Business Math Review of Chapters 1, 2, 3 + 4
Answer key by Michael Reimer

1) Percent change
New = 3,350
%CH = 85%
Old = ? 1810.81

2) Percent Change
New = $43.85
%CH = -14%
Old = ? $50.99

3) Annual Percent Change
Old = $92000
New = $220000
# PD = 2014 - 2008 = 14
%CH = 6.43%

4) Payroll
Weekly = 52 Pay Periods
$\frac{\$75000}{52} = \$1442.31$/week
$\frac{\$1442.31}{40} = \$36.06$/hour
$\$36.06 \times 1.5 = \$54.09$/overtime hour
45 - 40 = 5 overtime hours
$5 \times \$54.09 = \$270.45$ overtime pay
$\$1442.31 + \$270.45 = \$1712.76$

5) Payroll - Commission
Total Sales = $3500
First $1500 x 4% = $60
Second $1500 x 6% = $90
Over $3000 $500 x 9% = $45
$195

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6) Payroll

$48 - 40 = 8$ overtime hours $8 \times 1.5 = 12$ hours without overtime

$12 + 40 = 52$ hours without overtime pay

$\frac{\$850.20}{52} = \$16.35/\text{hour}$

7) Index

$\frac{\$3.99}{\$1.50} \times 100 = 266$

8) Index

$\frac{105.6}{\$1000} \times \frac{109.2}{x}$ Beginning = End

$105.6x = 109.2 \times \$1000$

$\frac{105.6x}{105.6} = \frac{\$109\,200}{105.6}$

$x = \$1034.09$

9) $N = L(1-d)$ Purchasing Goods - Net Price

$L = \$450$

$d = 25\% = 0.25$

$N = ?$

$N = \$450(1 - 0.25)$

$N = \$450(0.75)$

$N = \$337.50$

10) Single Equivalent Rate of Discount $1 - [(1-d_1)(1-d_2)(1-d_3)]$

$d_1 = 15\%$ $d_2 = 7.5\%$ $d_3 = 5\%$

$1 - [(1 - 0.15)(1 - 0.075)(1 - 0.05)]$

$1 - [(0.85)(0.925)(0.95)]$

$1 - 0.7469375 = 0.2530625 \times 100 = 25.31\%$

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11) Purchasing Goods - List

$N = \$275.75$
$d_1 = 20\% = 0.20$
$d_2 = 10\% = 0.10$
$L = ?$

$\$275.75 = L(1-0.20)(1-0.10)$
$\$275.75 = L(0.80)(0.90)$
$\frac{\$275.75}{0.72} = \frac{L(0.72)}{0.72}$
$L = \$382.99$

12) Purchasing Goods - Rate of Discount

$L = \$695$
$N = \$451.75$
$d = ?$

$d = \frac{L-N}{L} \times 100$
$d = \frac{\$695 - \$451.75}{\$695} \times 100$
$d = \frac{\$243.25}{\$695} \times 100 = 35\%$

13) Purchasing Goods - List Price

$d = 32.5\% = 0.325$
$D = \$47.58$
$L = ?$

$L = \frac{D}{d} = \frac{\$47.58}{0.325} = \$146.40$

14) Purchasing Goods - Net Price

$L = \$146.40$
$D = \$47.58$
$N = ?$

$N = L - D$
$N = \$146.40 - \$47.58$
$N = \$98.82$

15) Purchasing Goods and Markup

$L = \$45$
$d = 22\%$
$N = ?$

$N = L(1-d)$
$N = \$45(1-0.22)$
$N = \$45(0.78) = \$35.10$

N becomes $L = \$35.10$
$S = ?$
$M = 34\%$ of cost $= 0.34 \times \$35.10 = \$11.94$

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15) $S = C + M$
$S = \$35.10 + \$11.903$
$S = \$47.03$

16) Purchasing Goods and Rate of Markup on selling price

$L = \$145$
$d_1 = 15\% = 0.15$
$d_2 = 10\% = 0.10$
$N = ?$

$N = L(1-d_1)(1-d_2)$
$N = \$145(1-0.15)(1-0.10)$
$N = \$145(0.85)(0.90)$
$N = \$145(0.765)$
$N = \$110.93$ N becomes C

$C = \$110.93$
$S = \$175$
$M = ?$

$M = S - C$
$M = \$175 - \$110.93$
$M = \$64.07$

Rate of Markup on selling price $= \frac{M}{S} \times 100 \quad \frac{\$64.07}{\$175} \times 100 = 36.61\%$

17) Purchasing Goods and Markup - Expenses and profit

$L = \$129.99$
$d = 27.3\% = 0.273$
$N = ?$

$N = L(1-d)$
$N = \$129.99(1-0.273)$
$N = \$129.99(0.727)$
$N = \$94.50$ N becomes C

$C = \$94.50$
$E = 20\%$ of Cost $= 0.20 \times \$94.50 = \$18.90$
$P = 25\%$ of Cost $= 0.25 \times \$94.50 = \$23.63$

$S = C + E + P$
$S = \$94.50 + \$18.90 + \$23.63 = \$137.03$

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18) Markup and Break even

S = ?
C = $173.18
E = 27% of S = 0.27S
P = 18% of C = 0.18 × $173.18
P = $31.17

S = C + E + P
S = $173.18 + 0.27S + $31.17
1S = $204.35 + 0.27S
−0.27S −0.27S
0.73S = $204.35
0.73 0.73
S = $279.93

BE = C + E
BE = S − P = $279.93 − $31.17 = $248.76

19) Markdown

N = ?
L = $449.50
d = 40% = 0.40

N = L(1 − d)
N = $449.50(1 − 0.40)
N = $449.50(0.6)
N = $269.70

20) Rate of Markdown = $\frac{S - S_R}{S} \times 100$

S = $999.95
S_R = $949.95

$\frac{\$999.95 - \$949.95}{\$999.95} \times 100 = 5\%$

21) Sales Taxes

Price = $399
GST = 5%
PST = 8%

GST = $399 × 5% = $19.95
PST = $399 × 8% = $31.92

$399 + $19.95 + $31.92 = $450.87

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22) Tax Remittance or Refund

Purchases $56 780 — $56 780 − $80 225 = $−23445 × 5% =
Sales = $80 225 — $−1172.25 Remittance

23) Property tax

$\frac{\$750\,000 \times 5.3476}{1000} = \$4010.70$

24) Currency Exchange

Canadian / Euro

$\frac{\$1.4056}{X} = \frac{1}{2000}$

$1.4056 \times 2000 = X$

$\$2811.20 = X$

Bank Fee = $\$2811.20 \times 0.02 = \$56.22$

Total = $\$2811.20 + \$56.22 = \$2867.42$

25) Payment in Discount Period

August 10 → September 9

Days used for August = 31 − 10 = 21 days

Days used for September = 9

Total Days = 21 + 9 = 30 we get a 2% discount

$N = ?$ $N = L(1-d)$

$L = \$640$ $N = \$640(1-0.02)$

$d = 2\% = 0.02$ $N = \$640(0.98)$

$N = \$627.20$

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26) Partial Payment in Discount Period
November 13 - November 23 = 10 days
we get a 4% Discount
N = Amount Paid
L = Amount Credited
We are reducing our debt to $1000
L = $1975 - $1000 = $975
N = ?
d = 4% = 0.04

$N = L(1-d)$
$N = \$975(1-0.04)$
$N = \$975(0.96)$
$N = \underline{\$936}$

27) Partial Payment in discount period
N = $2000
L = ?
October 12 → October 22 = 10 days
d = 4%

$L = \frac{N}{(1-d)}$
$L = \frac{\$2000}{(1-0.04)}$
$L = \frac{\$2000}{0.96}$
$L = \underline{\$2083.33}$

28) Payment with discount period beginning at the End of Month
~~August 31~~ July 31 - August 10 = 10 days
we get a 2% discount
d = 2% = 0.02
L = $450
N = ?

$N = L(1-d)$
$N = \$450(1-0.02)$
$N = \$450(0.98)$
$N = \underline{\$441}$

29) Currency Exchange

Canadian	US
1.0566	1
x	450

$1.0566 \times 450 = x$

$x = \$475.47$

Bank Fee = $\$475.47 \times 1.5\% = \$7.13$

Total Received = $\$475.47 - \$7.13 = \underline{\$468.34}$