
			Subtotal		$ 2.50
			Sales Tax Amount		$ .13
					_____
			Total		$ 2.63

Receipt #4
Customer Name: Julia

Item Name	Retail Price	x	Quantity	=	Total Price
Twister Eraser	$.35		3		$ 1.05
Astral Wonders Pencils	$.20		4		$ .80
Criss Cross Critters	$.15		2		$ .30
Traction Mechanical Pencil	$.35		2		$ .70
Munchin Mike Sharpener	$.50		2		$ 1.00
					_____
			Subtotal		$ 3.85
			Sales Tax Amount		$ .19
					_____
			Total		$ 4.04

Receipt #5
Customer Name: Marcus

Item Name	Retail Price	x	Quantity	=	Total Price
G Mechanical Pencil	$.35		4		$ 1.40
.7mm Value Lead	$.40		2		$ .80
Study Buddy Inferno	$.50		1		$ .50
6-Color Pen	$.75		3		$ 2.25
Happy Cap Eraser	$.05		2		$ .10
					_____
			Subtotal		$ 5.05
			Sales Tax Amount		$ .25
					_____
			Total		$ 5.30

Calculating Sales Tax

Assessment of Student Progress

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 works with partner to identify information listed on a sales receipt.
____ Student participates in discussion by offering answers to one or more of the questions asked by the teacher.

Exploring and Learning

____ Student works with partner to create a sales tax chart for single item purchases using the Geddes Kit List**.**
____ The Geddes Kit List Sales Chart contains accurate calculations.
____ Student works with partner to convert the sales tax rate percentage to a decimal, to compute the total prices for each item of the sales receipt, to subtotal the items, and to calculate the sales tax amount and total purchase amounts.
____ The Sales Receipt Worksheet contains accurate calculations.
____ Student participates in closing discussions by offering answers to one or more of the questions asked by the teacher.

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.