

Grade Band: 3-5

Lesson Length: Approximately 2 days

NCTM Standard and Expectation

Algebra

1. Use mathematical models to represent and understand quantitative relationships.

Data Analysis and Probability

1. Formulate questions that can be addressed with data and collect, organize, and display relevant data to answer them.

Learning Objectives

1. The student will understand and explain inventory and the importance of inventory tracking.
2. The student will calculate ending inventory for school store items using beginning inventory, sales, and order information.
3. The student will determine which items need to be re-ordered based on the store's inventory goals and policy.

Connection to Bloom's Taxonomy

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

RG's Literary Connection



A Fair Bear Share by Stuart J. Murphy is a delightful story about bears and is part of the *MathStart* book series for children. The story is fun for students and contains a complete math lesson that deals with counting, grouping, regrouping, and adding. The book also has an appendix with additional learning suggestions and activities that involve counting and grouping of items.

Word Origin by Hannie



Inventory is from the 1415 Middle French word *inventaire* meaning “detailed lists of goods,” which is from the Medieval Latin word *inventorium*, meaning “list of what is found,” which is from the Latin word *inventus* meaning “to find.” The word origin meanings all fit well with the current day use for the word which refers to itemized reports, records, and list that show quantity for various items.

Vocabulary Words



1. Inventory – a list of goods or materials in stock and available to be sold
2. Customer – someone who pays for goods and/or services

Learning Model Component

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

Teaching Strategies

- ✓ Brainstorming
- ✓ Guided Practice
- ✓ Paired Learning

Materials List

- ✓ Calculator
- ✓ Pencils
- ✓ Classroom Inventory
- ✓ School Store Sales
- ✓ School Store Sales – Key
- ✓ School Store Beginning Inventory
- ✓ School Store Orders
- ✓ School Store Ending Inventory Record: Friday Afternoon
- ✓ School Store Ending Inventory Record: Friday Afternoon – Key
- ✓ School Store Ending Inventory Record: Tuesday Afternoon
- ✓ School Store Ending Inventory Record: Tuesday Afternoon – Key
- ✓ Assessment of Student Progress
- ✓ Index Cards
- ✓ Crayons or colored pencils

Tracking Inventory

Making Connections

Ask students to define the word inventory. As a class, brainstorm some possible definitions for the word. Before you give the students the definition, discuss Hannie' s Word Origin and have the students make up their own working definition.

Next, ask if anyone has ever visited a store that was in the middle or about to start taking an inventory? Explain that stores often bring in extra employees to help count every item in the store. Sometimes you may see tags with numbers indicating store stock numbers and maybe even the number count for different items. Inventory is a list of goods, materials, or items that a store has in stock. In a store setting, this is a list of items that a shop has available to be sold.

It is important for store owners to know their inventory. As a class, brainstorm several reasons why tracking inventory is important. Some responses may include the following:

- To have the right items available when customers want them
- To track when items numbers are becoming low and need to be reordered
- To reduce expenses associated with holding onto items that do not sell and are not popular
- To understand what items people want or need and what items people are not interested in purchasing
- To plan for future purchases when stocking shelves
- To determine what items should be marked down in price for quicker sale and to free up shelf space for items in demand
- To have a good reputation as a store that always has items in stock

Explain to students that inventory can be tracked for many different items not just store items. Pair students together and ask them to conduct an inventory of the items in the classroom. Use Classroom Inventory as a transparency or worksheet to help guide students. Ask the students why it is important for a teacher to know the inventory of items in his or her classroom. Discuss that tracking classroom items may help the teacher determine if supplies are getting too low or if there are enough supplies for every student.

Exploring and Learning

1. **At Home Assignment:** Tracking inventory occurs all around us. Prior to starting this lesson in class, ask students to interview several family members about what types of items they keep track of at home. Students should explore what type of inventory tracking takes place within a home. They should also find out what family members track on a weekly, monthly, or even annual basis? Have student's record answers and be prepared to share those responses the next day.
2. As a class, have students share responses from the "At Home Assignment". Responses will vary and may include the following:
 - food in the refrigerator – cartons of milk, eggs, yogurts (shopping list for groceries)
 - paper goods - napkins, paper plates, paper cups, plastic spoons, toilet paper
 - dry goods – cereal, granola bars
 - clothing – socks, underwear, t-shirts
 - baby supplies - diapers, baby formula, wipes
 - cleaning products - soap, glass cleaner sponges
 - personal care products – cotton swabs, dental floss, toothpaste
 - first aid supplies – bandages, pain relievers, cold packs
 - gardening supplies – grass seed, fertilizer
 - collections – CDs, baseball cards, coins, DVDs, computer games
 - arts & crafts supplies – paper, crayons, markers, glue, scissors
 - office supplies – printer cartridges, pens, pencils, envelopes, stamps
3. Tracking inventory can be easy or quite complex. At home, family members generally keep track of items used and that need to be replaced by counting or estimating. For example, you may notice that there is only one roll of paper towels left on the shelf. If you are planning several cleaning projects – all the house windows and storm doors, the mirrors, the patio furniture, and the car, you will need to estimate how many additional rolls to purchase. You may choose to buy three rolls, which means you would have a total of four rolls. If you use two rolls on the cleaning project, there will still be two rolls on the shelf for additional use.
4. Explain to students that tracking inventory is an important part of operating a school store. Using the class computer, visit the Raymond Geddes website at <http://www.raymondgeddes.com/>. If a computer is not available use a Raymond Geddes catalog or any office supply store catalog or sales brochure.

As a class, browse through the website or catalog. Ask students to identify some general categories of products the company offers to school stores? Examples from the Raymond Geddes School store items may include the following:

- Geddes Exclusives (Planet Happy, Dr. Seuss, etc.)
 - Writing Supplies (pens, pencils, mechanical pencils, and leads)
 - School Supplies (bookmarks, calculators, erasers, pencil grips, sharpeners, stretch book covers, etc.)
 - Art Supplies (colored pencils, crayons, markers, scissors, glue, etc.)
 - Paper Supplies (folders, memo pads, paper & notebooks, project boards)
 - Toys and Gifts (candy, cell phone accessories, key chains, toys & games, wearables)
 - Holiday Supplies (Halloween, Christmas, Winter, etc.)
 - Carded Supplies (supplies packaged with cardboard to fill card racks or pegboards)
 - Clearance Deals, Weekly Specials, New School Supplies, Party Favors, etc.
5. Discuss the fact that even though a school store may seem like a small enterprise compared to a large department store, the level of inventory can be detailed. Review the following information with students:
- Items may be small and numerous and keeping track of those items is still as important as tracking the large items.
 - Part of running a school store is maintaining inventory control. Inventory control includes purchasing items, caring for or storing the items, and selling the items.
 - The goal of good inventory control is to ensure that there is an appropriate supply of items at all times – not too much and not too little.
 - Ending inventory is determined by subtracting sales (reduces inventory) and adding orders (increases inventory).

6. Present students with the following scenario:



RG and Hannie are working at the Raymond Geddes Elementary School Store. Sniffer has asked them to track inventory for the week. Can you help RG and Hannie determine the ending inventory amounts for the school store?

7. To help complete the scenario, pair students together and provide each group with the following:
- Calculator and pencils
 - School Store Sales
 - School Store Beginning Inventory
 - School Store Orders
 - School Store Ending Inventory Record: Friday Afternoon
8. The next activity can be completed together as a class by using guided practice to complete each step of the process. You may choose to do half the worksheet as class and the other half independently. Explain and guide students through the following instructions:
- On the School Store Sales total the weekly sales for each item listed.

Item 1 – Retro Pencils	1+4+6+5+4= 20
Item 2 - Pet Silhouettes Pencils	2+3+0+5+3=13
Item 3 - Astral Wonders Pencils	5+3+2+1+3 =14

- Use the numbers from School Store Beginning Inventory to fill in Column A on the School Store Ending Inventory Record: Friday Afternoon.

Beginning Inventory on Monday
Retro Pencils = 20
Pet Silhouettes Pencils = 20
Astral Wonders Pencils = 35



If your class has access to a school store, have students list and count actual items in your store on a given day.

- Next, complete Column B on the School Store Ending Inventory Record: Friday Afternoon by filling in with the numbers you totaled in step 1 on the School Store Sales worksheet.

Column B = Total sales for the week

Retro Pencils = 20

Pet Silhouettes Pencils = 13

Astral Wonders Pencils = 14

- Complete Column C on the School Store Ending Inventory Record: Friday Afternoon by filling in the number from the School Store Orders column titles Total Items. Explain that the total items number is the number of items originally order from Raymond Geddes.

Column C = School Store Orders

Retro Pencils = 72

Pet Silhouettes Pencils = 72

Astral Wonders Pencils = 72

- Calculate the ending inventory totals for each item listed on the School Store Ending Inventory Record: Friday Afternoon. Subtract total sales from the beginning inventory and then add any school store orders that arrived during the week.

Retro Pencils $20 - 20 = 0 + 72 = 72$

Pet Silhouettes Pencils $20 - 13 = 7 + 72 = 79$

Astral Wonders Pencils $35 - 14 = 21 + 72 = 93$

9. Answer the following questions using your completed School Store Ending Inventory Record: Friday Afternoon:
- Which item sold the most this week? (Mini Fish Erasers)
 - Which item sold the least this week? (Twister Pens)
 - The school store has set an inventory policy to have a quantity of at least 25 for each item in stock. Using the Friday afternoon ending inventory figures, which items will Sniffer need to re-order? (Criss Cross Critters, Traction Mechanical Pencils, .7mm Value Lead, Study Buddy Inferno, 6-Color Pens, and Twister Pens)
10. Review the School Store Ending Inventory Record: Friday Afternoon as a class. Use the School Store Sales – Key and School Store Ending Inventory Record: Friday Afternoon – Key for answers.

Extended Learning and Practice

1. Challenge: Sniffer would like an ending inventory report for Tuesday. Complete an ending inventory record which shows beginning inventory, sales through Tuesday, orders received on Tuesday (pencils and erasers only), and ending inventory. Include all information and calculations on the School Store Ending Inventory Record: Tuesday afternoon. Use the School Store Ending Inventory Record: Tuesday Afternoon – Key for answers.
2. Have students read the book *Dan's Pants: The Adventures of Dan, the Fabric Man* by Merle Good in order to better understand the concept of "Supply and Demand". This is an excellent example of customers buying a product that is becoming increasingly popular and causes the demand to go up. Visit http://www.kidseconbooks.com/html/dan_s_pants.html for a lesson summary and comprehension questions that go along with this particular literature connection.

Assessment

The lesson objectives can be assessed by evaluating the School Store Sales and School Store Ending Inventory Record: Friday Afternoon with School Store Sales – Key and School Store Ending Inventory Record: Friday Afternoon - Key.

Use the Assessment of Student Progress to assess students' overall abilities to meet the lesson's learning objectives, which include understanding and explaining inventory and the importance of inventory tracking; calculating ending inventory for school store items using beginning inventory, sales, and order information; and determining which items need to be re-ordered based on the store's inventory goals and policy.

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.



**Tracking
Inventory
Classroom Inventory**

Item	Count
Desks	
Chairs	
Hard cover books	
Soft cover books	
Computers	
Waste paper baskets	
Pencil sharpeners	
Maps	
Board Erasers	



Tracking Inventory School Store Sales

	Item Name	RG Item #	Mon. Sales	Tues. Sales	Wed. Sales	Thurs. Sales	Fri. Sales	Total Sales
1	Retro Pencils	67176	1	4	6	5	4	
2	Pet Silhouettes Pencils	67175	2	3	0	5	3	
3	Astral Wonders Pencils	67124	5	3	2	1	3	
4	Munchin Mike Sharpener	67183	5	10	4	8	6	
5	Piranha Sharpener	67037	10	5	6	4	5	
6	Mouse Sharpener	65627	4	3	4	3	0	
7	Erasing Grip	67137	5	4	3	7	10	
8	Criss Cross Critters	67036	2	5	1	0	3	
9	Happy Cap Erasers	64259	25	10	5	7	16	
10	Dessert Erasers	66993	10	11	10	8	5	
11	Twister Erasers	67027	10	15	25	5	18	
12	Mini Fish Erasers	67099	15	20	15	15	15	
13	G Mechanical Pencils	67039	12	4	0	10	3	
14	Traction Mechanical Pencils	67013	5	5	5	5	5	
15	Funky Tube Mechanical Pencils	65229	4	10	0	0	0	
16	.7mm Value Lead	61152	1	0	4	8	3	
17	Study Buddy Inferno	66967	4	6	7	10	3	
18	6-Color Pens	66685	4	6	7	0	12	
19	Bracelet Pens	65581	6	15	4	0	0	
20	Twister Pens	66921	0	6	0	3	0	

Tracking Inventory School Store Sales - Key

	Item Name	RG Item #	Mon. Sales	Tues. Sales	Wed. Sales	Thurs. Sales	Fri. Sales	Total Sales
1	Retro Pencils	67176	1	4	6	5	4	20
2	Pet Silhouettes Pencils	67175	2	3	0	5	3	13
3	Astral Wonders Pencils	67124	5	3	2	1	3	14
4	Munchin Mike Sharpener	67183	5	10	4	8	6	33
5	Piranha Sharpener	67037	10	5	6	4	5	30
6	Mouse Sharpener	65627	4	3	4	3	0	14
7	Erasing Grip	67137	5	4	3	7	10	29
8	Criss Cross Critters	67036	2	5	1	0	3	11
9	Happy Cap Erasers	64259	25	10	5	7	16	63
10	Dessert Erasers	66993	10	11	10	8	5	44
11	Twister Erasers	67027	10	15	25	5	18	73
12	Mini Fish Erasers	67099	15	20	15	15	15	80
13	G Mechanical Pencils	67039	12	4	0	10	3	29
14	Traction Mechanical Pencils	67013	5	5	5	5	5	25
15	Funky Tube Mechanical Pencils	65229	4	10	0	0	0	14
16	.7mm Value Lead	61152	1	0	4	8	3	16
17	Study Buddy Inferno	66967	4	6	7	10	3	30
18	6-Color Pens	66685	4	6	7	0	12	29
19	Bracelet Pens	65581	6	15	4	0	0	25
20	Twister Pens	66921	0	6	0	3	0	9



Tracking Inventory

School Store

Beginning Inventory

Monday Morning

	Item Name	RG Item #	Beginning Inventory
1	Retro Pencils	67176	20
2	Pet Silhouettes Pencils	67175	20
3	Astral Wonders Pencils	67124	35
4	Munchin Mike Sharpener	67183	50
5	Piranha Sharpener	67037	45
6	Mouse Sharpener	65627	28
7	Erasing Grip	67137	55
8	Criss Cross Critters	67036	15
9	Happy Cap Erasers	64259	75
10	Dessert Erasers	66993	80
11	Twister Erasers	67027	100
12	Mini Fish Erasers	67099	110
13	G Mechanical Pencils	67039	46
14	Traction Mechanical Pencils	67013	25
15	Funky Tube Mechanical Pencils	65229	25
16	.7mm Value Lead	61152	30
17	Study Buddy Inferno	66967	37
18	6-Color Pens	66685	38
19	Bracelet Pens	65581	25
20	Twister Pens	66921	19



Tracking Inventory School Store Orders

	Item Name	RG Item #	Per Package	Qty Ordered	Total Items	Day Received
1	Retro Pencils	67176	72	1	72	Tuesday
2	Pet Silhouettes Pencils	67175	72	1	72	Tuesday
3	Astral Wonders Pencils	67124	72	1	72	Tuesday
4	Munchin Mike Sharpener	67183	24	2	48	Thursday
5	Piranha Sharpener	67037	24	4	96	Thursday
6	Mouse Sharpener	65627	24	2	48	Thursday
7	Erasing Grip	67137	36	1	36	Thursday
8	Criss Cross Critters	67036	0	0	0	
9	Happy Cap Erasers	64259	100	1	100	Tuesday
10	Dessert Erasers	66993	0	0	0	
11	Twister Erasers	67027	12	3	36	Tuesday
12	Mini Fish Erasers	67099	12	4	48	Tuesday
13	G Mechanical Pencils	67039	12	1	12	Tuesday
14	Traction Mechanical Pencils	67013	12	1	12	Tuesday
15	Funky Tube Mechanical Pencils	65229	24	1	24	Tuesday
16	.7mm Value Lead	61152	0	0	0	
17	Study Buddy Inferno	66967	0	0	0	
18	6-Color Pens	66685	12	1	12	Thursday
19	Bracelet Pens	65581	24	2	48	Thursday
20	Twister Pens	66921	0	0	0	



Tracking Inventory

School Store

Ending Inventory Record

Friday Afternoon

			A	B	C	D
	Item Name	RG Item #	Beginning Inventory (Monday Morning)	Total Sales (-)	School Store Orders (+)	Ending Inventory
1	Retro Pencils	67176				
2	Pet Silhouettes Pencils	67175				
3	Astral Wonders Pencils	67124				
4	Munchin Mike Sharpener	67183				
5	Piranha Sharpener	67037				
6	Mouse Sharpener	65627				
7	Erasing Grip	67137				
8	Criss Cross Critters	67036				
9	Happy Cap Erasers	64259				
10	Dessert Erasers	66993				
11	Twister Erasers	67027				
12	Mini Fish Erasers	67099				
13	G Mechanical Pencils	67039				
14	Traction Mechanical Pencils	67013				
15	Funky Tube Mechanical Pencils	65229				
16	.7mm Value Lead	61152				
17	Study Buddy Inferno	66967				
18	6-Color Pens	66685				
19	Bracelet Pens	65581				
20	Twister Pens	66921				

Questions:

1. Which item sold the most this week? _____
2. Which item sold the least this week? _____
3. The school store has set an inventory policy to have a quantity of at least 25 of each item in stock. Using the Friday afternoon ending inventory figures, which items will Sniffer need to re-order?

Tracking Inventory School Store Ending Inventory Key Friday Afternoon

			A	B	C	D
	Item Name	RG Item #	Beginning Inventory (Monday Morning)	Total Sales (-)	School Store Orders (+)	Ending Inventory
1	Retro Pencils	67176	20	20	72	72
2	Pet Silhouettes Pencils	67175	20	13	72	79
3	Astral Wonders Pencils	67124	35	14	72	93
4	Munchin Mike Sharpener	67183	50	33	48	65
5	Piranha Sharpener	67037	45	30	96	111
6	Mouse Sharpener	65627	28	14	48	62
7	Erasing Grip	67137	55	29	36	62
8	Criss Cross Critters	67036	15	11	0	4
9	Happy Cap Erasers	64259	75	63	100	112
10	Dessert Erasers	66993	80	44	0	36
11	Twister Erasers	67027	100	73	36	63
12	Mini Fish Erasers	67099	110	80	48	78
13	G Mechanical Pencils	67039	46	29	12	29
14	Traction Mechanical Pencils	67013	25	25	12	12
15	Funky Tube Mechanical Pencils	65229	25	14	24	35
16	.7mm Value Lead	61152	30	16	0	14
17	Study Buddy Inferno	66967	37	30	0	7
18	6-Color Pens	66685	38	29	12	21
19	Bracelet Pens	65581	25	25	48	48
20	Twister Pens	66921	19	9	0	10

Questions:

1. Which item sold the most this week? Mini Fish erasers
2. Which item sold the least this week? Twister Pens
3. The school store has set an inventory policy to have a quantity of at least 25 of each item in stock. Using the Friday afternoon ending inventory figures, which items will Sniffer need to re-order?
Criss Cross Critters, Traction Mechanical Pencils, .7mm Value Lead, Study Buddy Inferno, 6-Color Pens, and Twister Pens



Tracking Inventory

School Store

Ending Inventory Record

Tuesday Afternoon

	Item Name	RG Item #	A Beginning Inventory (Monday Morning)	B Mon & Tues. Sales (-)	C Tuesday School Store Orders (+)	D Ending Inventory
1	Retro Pencils	67176				
2	Pet Silhouettes Pencils	67175				
3	Astral Wonders Pencils	67124				
4	Munchin Mike Sharpener	67183				
5	Piranha Sharpener	67037				
6	Mouse Sharpener	65627				
7	Erasing Grip	67137				
8	Criss Cross Critters	67036				
9	Happy Cap Erasers	64259				
10	Dessert Erasers	66993				
11	Twister Erasers	67027				
12	Mini Fish Erasers	67099				
13	G Mechanical Pencils	67039				
14	Traction Mechanical Pencils	67013				
15	Funky Tube Mechanical Pencils	65229				
16	.7mm Value Lead	61152				
17	Study Buddy Inferno	66967				
18	6-Color Pens	66685				
19	Bracelet Pens	65581				
20	Twister Pens	66921				

Tracking Inventory

School Store

Ending Inventory Key

Tuesday Afternoon

			A	B	C	D
	Item Name	RG Item #	Beginning Inventory (Monday Morning)	Mon & Tues. Sales (-)	Tuesday School Store Orders (+)	Ending Inventory
1	Retro Pencils	67176	20	5	72	87
2	Pet Silhouettes Pencils	67175	20	5	72	87
3	Astral Wonders Pencils	67124	35	8	72	99
4	Munchin Mike Sharpener	67183	50	15	0	35
5	Piranha Sharpener	67037	45	15	0	30
6	Mouse Sharpener	65627	28	7	0	21
7	Erasing Grip	67137	55	9	0	46
8	Criss Cross Critters	67036	15	7	0	8
9	Happy Cap Erasers	64259	75	35	100	140
10	Dessert Erasers	66993	80	21	0	59
11	Twister Erasers	67027	100	25	36	111
12	Mini Fish Erasers	67099	110	35	48	123
13	G Mechanical Pencils	67039	46	16	12	42
14	Traction Mechanical Pencils	67013	25	10	12	27
15	Funky Tube Mechanical Pencils	65229	25	14	24	35
16	.7mm Value Lead	61152	30	1	0	29
17	Study Buddy Inferno	66967	37	10	0	27
18	6-Color Pens	66685	38	10	0	28
19	Bracelet Pens	65581	25	21	0	4
20	Twister Pens	66921	19	6	0	13

Tracking Inventory 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. Use this tool 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 class discussion to define inventory.
- _____ Student participates in discussion by offering reasons why tracking inventory is important.

Exploring and Learning:

- _____ Student completes homework assignment interviewing family members about the types of items each member tracks at home.
- _____ Student shares homework assignment responses with class to create a list of at home inventory items.
- _____ Student works with partner to calculate total sales for the week.
- _____ School Store Sales contains accurate calculations.
- _____ Student works with partner to complete columns A, B, and C of the School Store Ending Inventory Record: Friday Afternoon using sales, beginning inventory, and order information.
- _____ Student works with partner to calculate the ending inventory totals for each item in the school store.
- _____ The School Store Ending Inventory Record: Friday Afternoon contains accurate calculations (column D).
- _____ Student works with partner to identify the top selling item, the item with least sales, and the items that need to be re-ordered to maintain inventory goals.
- _____ The School Store Ending Inventory Record: Friday Afternoon contains accurate responses to the three questions.

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.