Business Math Answer key For Chapter 4: Mathematics of Merchandising by Michael Reiner

1) L = List Price = $150 d = Discount Rate (%) = 35% = 0.
N = Net Price = ?
N = L (1-d) = $150 (1 - 0.35) = $150 (0.65) = $97.50

2) D = Markdowned Amount ($) = 435 d = 42% = 0.42
To Find L when we have D and d use this formula:

$$L = \frac{D}{d} = \frac{\$435}{0.42} = \$1035.71$$

Step1
3) Competitors' Company has an L = $56 and d = 15% = 0.15 but no N = ? N = L(1-d) = 56(1-0.15) = 56(0.85) = $47.60
Competitors' Companys' N = $47.60
Step2: Our company N = $47.60 L = $60 d = ? D = ? D = L - N = $60 - $47.60
D = $12.40
$d = \frac{D}{L} \times 100 = \frac{\$12.40}{\$60} \times 100 = 20.67\%$

4) L = $450 N = $375 d = ? D = ?
You can not find d without First finding D. To find "D" use this formula: D = L - N = $450 - $375 = $75
Now use this formula to find small d.

$$d = \frac{D}{L} \times 100\% = \frac{75}{450} \times 100\% = 16.66\%$$

5) Credit terms of 3/5 mean that you, the buyer, will receive a 3% discount if you pay within 5 days.

Purchase Date May 16th - Payment Date May 21st d = 3% L = $645
N = ? N = $645 (1 - 3%) = $645 (1 - 0.03) = $645 (0.97) = $625.65

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b) Purchase Date May 16th - Payment Date May 26th
$d = 2\% = 0.02$ $L = 645$ $N = ?$
$N = L(1-d) = 645(1-0.02) = 645(0.98) = \$632.10$

c) Purchase Date May 16th - Payment Date May 31st
$d = 0$ $L = \$645$ $N = ?$
$N = L(1-d) = \$645(1-0) = \$645(1) = \$645$

6) Purchase Date June 3rd - Payment Date June 13th
$d = 2\%$ $L = ?$ $N = \$75$
The reason that the \$75 is the N is because the \$75 represents the amount that we paid, but it does not represent the amount that will be used to reduce the debt. This is because we are making a smaller payment and not paying the whole amount in a discount period. So, we must calculate "L" to represent the amount that will reduce the debt because the "L" is always bigger than the N and the debt reduction will be bigger than the actual payment made.

$L = \frac{N}{1-d} = \frac{\$75}{1-0.02} = \frac{\$75}{0.98} = \$76.53$ for payment 1 on June 13th

Purchase Date June 3rd - Payment Date June 23rd
$d = 1\% = 0.01$ $L = ?$ $N = \$50$
$L = \frac{N}{1-d} = \frac{\$50}{1-0.01} = \frac{\$50}{0.99} = \$50.51$

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6) To find the amount owing on July 3rd we take the total amount of the debt and subtract the 2 payments that were made
$199 - $76.53 - $50.51 = $71.96

7) EOM = End of the Month which means the discount period starts at the end of the month
Payment on October 15 means 15 days after the end of the month. This entitles us to a 2% discount.

$N = L(1-d) = \$599.95(1-2\%) = 599.95(0.98) = \$587.95$

Since the debt is due in 40 days, the last day to make a payment would be:

Oct	31 days	
Nov	9 days	November 9
	40	

8) Debt 1: Purchase Date July 22nd - Payment Date August 22nd
July = 31 - 22 = 9
Aug = 22
31 days No discount, we will pay $425

Debt 2: Purchase Date August 12th - Payment Date August 22nd
Aug = 22 - 12 = 10 days, we get a 2% discount, $L = \$235$ $N = ?$
$N = L(1-d) = \$235(1-2\%) = \$235(0.98) = \$230.30$
Debt 3: Purchase Date August 20th - Payment Date August 22nd
Aug = 22 - 20 = 2 days, we get a 2% discount $L = \$125$ $N = ?$
$N = L(1-d) = \$125(1-2\%) = \$125(0.98) = \$122.50$
Now add all 3 debts together: $\$425 + \$230.30 + \$122.50 = \$777.80$

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9) $C = \$5$ $M = 35\%$ of $C = 35\%C = 0.35C$ $S = ?$

$= 0.35(5)$

$S = C + M$ $S = \$5 + 0.35(5)$ $S = 5 + 1.75$ $S = \underline{\$6.75}$

Rate of Markup Based on Selling Price $= \frac{M}{S} \times 100$ $\frac{\$1.75}{\$6.75} \times 100 = \underline{25.93\%}$

10) $S = \$20$ $M = 25\%$ of $C = 0.25C$ $C = ?$

$S = C + M$ $\$20 = C + 0.25$ $\$20 = 1C + 0.25C$ $\frac{\$20}{1.25} = \frac{1.25C}{1.25}$

$C = \underline{\$16}$

11) $L = \$85$ $d = 25\%$ $N = ?$ $M = 55\%$ of $S = 0.55S$ $C = ?$ $S = ?$

First step is to solve for Net Price (N). Once we have solved for N, this answer will be our Cost (C). We will then use this answer to solve for selling price (S).

Step 1

$N = L(1-d) = \$85(1-25\%) = \$85(0.75) = \$63.75 = N = C$

Step 2

$S = C + M$ $S = \$63.75 + 0.55S$ $1S - 0.55S = \$63.75$

$-0.55S$ $-0.55S$

$\frac{0.45S}{0.45} = \frac{\$63.75}{0.45}$ $S = \underline{\$141.67}$

Rate of Markup Based on Cost $= \frac{M}{C} \times 100 = \frac{\$77.92}{\$63.75} \times 100 = \underline{122.23\%}$

Step 1

$M = 0.55S = 0.55(\$141.67) = \$77.92$

Step 2

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12) $S = \$45$ $M = 37.5\%$ of $S = 0.375S = 0.375(45)$ $C = ?$

$S = C + M$ $45 = C + 0.375(45)$ $45 = C + 16.88$

$45 = C + \$16.88 - \$16.88$ $45 - \$16.88 = C$ $C = \$28.12$

$-\$16.88$

13) $L = \$89$ $d = 22.5\%$ $N = ?$ $C = ?$ $E = 25\%$ of S $P = 35\%$ of S

$S = ?$ $0.25S$ $= 0.35S$

Step 1

$N = L(1-d) = \$89(1-0.225) = \$89(0.775) = \$68.98 = C$

Step 2

$S = C + E + P$ $S = \$68.98 + 0.25S + 0.35S$ $S = \$68.98 + 0.6S$

$-0.6S$ $-0.6S$

$1S - 0.6S = \$68.98$ $\frac{0.4S}{0.4} = \frac{\$68.98}{0.4}$ $S = \$172.45$

Breakeven $= C + E$ $C = \$68.98$ $E = 0.25S$ $S = \$172.45$

$E = 0.25(\$172.45) = \$43.11$

Breakeven $= \$68.98 + \$43.11 = \$112.09$

14) $C = \$599$ $M = 45\%$ of C $S = ?$ $MD = 35\%$ of S

$M = 0.45C = 0.45(\$599)$ $0.35S$

$S_{reduced} = ?$ $M = \$269.55$

Step 1

$S = C + M$ $S = \$599 + \$269.55$ $S = \$868.55$

Step 2

$S_{reduced} = S - MD$ $S = \$868.55$ $MD = 0.35S = 0.35(\$868.55)$

$MD = 303.99$

$S_{reduced} = \$868.55 - \$303.99 = \$564.56$