Business Math Review For Quiz #1
Answer Key by Michael Reiner

1) Percent Change

Old $50.99 Enter
New $43.85 Enter
%CH 13 Enter 11
Old $50.99 Enter

CPT 189.88

2) Percent Change

Old $?
New $214.57 Enter
%CH 13 Enter 11
CPT -14.00%

3) Payroll

Semimonthly = 24 pay periods
Regular Pay = $75000 - $3125

\[
\text{Hourly Pay} = \frac{75000}{52} = 1442.31 - 36.06
\]

\[
\text{OT Pay} = 5 \times 1.5 \times 36.06 = 270.45
\]

Gross Pay = $3125 + $270.45 = $3395.45

4) Payroll - Commission

Total Sales = $350000

First Level = $0 - $150000 = $150000 \times 7\% = $10500

Second Level = $150000 - $300000 = $150000 \times 10\% = $15000

Third Level = $300000 + = ($350000 - $150000 - $150000) \times 15\% = 50000 \times 15\% = 7500

Gross Pay = $10500 + $15000 + $7500 = $33000

5) Payroll

48 - 40 = 8 overtime hours
8 \times 1.5 = 12 hours at regular pay = 8 hours

12 + 40 = 52 hours without OT $850.20 - $16.35/hour of OT

\[
\frac{52}{850.20}
\]
6. Index

\[
\frac{3.99 \times 100}{1.50} = 266
\]

7. Index

\[
\begin{align*}
\text{Beginning} & = 105.6 \\
\text{End} & = 109.2 \\
\frac{105.6}{1000} \times \frac{109.2}{1000} & = \frac{105.6 \times 109.2 \times \$1000}{105.6 \times 105.6}
\end{align*}
\]

\[
105.6 \times \$1000 = \$109,200 \\
\therefore x = \$103,409
\]

8. Calculating Net Price

\[
N = L (1 - d) \\
N = \$450 (1 - 0.25) \\
L = \$450 \\
N = \$450 (0.75)
\]

\[
d = 25\% \div 100 = 0.25 \\
N = \$337.50
\]

9. Calculating List Price

\[
N = \$60.49 \\
L = N \\
d_1 = 15\% = 0.15 \\
(1-d_1) (1-d_2) (1-d_3) \\
d_2 = 7.5\% = 0.075 \\
L = \$60.49 \\
d_3 = 5\% = 0.05 \\
(1-0.15)(1-0.075)(1-0.05) \\
L = \$60.49 \\
(0.85)(0.925)(0.95) \\
\therefore L = \$58.078 \\
0.7469375
\]
(10) Calculating Rate of Discount
\[ d = \frac{D}{L} \times 100 \]
\[ L = \$695 \]
\[ D = \$451.75 \]
\[ N = \$243.25 \]
\[ d = \frac{\$243.25}{\$695} \times 100 = 35.00\% \]

(11) Calculating List Price
\[ d = 32.5\% = 0.325 \]
\[ L = \frac{D}{1 - d} = \frac{\$47.58}{0.325} = \$146.40 \]
\[ D = \$47.58 \]
\[ L = \$146.40 \]
\[ N = \$98.82 \]

(12) Calculating Net Price
\[ N = L - D = \$146.40 - \$47.58 = \$98.82 \]
\[ L = \$146.40 \]
\[ D = \$47.58 \]

(13) Calculating Selling Price after computing Net Price
\[ L = \$129.99 \]
\[ d = 27.3\% = 0.273 \]
\[ N = L (1 - d) = \$129.99 (1 - 0.273) = \$94.50 \]
\[ N = \$94.50 \]
\[ M = 45\% \text{ of } Cost = 0.45 \times \$129.99 = \$58.45 \]
Continued

\[ N = C = \$94.50 \]

\[ s = ? \]

\[ M = 0.45 C = 0.45(\$94.50) = \$42.53 \]

\[ s = c + m \quad s = \$94.50 + \$42.53 = \$137.03 \]

14. Calculating Selling Price

\[ c = \$45 \quad s = c + m \]

\[ m = 34\% \text{ of Selling Price} = 0.345 \quad 1s = \$45 + 0.345 \]

\[ s = ? \]

\[ \begin{array}{r}
-0.34 \\
-0.345 \\
1s - 0.345 = \$45 \\
0.665 = \$45 \\
0.66 \overline{0.66} \\
\hline
s = \$68.18
\end{array} \]

15. Calculating Rate of Markup on Selling Price

\[ L = \$145 \]

1. Calculate Net Price (Cost)

\[ d_1 = 15\% = 0.15 \quad N = L(1-d_1)(1-d_2) \]

\[ d_2 = 10\% = 0.10 \quad N = \$145(1-0.15)(1-0.10) \]

\[ N = c = ? \quad N = \$145(0.85)(0.9) \]

\[ s = \$175 \quad N = \$110.93 \]

\[ M = ? \quad \text{Net Price becomes Cost} \quad C = \$110.93 \]

2. Calculate Markup

\[ s = c + m \quad \$175 = \$110.93 + m \]

\[ -110.93 \quad -\$110.93 \]

\[ \$175 - \$110.93 = m \quad \$64.07 = m \]
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Calculate Rate of Markup on Selling Price
\[
\frac{M \times 100}{S} = \frac{164.07}{175} = 94.07\% \\
\]

Calculate Break-even Price ($0 Profit)
\[
C = 173.18 \\
E = 27\% \text{ of Selling Price} = 0.275 \\
P = 10\% \text{ of Selling Price} = 0.165 \\
S = ?
\]

Calculate Sale Price because Expenses and Profit are based on Selling Price
\[
S = C + M \quad M = E + P \quad S = C + E + P \\
S = 173.18 + 0.275 + 0.165 \\
15 = 173.18 + 0.435 \\
-0.435 \\
15 - 0.435 = 173.18 \\
0.575 = 173.18 \quad S = 303.82 \\
\frac{0.57}{0.57}
\]

Calculate Expenses: 
\[
E = 0.27 \times S = 0.27(303.82) = 82.03
\]

Calculate Break-even
\[
S_{be} = C + E = 173.18 + 82.03 \\
S_{be} = 255.21
\]

Calculate Reduced Selling Price:
Regular Selling Price = List Price = L = $449.50
Discount Rate = d = 40\% = 0.40
\[
N = 2 (1 - d) = 449.50 (1 - 0.40) = 449.50(0.60) = 269.70
\]
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8. Calculate Rate of Markdown
\[ S = \$999.95 \quad \Delta \times 100 \]
\[ S_r = \$949.95 \]
\[ D = ? = \$999.95 - \$949.95 = \$50 \]
\[ \frac{\$50}{\$999.95} \times 100 = 5.00\% \]

9. Calculate Sales Tax \#5 (Use Percent Change)
\[ \text{Old} = ? \quad \downarrow \]
\[ \text{New} = \$399 \quad \text{Enter} \quad \downarrow \]
\[ \%CH = 12\% \ (5\% + 7\%) \quad \text{Enter} \quad \downarrow \]
\[ \text{Old} = \text{CPT} \quad \$356.25 \quad \text{(Price without taxes)} \]
\[ \text{ Taxes} = \$399 - \$356.25 = \$42.75 \]

10. Calculate Remittance
\[ \text{Purchased} = \$56,780 < \text{Sales} = \$80,225 \quad \text{Remittance} \]
\[ \$56,780 - \$80,225 = -\$23,445 \times 5\% = \$1,172.25 \]

11. Calculate Property Taxes
\[ \text{Mill Rate} \times \text{Assessed Property} = 5.3476 \times \$75,000 = \$401,070 \]

12. Currency Conversion
\[ \text{Canadian} = \text{Euro} \]
\[ \frac{\$1 \times \$2000}{\text{E}2000} = \frac{0.69 \times \text{E}2000}{0.69} \]
\[ \text{E}2000 \times 0.69 = 1380 \]
\[ \text{E}1,380 = 1,380 \]
\[ \text{E}2,898.55 \]
22. Continued
\[
\begin{align*}
&52898.55 \times 0.02 = \$57.97 \text{ (Bank Fee)} \\
&52898.55 + \$57.97 = \$53476.52
\end{align*}
\]

23. Calculate cash paid to settle invoice

August 10, \rightarrow September 9 = 30 \text{ day}

2nd

DT1 8.10.19

DT2 9.09.19

DBD = ? (LT) 30 days \quad i = 2\% = 0.02

\[
\begin{align*}
L &= \$640 \\
N &= L / (1 - d) \\
N &= \$640 (1 - 0.02) \\
N &= \$640 (0.98) \\
N &= \$627.20
\end{align*}
\]

24. Calculate cash paid to reduce invoice (Partial Payment)

L = \$1975 - \$1000 = \$975

\[
\begin{align*}
N &= L / (1 - d) \\
N &= \$975 / (1 - 0.04) \\
N &= \$975 / (0.96) \\
N &= \$1021.88
\end{align*}
\]

Nov. 13 \rightarrow Nov. 23 = 10 \text{ days}

N = \$936

25. Partial Payment in Discount Period

\[
\begin{align*}
N &= \$2000 \\
L &= \frac{N}{(1 - d)} \\
L &= \frac{\$2000}{(1 - 0.04)} \\
L &= \$2083.33
\end{align*}
\]

Oct 12 \rightarrow Oct 22 = 10 \text{ days}
Currency Exchange

Canadian = US

\[
\begin{align*}
1.32 \times \frac{450}{x} &= 1 \\
1.32 \times 450 &= x \\
594 &= x
\end{align*}
\]

Bank Fee = \(594 \times 0.015 = 8.91\)

\[594 - 8.91 = 585.09\]