Unit One Review (do all work on a separate sheet)

(Remember that this has the key ideas that make up your knowledge base for this unit). This is considered as a major hand-in assignment.

A. Terms: (use the definition given or re-write so that it makes sense to you). Remember you have a practice quiz of these terms at http://schools.spsd.sk.ca/mountroyal/Hoffman/Apprenticeship/Activities/Vocabunit1.htm and that you are provided with a formal definition.

Rate, ratio, proportion, exchange rate, buying rate, promotion, markup, selling rate, unit price, unit rate.

Have you written them out? Do not proceed until you have these definitions.

B. Simple Equations (answer can be left in fraction form or decimal form)

1. $3x = -12 \Rightarrow \frac{3x}{3} = \frac{-12}{3} \Rightarrow x = -4$
2. $-5x = -20 \Rightarrow \frac{-5x}{-5} = \frac{-20}{-5} \Rightarrow x = 4$
3. $x + 7 = -9 \Rightarrow x = -7 - 9 \Rightarrow x = -16$
4. $x - 6 = 12 \Rightarrow x = 6 + 12 \Rightarrow x = 18$
5. $7 - x = -12 \Rightarrow -x = -7 - 12 \Rightarrow -x = -19 \Rightarrow \frac{-x}{-1} = \frac{-19}{-1} \Rightarrow x = 19$
6. $2x + 4 = 3x + 8 \Rightarrow 2x - 3x = -4 + 8 \Rightarrow -x = 4 \Rightarrow \frac{-x}{-1} = \frac{4}{-1} \Rightarrow x = -4$
7. $4x - 9 = 2x - 1 \Rightarrow 4x - 2x = 9 - 1 \Rightarrow 2x = 8 \Rightarrow \frac{2x}{2} = \frac{8}{2} \Rightarrow x = 4$
8. $-3x + 6 = 5x + 2 \Rightarrow -3x - 5x = -6 + 2 \Rightarrow -8x = -4 \Rightarrow \frac{-8x}{-8} = \frac{-4}{-8} \Rightarrow x = \frac{4}{8} = \frac{1}{2}$
9. $11x + 9 = 8x - 4 \Rightarrow 11x - 8x = -9 - 4 \Rightarrow 3x = -13 \Rightarrow \frac{3x}{3} = \frac{-13}{3} \Rightarrow x = \frac{-13}{3}$
10. $7x + 4 = -3x - 16 \Rightarrow 7x + 3x = -4 - 16 \Rightarrow 10x = -20 \Rightarrow \frac{10x}{10} = \frac{-20}{10} \Rightarrow x = -2$

C. Ratio – reduce each of the following:

1. $\frac{3}{9} = \frac{3/3}{9/3} = \frac{1}{3}$
2. $\frac{12}{30} = \frac{12/6}{30/6} = \frac{2}{5}$
3. $\frac{6}{14} = \frac{6/2}{14/2} = \frac{3}{7}$
4. $\frac{50}{125} = \frac{50/25}{125/25} = \frac{2}{5}$

D. Solve the following ratios:

1. $\frac{x}{9} = \frac{5}{45}$

$x = \frac{9 \cdot 5}{45}$

$x = 9$

2. $\frac{x}{4} = \frac{8}{6}$

$x = \frac{4 \cdot 8}{6}$

$x = \frac{32}{6} = \frac{16}{3} = 5.3$

3. $\frac{6}{5} = \frac{x}{3}$

$\frac{x}{3} = \frac{6}{5}$

$x = \frac{3 \cdot 6}{5}$

$x = \frac{18}{5} = 5.6$

4. $\frac{20}{5} = \frac{x}{2}$

$\frac{x}{2} = \frac{20}{5}$

$x = \frac{2 \cdot 20}{5}$

$x = \frac{40}{5} = 8$

5. $\frac{3}{x} = \frac{5}{4}$

$\frac{3}{5} = \frac{x}{4}$

$\frac{x}{4} = \frac{3}{5}$

$x = \frac{4 \cdot 3}{5}$

$x = \frac{12}{5} = 2.5$

6. $\frac{7}{x} = \frac{28}{2}$

$\frac{7}{28} = \frac{x}{2}$

$\frac{x}{2} = \frac{7}{28}$

$x = \frac{2 \cdot 7}{28}$

$x = \frac{14}{28} = \frac{1}{2} = 0.5$

7. $\frac{4}{10} = \frac{10}{x}$

$\frac{x}{10} = \frac{10}{4}$

$x = \frac{10 \cdot 10}{4}$

$x = \frac{100}{4} = 25$

8. $\frac{3}{6} = \frac{18}{x}$

$\frac{x}{6} = \frac{18}{3}$

$x = \frac{6 \cdot 18}{3}$

$x = \frac{108}{3} = 36$

E. Solve the following problems

1. If 3 cups of cranberry juice are part of a fruit drink recipe that makes 10 cups, how many cups of cranberry juice are required to make 65 cups of the fruit juice recipe?

$\frac{\text{cranberry (cups)}}{\text{fruit (cups)}} \Rightarrow \frac{3}{10} = \frac{x}{65} \Rightarrow \frac{x}{65} = \frac{3}{10} \Rightarrow x = \frac{65 \cdot 3}{10} \Rightarrow x = \frac{195}{10} = 19.5$

2. If it costs \$2.10 for 100 g of white fish, how much will it cost to buy 350 g?

$\frac{\text{cost (dollars)}}{\text{fish (g)}} \Rightarrow \frac{2.10}{100} = \frac{x}{350} \Rightarrow \frac{x}{350} = \frac{2.10}{100} \Rightarrow x = \frac{350 \cdot 2.10}{100} \Rightarrow x = \frac{735}{100} = 7.35$

3. If a 24 oz container of Aunt Jemima pancake syrup costs \$6.35, how many containers can be bought for \$57.15?

$\frac{\text{containers (number)}}{\text{cost (dollars)}} \Rightarrow \frac{1}{6.35} = \frac{x}{57.15} \Rightarrow \frac{x}{57.15} = \frac{1}{6.35} \Rightarrow x = \frac{57.15 \cdot 1}{6.35} \Rightarrow x = \frac{57.15}{6.35} = 9$

4. A scale drawing of a boat uses 1 inch = 7 feet. Find the actual length of the boat measures 5.25 inches.

$\frac{\text{scale (inch)}}{\text{length (feet)}} \Rightarrow \frac{1}{7} = \frac{5.25}{x} \Rightarrow \frac{x}{7} = \frac{5.25}{1} \Rightarrow x = \frac{7 \cdot 5.25}{1} \Rightarrow x = 36.75$

5. If the total mass of 300 concrete blocks is 2100 kg, calculate the mass of 700 concrete blocks.

$$\frac{\text{blocks (number)}}{\text{mass (kg)}} \Rightarrow \frac{300}{2100} = \frac{700}{x} \Rightarrow \frac{x}{2100} = \frac{700}{300} \Rightarrow x = \frac{2100 \cdot 700}{300} \Rightarrow x = \frac{1470000}{300} = 4900$$

6. If a can of paint covers an area of 350 square feet, how many cans are required to put two coats of paint on the walls of a room that has a total are of 960 square feet.

$$\frac{\text{cans (number)}}{\text{coverage (sq ft)}} \Rightarrow \frac{1}{350} = \frac{x}{1920} \Rightarrow \frac{x}{1920} = \frac{1}{350} \Rightarrow x = \frac{1920 \cdot 1}{350} \Rightarrow x = \frac{1920}{350} = 5.49$$

F. Which is a better buy?

1. 12 oz can of soup at $2.39 or a 18 oz can at $3.69?

$\frac{2.39}{12} = 0.199$ dollars per oz, $\frac{3.69}{18} = .205$ dollars per oz

better buy 12 oz can

2. 200 bricks at $193.40 or 260 brick at $274.30?

$\frac{193.40}{200} = 0.967$ dollars per brick, $\frac{274.30}{260} = .055$ dollars per brick

better buy 200 bricks

3. 16 kg bag of flour at $7.19 or 20 kg bag at $9.29?

$\frac{7.19}{16} = 0.449$ dollars per kg, $\frac{9.29}{20} = .464$ dollars per kg

better buy 16 kg

4. 1 liter of paint at $12.37 or 3.78 liters at $43.20?

$\frac{12.37}{1} = 12.37$ dollars per liter, $\frac{43.20}{3.78} = 11.42$ dollars per liter

better buy 3.78 liters

G. Determine the cost of each item after applying the given markup?

1. The whole sale price of a winter ski jacket valued at $158.00 with a mark up of 26%.

$158.20 \cdot 26\% \Rightarrow 158.20 \cdot 0.26 \Rightarrow 41.13 + 158.20 = 199.33$

or (adding percent 100% {original price} + 26% {markup})

$158.20 \cdot 126\% \Rightarrow 158.20 \cdot 1.26 \Rightarrow 199.33$

2. The whole sale price of a sofa and chair valued at $1240.00 with a mark up of 18%.

$1240.00 \cdot 18\% \Rightarrow 1240.00 \cdot 0.18 \Rightarrow 223.20 + 1240.00 = 1463.20$

or (adding percent 100% {original price} + 18% {markup})

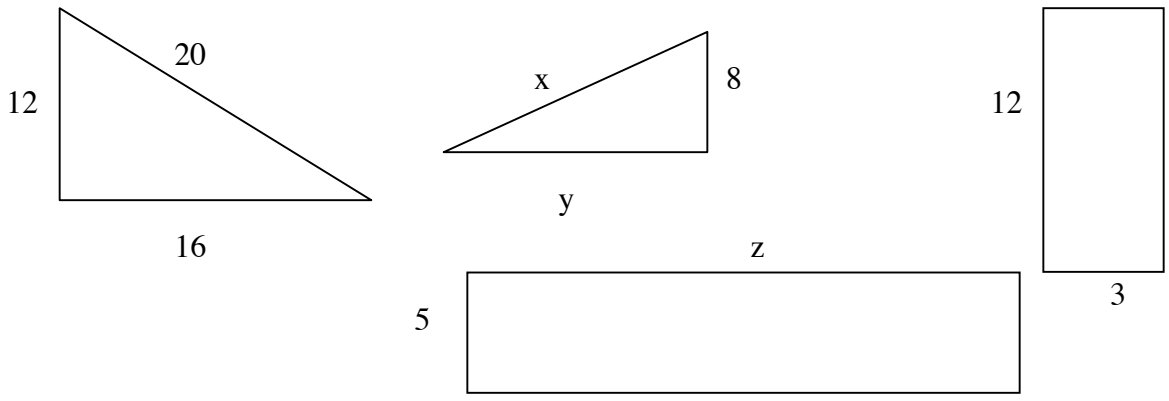
$1240.00 \cdot 118\% \Rightarrow 1240.00 \cdot 1.18 \Rightarrow 1463.20$

3. The whole sale price of a plasma 42 inch television valued at $698.00 with a mark up of 34%.
   $698.00 \cdot 34\% \Rightarrow 698.00 \cdot 0.34 \Rightarrow 237.32 + 698.00 = 935.32$
   or (adding percent 100% {original price} + 34% {markup})
   $698.00 \cdot 134\% \Rightarrow 698.00 \cdot 1.34 \Rightarrow 935.32$
4. The whole sale price of a apple computer valued at $1649.00 with a mark up of 8%.
   $1649.00 \cdot 8\% \Rightarrow 1649.00 \cdot 0.08 \Rightarrow 131.92 + 1649.00 = 1780.92$
   or (adding percent 100% {original price} + 8% {markup})
   $1649.00 \cdot 108\% \Rightarrow 1659.00 \cdot 1.08 \Rightarrow 1780.92$

H. Determine the sale price of an item after applying the price reduction?

1. The original price of a lazy boy recliner valued at $929.00 with a mark down of 42%.
   $929.00 \cdot 42\% \Rightarrow 929.00 \cdot 0.42 \Rightarrow 929.00 - 390.18 = 538.82$
   or (subtracting percent 100% {original price} - 42% {markdown})
   $929.00 \cdot 58\% \Rightarrow 929.00 \cdot 0.58 \Rightarrow 538.82$
2. The original price of a ski doo valued at $7450.00 with a mark down of 22%.
   $7450.00 \cdot 22\% \Rightarrow 7450.00 \cdot 0.22 \Rightarrow 7450.00 - 1639.00 = 5811.00$
   or (subtracting percent 100% {original price} - 22% {markdown})
   $7450.00 \cdot 78\% \Rightarrow 7450.00 \cdot 0.78 \Rightarrow 5811.00$
3. The original price of a triple glass picture window valued at $2890.00 with a mark down of 8%.
   $2890.00 \cdot 8\% \Rightarrow 2890.00 \cdot 0.08 \Rightarrow 2890.00 - 231.20 = 2658.80$
   or (subtracting percent 100% {original price} - 8% {markdown})
   $2890.00 \cdot 92\% \Rightarrow 2890.00 \cdot 0.92 \Rightarrow 2658.80$
4. The original price of a cruise vacation valued at $6350.00 with a mark down of 30%.
   $6350.00 \cdot 30\% \Rightarrow 6350.00 \cdot 0.30 \Rightarrow 6350.00 - 1905.00 = 4445.00$
   or (subtracting percent 100% {original price} - 30% {markdown})
   $6350.00 \cdot 70\% \Rightarrow 6350.00 \cdot 0.70 \Rightarrow 4445.00$

I. Determine the measure of the missing side of these similar geometric figures.



$$\frac{12}{8}=\frac{20}{x}\Rightarrow\frac{x}{8}=\frac{20}{12}\Rightarrow x=\frac{8\cdot 20}{12}=\frac{160}{12}=13.33$$

$$\frac{5}{3}=\frac{z}{12}\Rightarrow\frac{z}{12}=\frac{5}{3}\Rightarrow z=\frac{12\cdot 5}{3}\Rightarrow z=\frac{60}{3}=20$$

$$\frac{12}{8}=\frac{16}{y}\Rightarrow\frac{y}{8}=\frac{16}{12}\Rightarrow y=\frac{8\cdot 16}{12}=\frac{128}{12}=10.67$$