UNLV
UNIVERSITY OF NEVADA LAS VEGAS
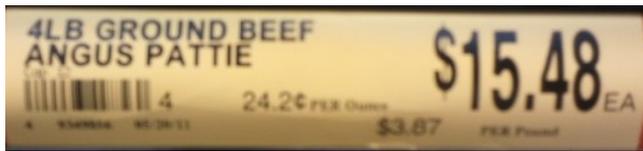
Project 12
Consumer Math

Purpose: The purpose of this project is to answer some of your burning questions.
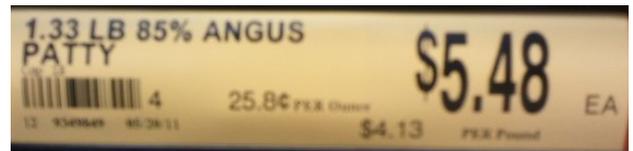Topical Objectives: To be more efficient consumers.
Instructions: Go through the following exercises, and answer the given questions completely. You must show all work. Some of the problems we will do together as a class (designated 'group'), some are designed for you and your group members (designated 'individual').

(Group) Which is the Better Buy?

Let's investigate each tag, and determine which is the better deal (even if it is obvious on the tag). Circle your choice after we discuss.

4LB GROUND BEEF ANGUS PATTIE   4   24.2¢ PER Ounce $3.87 PER Pound   **$15.48** EA

or

1.33 LB 85% ANGUS PATTY   4   25.8¢ PER Ounce $4.13 PER Pound   **$5.48** EA

17 ounce box of frosted flakes

17.5¢   17.00 OZ   Dept. 92   **$2.98** ★   FROSTED FLAKES 17

or

23 ounce box of frosted flakes

14.3¢   23.00 OZ   Dept. 92   **$3.28** ★   KLG FROSTED FLKS 23

18 ounce box of great value corn flakes

UNIT PRICE 8.0¢ PER OUNCE   18.00 OZ 9215715 35886   18   Dept.92 0058-0002-0023   SCW 7874235886   01/23/11   **$1.44**   GV CORN FLAKES 18

or

18 ounce box of kellogs corn flakes

UNIT PRICE 17.3¢   18.00 OZ   Dept. 92   RETAIL PRICE **$3.12**   KLG CORN FLKS 18

12 ounce box of great value crisp rice

15.7¢ 12.00 OZ **RETAIL PRICE** **$1.88** GV CRISP RICE 12

or

18 ounce box of kellogs rice krispies

19.3¢ 18.00 OZ **RETAIL PRICE** **$3.48** ★ KLG RICE REG 18

Nature Valley Bars
12 bars, wrapped 2 in a pack for 6 packs

UNIT PRICE **33.5¢** 8.90 OZ 9225272 Dept.92 PER Ounce 0054-0006-0016 **RETAIL PRICE** **$2.98** NATURE VLY PNBTR GR. 04/25/11

or

Sweet and Salty granola bars
6 bars individually wrapped in a pack

UNIT PRICE **36.2¢** 7.40 OZ 9272448 24 27707 Dept.92 0054-0006-0013 PER OUNCE SCW 1600027707 02/09/11 **RETAIL PRICE** **$2.68** ★ NV SWT SAL PEANUT

Half gallon of milk (64 fluid ounces)

4.0¢ 64.00 FO 9098605 Dept.90 PER Fl Oz **$2.58** ANDERSON 2

or

Gallon of milk (128 fluid ounces)

UNIT PRICE **3.2¢** 128.00 FO 9098598 Dept.90 PER Fl Oz **$4.15** ANDERSON 2

Ruffles 9.5 oz bag potato chips

UNIT PRICE **31.4¢** 9.50 OZ 9569930 2840003375 Dept. 96 0071-0013-0004 PER OUNCE DSD 28400 06/18/11 Cap **RETAIL PRICE** **$2.98** RUFFLES REGULAR

Lays 10.5 oz bag potato chips

UNIT PRICE **23.8¢** 10.50 OZ **RETAIL PRICE** **$2.50** LAYS REGULAR

(Individual) Question: How Can I find the Discount Quickly?

Use the following tricks to quickly estimate how much an item will be after a certain discount. Keep in mind, it may not be exact, but a quick close…

10% off	Move decimal 1 place to the right Subtract from original	$12.99 round to $13 13 → 1.3 Subtract 1.3 from 13 $11.70
20% off	Move decimal 1 place to the right Double Subtract from original	$12.99 round to $13 13 → 1.3 1.3 doubled → 2.6 Subtract 2.6 from 13 $10.30
25% off	Divide by 4 Subtract from original	$12.99 round to $13 13/4 is about 3 Subtract 3 from 13 $10
33% off	Divide by 3 Subtract from original	$12.99 round to $13 13/3 is about 4 Subtract 4 from 13 $9
50% off	Divide by 2	$12.99 round to $13 13/2 $6.50
75% off	Divide by 4	$12.99 round to $13 13/4 about $3

Find the price of an item that costs $24.99 with the following discounts

10% off	
20% off	
25% off	
33% off	
50% off	
75% off	

Also keep in mind some stores like to use tricks… 25% off, and an additional 25% off. This does not mean a total of 50% off. Why?

Your employer will automatically deduct several things from your paycheck…
- Social security
- Medicare
- Federal tax
- State tax (not in NV, though!)
- Health insurance premium (if you have one)
- Other fees

Social Security and Medicare taxes

Social Security taxes	2010	2011
Employee	6.2% on earnings up to $106,800	4.2% on earnings up to $106,800
Employer	6.2% on earnings up to $106,800	6.2% on earnings up to $106,800
Self-employed *Can be offset by income tax provisions	12.4%* on earnings up to $106,800	10.4%* on earnings up to $106,800

Medicare taxes	2010	2011
Employee/employer (each)	1.45% on all earnings	1.45% on all earnings
Self-employed *Can be offset by income tax provisions	2.9%* on all earnings	2.9%* on all earnings

Federal Tax Rates

Federal Income Tax (FIT) - Withholding formula
Supplemental withholding information here

Single Individuals & Head of Household- 2011

Income	Pay	+ % of	Amount >
<$2,100	$0.00	0%	$0
<$10,600	$0.00	10%	$2,100
<$36,600	$850.00	15%	$10,600
<$85,700	$4,750.00	25%	$36,600
<$176,500	$17,025.00	28%	$85,700
>$381,250	$42,449.00	33%	$176,500
>$381,250	$110,016.50	35%	$381,250

So as an example, if you are paid $25,000 per year you will have the following deductions…

Type	Calculation	Amount
Social security	6.2% of 25,000	1,550.00
Medicare	1.45% of 25,000	362.50
Federal Tax	You make less than 36,600	850.00
	You pay 15% on what you make *over* 10,600 -or-	
	15% of (25,000 – 10,600)	2,160.00
	TOTAL deductions per year	4,922.50

This would mean, your yearly salary would be 25,500 – 4922.50 = 20,077.50

If you were paid once per month, it would be 20,077.50/12 = $1,673.13

Determine the yearly salary after deductions for $75,000 per year.

Type	Calculation	Amount
Social security		
Medicare		
Federal Tax		
	TOTAL deductions per year	

The federal minimum wage is $7.25 per hour effective July 24, 2009. If you work 40 hours per week for 52 weeks per year, what is your yearly base salary?

Determine the yearly salary after deductions for minimum wage earners.

Type	Calculation	Amount
Social security		
Medicare		
Federal Tax		
	TOTAL deductions per year	

(Individual) Question: How Do I Determine Tax and Gratuity?

When you are provided with a bill at a restaurant, it typically already added in the tax. In Nevada, our tax rate is 8.1% (0.081).

This would mean that if your bill came to $54.00, you would pay an additional 54(0.081) = 4.37 for a total of $54 + 4.37 = $58.37

There are a few ways to easily calculate tip, depending on how good of a tipper you are. The 'standard' is 15 to 20% of the bill (you could argue, before or after taxes?). I like to tip about 20% for good service, mostly because it is a good tip, and an easy calculation.

This would mean that for my $58.37 bill, I would round up to $60, divide by 10 (60/10 = 6) and double it (6x2 = 12). I would leave a $12 tip.

The method is still just as easy if you don't want to round up first.

$$58 / 10 = 5.8$$
$$5.8 \times 2 = 11.6$$

What would you tip on the following bills? Explain your calculation.

$104.25	
$33.58	
$10.60	
$1045.00	

(Individual) What Kind of Gas Should I Buy?

Depending on your car, the outside temperature, and the way you drive (city or highway, gunning it or taking it slow), your car will consume gas differently. Also, what you put in your car has an effect on how many miles per gallon (MPG) your car will get.

One of your classmates found the following for his car (assume all other variables are constant):

Fuel Type	Price	Miles to Empty
Regular gas alone	$3.57/gal	278
Premium gas alone	$4.10/gal	310
Regular gas plus booster	$3.57/gal plus $10	290
Premium gas plus booster	$4.10/gal plus $10	310

He wants to know which scenario is the most cost effective. We will be filling in the chart below.

Fuel Type	1. Price for Tank	2. Price per Gallon	3. Miles per Gallon	4. Price per Mile
Regular gas alone				
Premium gas alone				
Regular gas plus booster				
Premium gas plus booster				

1. First we need to determine how much money it costs for each tank of gas. We do this by multiplying the size of his tank (10 gallons) by the price and adding in the cost of the booster (if needed). Find the **Price for Tank** for each scenario and fill it in on the chart above.

2. Next we need to determine how much money it costs per gallon. We do this by dividing the **Price for Tank** (above) by the size of his tank (10 gallons). Find the **Price per Gallon** for each scenario and fill it in on the chart above.

3. Next, we need to find how well his car performs in each scenario, or the **Miles per Gallon** his car gets. We do this by dividing **Miles to Empty** by the size of his tank (10 gallons). Find the **Miles per Gallon** for each scenario.

4. Now, to answer our question, we are going to find out how much it costs for him to drive per mile with each scenario. We do this by dividing **Price per Gallon** by **Miles per Gallon**. This will give us a **Price per Mile**

5. Which is the most economical way for him to fuel up his car? Explain.

(Group) Question: Is it more cost effective to buy a Brita filter, or bottled water?

First, we need to decide what questions to ask to help us along…

Information to help us answer these questions are presented next. We will do this problem together, so there is little guidance.

Brita Classic Water Pitcher
★★★★★ ▾   (5 Customer Reviews)   Write a review | About this product   🖶 Print

Buy from Walmart	**Shipping & Pickup**	**See estimated arrival date**
Online **$16.**⁸⁸	**FREE SHIPPING TO HOME** **In stock** for: • **Store pickup - Free** Enter ZIP code **Find** What's This? • **Ship to home** **Add to Cart** Add to: **My List** ▾ **My Registry**	
In stores Price may vary	Check store availability for this product.	

Item Description   Top of Page

Get great-tasting, cleaner* water for pennies per gallon. The Brita Classic Water Filtration Pitcher turns ordinary water into healthier*, fresh-filtered drinking water removing impurities* that are often found in tap water, and reduces the taste and odor of chlorine. Better for the Environment - No bottles to throw away. *Certified to reduce copper. Substances reduced may not be in all users' water.

- Capacity: six 8 oz. glasses of filtered water
- Certified to reduce chlorine (taste and odor), mercury and copper. Substances reduced may not be in all users' water.
- One Brita pitcher filter can effectively replace as many as 300 standard 16.9-ounce bottles.
- Filter should be replaced every 40 gallons or about every two months

8 oz = 1 cup   4 cups = 1 quart   32 oz = 1 quart   4 quarts = 1 gallon   128 oz = 1 gallon

Are they advertising the truth here? Will a filter that lasts 40 gallons be equivalent to 300 standard 16.9oz bottles? Explain.

			Price + Tax	$ per filter
	Brita Pitcher Filters, 6pk • Fit in all Brita pitchers • Reduce chlorine, copper, and mercury	Online **$29.**88 FREE SHIPPING TO HOME Sold In Stores Check availability	$29.88 + 2.42	
	Brita Pitcher Filters, 4pk • Fit in all Brita pitchers • Reduce chlorine, copper, and mercury Quick Look	Online **$19.**88 NEW Sold In Stores Check availability	$19.88 + 1.61	
	Brita Pitcher Filter, 1 ct ★★★★★ Used in all Brita pitchers, our filters reduce chlorine (taste and odor), copper and mercury content*. Quick Look	Online **$8.**44 FREE SHIPPING TO HOME Sold In Stores Check availability	$ 8.44 + 0.68	

	Aquafina® Purified Drinking Water - 32/16.9 oz.	Arrowhead® Mountain Spring Water - 48/8 oz.	Nestle® Spring Water - 16.9 oz Bottles - 24 case	Arrowhead® Mountain Spring Water 28/20oz Bottles
No. bottles				
Oz per bottle				
Total oz				
Price (tax included)	$4.30	$7.18	$7.51	$5.80
Price per oz				

What is your choice, and why? Be specific.