**LESSON PLAN OUTLINE- (3-Day Lesson)**

**Day 1-Calculating Tax & Discount**

1. TITLE OF LESSON: Calculating Tax & Discount
2. CONTEXT OF LESSON: Students have recently been learning about proportions, including how useful the percent proportion can be in the real world. Here they will learn to calculate sales tax and discount, to extend upon their knowledge of the percent proportion with consumer applications. Students should be fairly confident in working with the percent proportion by the time they get to this lesson. It should also be a high interest lesson for them since many middle school students like to shop or go shopping with their parents.
3. LEARNING OBJECTIVES and ASSESSMENT:

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| Learning Objective | Bloom | Assessment (Formative/Summative) |
| Students will be able to explain what a discount is and why stores have discounted items. | Comprehension | Teacher will assess student knowledge by having the class complete a K-W-L chart for this lesson. This will be used to informally assess prior knowledge as well as assess student knowledge by the end of the lesson. |
| Students will be able to explain what sales tax is and why it exists. | Comprehension | Teacher will assess student knowledge by having the class complete a K-W-L chart for this lesson. This will be used to informally assess prior knowledge as well as assess student knowledge by the end of the lesson. |
| Students will be able to calculate the discount and resulting sale price for an item, given its original price. | Application | Observation will occur as students work in groups, and teacher asks questions to them as they are working. Summative assessment will occur as students complete a Design Challenge project in a few days. |
| Students will be able to calculate the sales tax and resulting final price for an item, given its original price. | Application | Observation will occur as students work in groups, and teacher asks questions to them as they are working. Summative assessment will occur as students complete a Design Challenge project in a few days. |

1. RELATED 2009 VIRGINIA STANDARDS OF LEARNING:

SOL 7.4 The student will solve single-step and multistep practical problems, using proportional reasoning. (*The essential knowledge includes students solving problems involving tips, tax, and discounts.)*

1. MATERIALS NEEDED:

KWL handout for each student

1 sheet of chart paper

Handout for vocab pictures

8-5 Notes handout(2-sided, 1 per student) & answer key

6 Group-work situation cards

6 sheets of blank computer paper

\*Classroom teacher will be responsible for securing all of above materials.

1. PROCEDURE:

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| Time | Mathematical Tasks to be Used,  Teacher Thoughts/Actions/Questions | Anticipated Student Comments, Questions, Actions, and Strategies |
|  | INTRODUCTION: Teacher will tell students that today they will be continuing to work with the percent proportion, but will be seeing how it can be useful in the real world when shopping. Tell students that first, we must find out what we already know about sales tax and about discount. Hand out the KWL chart handout to each student. Instruct students to take a few minutes to complete first 2 columns of this chart individually, filling in what they already know, and what they would want to know about each topic in each respective column. (They can divide the KWL chart in half, and use the top half for discount and the bottom half for sales tax.)  Display the KWL poster paper on the board for all students to see. After students fill in the class table, you can follow up by commenting on and questioning students on the various things written on the chart. Keep any misconceptions the students have in mind as you teach the rest of the lesson and be sure to bring them to light when possible.  As a follow up to this questioning, the teacher can ask the students the following, "How many people like to shop?", "Have you or someone you know ever got a really good deal?", "Is the price on the shelf always the amount you end up paying for an item?" and respond appropriately. Explain to students that when they go shopping, it is often the case that the price they see on the shelf is not the price they will end up paying for an item. Taxes are added to that price, and if applicable, discounts may also be subtracted. Tell students that today they will learn to calculate tax, discounts, and final prices. | Students will fill in the first two columns of their KWL chart individually. It is anticipated that students will know that a discount is an amount taken off of a price and occurs when something is on sale. They will probably want to know how to calculate it, and why stores sometimes offer discounts. It is also anticipated that students will know that sales tax is an amount added on to an item before it is purchased. They may want to know how it is calculated, what Virginia's sales tax is and how that compares to other states' sales tax. Also, they may want to know if any states do not have a sales tax.  Students will take turns filling in their ideas in the K and W columns on the class poster paper. Students often have the misconception that sales tax is always "a couple of dollars" added on to the price. This may come out in what they "know" about sales tax.    It is anticipated that many students will raise their hand when asked if they like to shop. Students will also most likely have stories to share about good deals. Students will most likely be able to recognize that the price on the shelf is not the price they are usually charged. They know taxes and discounts are often applied. |
|  | BODY: Hand out a copy of the 8-5 Notes to each student. Display a blank copy of the notes under the document camera to fill in as you go through them with students. Work through the first side with students. Include a discussion of what tax money is used for, and which states do not have any sales tax(Alaska, Delaware, Montana, New Hampshire, Oregon). Make connections to the previous lessons on percent proportion when setting up example problems. Have students try numbers 1 and 2 on their own. Then, they can check with their partner to see if they are on the right track. Go over numbers 1 and 2 by having student volunteers share their work on the document camera.  Next, discuss discount with the students, being sure to clear up any misconceptions they had from the beginning of the lesson. Explain that stores sometimes have sales to clear out their products at the end of a season, but often they have sales to draw people into their stores in the hopes they will spend more money. Complete the example problem with the students, again making connections that this is an application of the percent proportion. Ask them what the only difference is between calculating the total cost(after tax) and calculating the sale price(after discount).  Again, have students try numbers 1 and 2 on their own. Then, they can check with their partner to see if they are on the right track. Go over numbers 1 and 2 by having student volunteers share their work on the document camera.  Next, students will turn to their neighbor and summarize what they have learned about sales tax and discount. As they do this, hand out the vocab picture sheet to each student. Instruct students to write a definition (in their own words) for each term and sketch a picture that will help them to remember the meaning of the word. They should do this for both sales tax and discount. You may want to have select students share and explain their drawings to the class under the document camera.  Now students will practice the skills they have learned with their table group. Each table group will be given a blank piece of computer paper which they will fold into 6 sections. The teacher will give a group-work card to each group. They will show their work for the card they have been given in one of the squares. Then, the groups will switch cards, and complete this new question. This will continue until all groups have received all 6 cards. As students work, the teacher is circulating around the room asking them to explain their thinking and observing their work. When all groups have finished with the final problem, students from each group will present one of the problems to the class. Teacher will question students as necessary and encourage other students to help them look for mistakes in their work as needed. | Students may ask why they would need to figure out tax when the cashier will just tell them how much it is going to be. Teacher can stress the importance of knowing how much you will pay *before* paying to ensure you will have enough money. This could also include a spin-off discussion about budgeting.  Students will work through the example problem with the teacher, filling in their notes handout. Then they will work individually to complete numbers 1 and 2, and finally check with their partner.  Then they will evaluate their solutions against those presented by their classmates.  Students should be working through the sale price example with the teacher, writing this out on their paper, asking any questions they may have about the process.  Students will work individually to complete numbers 1 and 2, and finally check with their partner. Then they will evaluate their solutions against those presented by their classmates. It is anticipated that many students will not read #1 carefully and will find the sale price rather than the discount. At this point, the teacher should address reading the problems carefully, and highlighting/underlining key words and information.  Students will work on their vocabulary definitions and drawings.  Students will work with their table group to complete each of the 6 application problems given. When their group is called upon, they will bring their paper to the document camera and explain their work to the rest of the class. |
|  | CLOSURE: Direct students to take a minute to fill in their "L" column on their KWL chart, giving specific examples of things they learned today. Then, have a discussion as a class about things students learned and fill these in on the class KWL chart. At this time, also review the K and W columns, making sure that all of the known items were actually true, and that the lesson addressed all of the questions in the W column. If not everything was addressed, be sure to do so at this time. | Students will be involved in class discussion about what they learned in today's lesson. |

H. MEETING THE NEEDS OF ALL STUDENTS: The KWL format of the lesson allows students of varying abilities to be challenged depending on what it is they want to know. Above grade-level students should be encouraged to do research and present it to the class on any lingering questions they had about tax and/or discount that were not addressed during the lesson.

Students who are below grade-level may need extra support throughout the lesson, including additional prompting from the teacher when completing their KWL chart. Students who are below grade-level or have special needs can also be purposefully grouped with helpful peers. Partner-work is often helpful to lower-level students who may not understand material when it is first presented by the teacher. It is often helpful to hear an explanation from another student.

I. WHAT COULD GO WRONG WITH THIS LESSON AND WHAT WILL YOU DO ABOUT IT? When completing the KWL chart, some students may say there is nothing they want to know about calculating discount or tax. Be sure to have some ideas ready of why other students typically want to know so you can prompt the student to come up with ideas.

There is always the chance when working cooperatively, that students may not participate or their behavior may take the group off task. Prepare a few extra copies of the 6-problem group-work task so that if a student needs to complete this individually, they may do so.

J. CONNECTION TO CTA: Although Colleen Watson's lessons mainly focused on statistics, she spoke of always making the connection of math to the real world and to what makes sense to the students so they see how they will use a particular skill. The discussions about what tax and discount are that are built into the lesson help to address this. Students are not simply calculating numbers that they don't know the meaning of. Dan Mulligan's ideas of drawing pictures for vocabulary to help students remember the words were also incorporated, as was John Strebe's emphasis on group-work.

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| **What I KNOW** | **What I WANT to Know** | **What I LEARNED** |
|  |  |  |

**8-5 Notes: Sales Tax & Discounts**

SOL 7.4

MCj02864620000[1]**Sales Tax** is an additional amount of money charged on items that people buy. The local, state, and federal governments receive this money. The total price of an item is the regular price plus the sales tax.

**(Virginia’s sales tax is 5% for non-food purchases and 2.5% for food purchases.)**

**Find the Total Cost:**

**A Playstation 3 game costs $60.00, and the sales tax is 5%. What is the total cost of the game?**

**Step 1: Find the sales tax.**

**(Set up a proportion)**

**X = % .**

**Price** **100**

**(X = sales tax)**

**\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_**

**Step 2: Add the sales tax to**

**the price.**

**Price + sales tax = total cost**

**\_\_\_\_\_\_ + \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_**

**Try These:**

1. MCj02925000000[1]A set of golf balls sells for $20.00 and the sales tax is 6%. What is the total cost of the set?

MCj04375690000[1]

1. What is the total cost of a tennis racket if the regular price is $120.00 and the sales tax is 5% ?

**Discount** is the amount by which the regular price of an item is reduced. The **sale price** is the regular price minus the discount.

**Find the Sale Price:**

MCj03967160000[1]

Alan wants to buy a snowboard that has a regular price of $200.00. This week, the snowboard is on sale at a 40% discount. What is the sale price of the snowboard?

**Step 2: Subtract the discount**

**from the price.**

**Price - discount = sale price**

**\_\_\_\_\_\_ - \_\_\_\_\_\_\_ = \_\_\_\_\_\_\_**

**Step 1: Find the discount.**

**(Set up a proportion)**

**X = % .**

**Price** **100**

**(X = amount of discount)**

**\_\_\_\_\_\_\_\_\_ = \_\_\_\_\_\_\_\_\_\_**

**Try These:**

1. MCj04078560000[1]Whitney wants to buy a new coat that has a regular price of $70.00. This weekend, the coat is on sale at a 20% discount. What is the discount?
2. FYE is having a sale on all of their CDs. The CDs that are originally $16.00 are 10% off today! What is the sale price of each CD?

MCj04120120000[1]

**Picture it!**

In the space below, write out a definition for sales tax and discount and draw a picture for each word that will help you to remember its meaning.

Sales Tax Discount

Group-work cards

(to be cut up and distributed to table groups)

1) Find the total cost:

$50 shoes; 6% sales tax

2) Find the total cost:

$300 DVD player; 7% sales tax

3) Find the sale price:

$30 tie; 15% discount

4) Find the sale price:

$80 cell phone; 20% discount

5) Find the total cost:

$40 concert ticket; 4% tax

6) Find the sale price:

$500 television; 30% discount