Journal of Accountancy

Volume 42 | Issue 4 Article 8

10-1926

Students' Department

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(NOTE.—The fact that these solutions appear in THE JOURNAL OF ACCOUNTANCY should not cause the reader to assume that they are the official solutions of the board of examiners. They represent merely the opinions of the editors of the *Students' Department.*)

EXAMINATION IN ACCOUNTING THEORY AND PRACTICE—PART II (*Continued*)

MAY 14, 1926, 1 P.M. TO 6 P.M.

The candidate must answer all the following questions:

No. 3 (20 points):

Corporation X has a capital stock of $100,000, liabilities $10,000 and surplus $25,000. The liability represents notes given to stockholders for loans made by them in proportion to their stock interests. A owns 400 shares and B, C and D own 200 shares each.

During 1924, X sells all its assets, except cash $5,000, to corporation Y for $145,000 for which it receives $15,000 cash, 800 shares preferred stock of corporation Y, which it records at the par value $100 per share, and 1,000 shares of no-par common stock of corporation Y.

Corporation X distributes the stock of Y to its own stockholders who, as a part consideration, cancel the notes of the corporation above mentioned. No entry for this distribution is made on X's books as the officers are not sure how to make it nor are they sure what value should be set on the stock so distributed.

Corporation Y shows its common stock to have a book value of $93 per share but is, at that time, selling one share of preferred with one share of common for $130.

None of the stock of corporation X has been called in or cancelled.

You are called upon by corporation X to make the proper entries and to set up a balance-sheet.

Solution:

A balance-sheet of corporation X before the sale of its assets would show:

Cash	$5,000.00	
Assets, other than cash	130,000.00	
Notes payable—stockholders		$10,000.00
Capital stock		100,000.00
Surplus		25,000.00
	$135,000.00	$135,000.00

For the assets other than cash of corporation X, book value $130,000, corporation Y agrees to pay $145,000, of which $15,000 is cash and the remainder 800 shares of preferred stock (par $100) and 1,000 shares of no-par common stock of corporation Y. The point immediately raised is, what is the cost to corporation X of the stock of corporation Y thus transferred? Without question this is $145,000, the agreed price, less the cash payment of $15,000, or $130,000.

This cost could be allocated as between the preferred and the common stock received from corporation Y, as follows:

800 shares preferred stock (par $100)	$80,000.00
1,000 shares common stock (no par)	50,000.00
Total	$130,000.00

However, it is unnecessary to distribute the cost as between the two classes of stock, if we charge the total cost of $130,000 to an account called "investment in corporation Y," as is done in this solution.

According to the problem, the preferred stock has been recorded at par value, $100 a share, and a journal entry should be made to reverse this entry. If the cash received, $15,000, and the common stock—corporation Y, have been recorded, these entries should be reversed also.

In the working papers attached (page 302), adjustment No. 1 shows the transfer of the assets of corporation X to corporation Y, and the profit of $15,000 resulting from the sale.

Corporation Y—vendee	$145,000.00	
To: Assets, other than cash		$130,000.00
Surplus		15,000.00
To record the transfer of assets other than cash to corporation Y, and the profit of $15,000 resulting from the sale thereof.		

Adjustment No. 2 shows the cash and capital stock received from corporation Y in payment of the assets of corporation X, as transferred in entry No. 1.

Cash	$15,000.00	
Investment—corporation Y	130,000.00	
To: Corporation Y—vendee		$145,000.00
To record the receipt of cash, $15,000, and the following capital stock of corporation Y, per agreement:		
800 shares (par $100) preferred		
1,000 shares (no par) common		

There are two possible interpretations of the next transaction whereby corporation X distributes the stock of corporation Y to its own stockholders who, as a part consideration, cancel the notes of the corporation. First, it might be inferred from the use of the word "distributes" that a dividend, payable with the stock of corporation Y, had been declared and paid. But if the distribution is treated as a dividend, a deficit of $80,000 is incurred, as follows:

Book value—investment in corporation Y	$130,000.00
Less: Notes payable—stockholders	10,000.00
Net distribution	$120,000.00
Surplus account before the above dividend	40,000.00
Deficit created	$80,000.00

CORPORATION X

Working papers — Date

	Balance-sheet before adjustments		Adjustments				Balance-sheet after adjustments	
Cash	$5,000.00		(2) $15,000.00				$20,000.00	
Assets other than cash	130,000.00				(1) $130,000.00			
Notes payable to stockholders		$10,000.00	(3) 10,000.00					
Capital stock		100,000.00						$100,000.00
Surplus		25,000.00			(1) 15,000.00			40,000.00
	$135,000.00	$135,000.00						
Corporation Y—vendee			(1) 145,000.00		(2) 145,000.00			
Investment—corporation Y			(2) 130,000.00		(4) 130,000.00			
Due from stockholders			(4) 130,000.00		(3) 10,000.00		120,000.00	
			$430,000.00		$430,000.00		$140,000.00	$140,000.00

Key to adjustments:

1. To record transfer of assets sold to corporation Y, and profit thereon.
2. To record cash and securities received in payment for assets sold.
3. To credit stockholders' accounts with notes of corporation.
4. To charge stockholders with cost of securities distributed.

It is hardly possible that the directors of corporation X intended this distribution as a dividend, for besides creating the deficit above noted the only asset remaining is that of cash, $20,000. If, however, it was intended as a liquidating dividend, the capital stock should be reduced or scaled down by the amount of $80,000. Furthermore, the problem states that the stockholders canceled the notes of the corporation held by them "as a part consideration", a fact which leads to a second interpretation—that the distribution was not a dividend but a sale. Reference should therefore be made to the minutes of the meetings of the board of directors of corporation X to determine the intention of the board.

In the meantime, the following entries should be made:

Entry No. 3

Notes payable—stockholders.....	$10,000.00	
To: Due from stockholders.....		$10,000.00
To record cancellation of notes of corporation as a part consideration for stock of corporation Y.		

Entry No. 4

Due from stockholders.....	$130,000.00	
To: Investment—corporation Y....		$130,000.00
To record distribution of capital stock of corporation Y to stockholders.		

After making and posting these entries, the final balance-sheet will appear as follows:

CORPORATION X

Balance-sheet Date

Assets

Cash.....	$20,000.00
Due from stockholders.....	120,000.00
Total.....	$140,000.00

Net Worth

Capital stock.....	$100,000.00
Surplus.....	40,000.00
Total.....	$140,000.00

After determining the character of the distribution of the stock of corporation Y, adjustments can be made through the account "due to stockholders."

No. 4 (20 points):

M, a wholesale dealer in heavy merchandise, is unable to reconcile the percentage of net profits, as shown by his annual accounts, with the percentages arbitrarily added to cost prices, and asks your assistance in an effort to ascertain the reason therefor.

You investigate and find, first, that effective precautions are taken against theft of material and funds and that there are adequate checks against shipping merchandise unbilled.

You then obtain the following information from the books of account and the records:

(1) Twenty-five per cent. has been added to cost prices in order to obtain an average gross profit of 20% on sales.

(2) Expenses are estimated to amount to a total of 9% on sales, viz.:—1% selling, 1½% office, 3½% delivery, 2% general and 1% executive salaries.

(3) The accounts for the last completed year, 1925, showed the following:

Net sales		$2,490,000
Cost of sales		1,980,000
Gross profit		$510,000
Expenses:		
Selling	$23,600	
Delivery	165,100	
Office	37,300	
General	59,000	
Executive	25,000	310,000
Net profit		$200,000

(4) An analysis of the sales for an average month during the season of 1925 gives the following details, each invoice representing a separate delivery to a customer:

Sales:	Numbers of invoices	Amount of sales
Under $6	1,020	$2,648
From $6 to $10	324	2,679
" $10 " $20	428	6,174
" $20 " $50	583	19,440
" $50 " $100	667	52,630
" $100 " $200	781	102,475
" $200 " $300	225	55,210
Over $300	112	47,000
Average for one month during the season	4,140	$288,256

Prepare a statement accounting, as far as possible, for the difference between the estimated and the actual profits, giving the main facts but avoiding unnecessary details, and indicating what should be done to obtain better operating results.

Solution:

Examination of the statement of profit and loss and comparison with estimated profit and loss for the year ended December 31, 1925 (page 305), discloses that the principal cause of the disparity between actual and estimated results of operations for the year was the excess of delivery expense over the estimated amount thereof. Instead of the estimated 3.5 per cent. of net sales, or $87,150, delivery expense was 6.63 per cent. of net sales, or $165,100. The excess of delivery expense over the estimated amount thereof was $77,950, slightly more than the amount by which the actual net profit fell short of the estimated net profit.

Reference to the analysis of sales given for an average month shows that approximately one-third of the invoices for that month were for sales of less than $10. If the number of invoices for this month, 4,140, represents one-twelfth of the deliveries made during the year, the total deliveries for the year, 12×4,140, or 49,680, entailing delivery expense of $165,100, were made at an

M

Statement of profit and loss and comparison with estimated profit and loss for the year ended December 31, 1925

Particulars	Actual		Estimated		Excess or deficiency * of actual compared with estimated	
	Amount	Percentage	Amount	Percentage	Amount	Percentage†
Net sales	$2,490,000.00	100.00	$2,490,000.00	100.00	.....	...
Cost of sales	1,980,000.00	79.52	1,992,000.00	80.00	$12,000.00*	.48*
Gross profit	$510,000.00	20.48	$498,000.00	20.00	$12,000.00	.48
Expenses:						
Selling	$23,600.00	.95	$24,900.00	1.00	$1,300.00*	.05*
Delivery	165,100.00	6.63	87,150.00	3.50	77,950.00	3.13
Office	37,300.00	1.50	37,350.00	1.50	50.00*	...
General	59,000.00	2.37	49,800.00	2.00	9,200.00	.37
Executive	25,000.00	1.00	24,900.00	1.00	100.00	...
Total	$310,000.00	12.45	$224,100.00	9.00	$85,900.00	3.45
Net profit	$200,000.00	8.03	$273,900.00	11.00	$73,900.00*	2.97*

† This column shows excess or deficiency* of actual percentage of the various items compared with the estimated percentage thereof.

average delivery cost of $3.323 each. It can not be said, of course, that delivery cost on the smaller sales was as much as on the larger ones. In fact, the probably greater bulk of the latter, requiring more time and labor in handling and comprising greater tonnage, would no doubt result in a higher delivery cost. Nevertheless, delivery costs generally vary with the number of deliveries rather than with the amount of sales represented. Moreover, as no data are given whereby delivery costs may be distributed on any other basis than the number of invoices (except on the basis of amount of sales, a basis which would seem unwarranted) that method will have to be followed, although it may tend to exaggerate the results somewhat. It should be noted, however, that there is one other element of doubt as to the correctness of this computation. The problem states that the details of sales given are from "analysis of the sales for an average month during the season of 1925," but the amount of sales given represents one-twelfth of $3,459,072, which is greater by almost a million dollars than the actual net sales for 1925. It seems unlikely that sales returns and allowances would aggregate a million dollars and it follows that so far as amount of sales is concerned, the month given is hardly average in the usual meaning of that term. Whether the number of invoices given for this "average" month bears a corresponding ratio to the actual number for the year is not known, of course. In any case, average cost per delivery can only be determined by dividing total delivery expense by the actual number of deliveries.

Using the figures given, however, it is apparent that on all sales of less than $16.62 the gross profit of 20 per cent., being $3.32 or less, would not be sufficient to cover the average delivery cost.

In the following statement (page 307) there is set out, for each classification of sales, the gross profit on sales (at 20 per cent.) and the amount of delivery expense, using the average of $3.323 per sale.

If we carry the analysis further (page 308), we find that the percentage of delivery expense for the average month given in the problem is 4.77 per cent. of the sales total for that month and, further, that these percentages for the first four classes of sales are considerably in excess of this 4.77 per cent. rate.

The most obvious solution to the problem would seem to call for recommendations involving the reduction of delivery expense through elimination of deliveries made at a cost which is excessive in relation to the profit from the sale. The editors of this department, however, do not believe that such a solution is necessarily the most correct or desirable one and the reasons therefor are these:

(1) It is not definitely known that deliveries on small sales are as expensive as would be indicated by using an average cost per delivery.

(2) Elimination of deliveries on small sales may not result in the desired reduction in delivery expense.

(3) The delivery of small items may be necessitated by the merchandising or other policies of the business and may, in many cases, be matters of accommodation to important customers.

From an accounting viewpoint, it would seem desirable in these circumstances to prepare an analysis of the delivery expenses with the object of ascertaining any excessive items, it being assumed that the account as stated in the problem is correct and that delivery expense contains only items properly

M

Analysis of sales according to amount of invoice showing gross profit and delivery expense for each classification for the month of———, 1925

Sales—	Number of invoices	Amount of sales	Gross profit (20% of sales)	Delivery expense $3.323 per sale	Excess or deficiency* of gross profit
Under $6.00	1,020	$2,648.00	$529.60	$3,389.46	$2,859.86*
From $6.00 to $10.00	324	2,679.00	535.80	1,076.65	540.85*
" 10.00 to 20.00	428	6,174.00	1,234.80	1,422.24	187.44*
" 20.00 to 50.00	583	19,440.00	3,888.00	1,937.31	1,950.69
" 50.00 to 100.00	667	52,630.00	10,526.00	2,216.44	8,309.56
" 100.00 to 200.00	781	102,475.00	20,495.00	2,595.26	17,899.74
" 200.00 to 300.00	225	55,210.00	11,042.00	747.67	10,294.33
Over $300.00	112	47,000.00	9,400.00	372.17	9,027.83
Total	4,140	$288,256.00	$57,651.20	$13,757.20	$43,894.00

M

Statement showing percentage of delivery expense to sales for each classification for the month of———, 1925

	Number of invoices	Amount of sales	Delivery expense $3.323 per sale	Percentage of delivery expense to sales
Sales—				
Under $6.00	1,020	$2,648.00	$3,389.46	128.00
From $6.00 to $10.00	324	2,679.00	1,076.65	40.19
" 10.00 to 20.00	428	6,174.00	1,422.24	23.04
" 20.00 to 50.00	583	19,440.00	1,937.31	9.96
" 50.00 to 100.00	667	52,630.00	2,216.44	4.21
" 100.00 to 200.00	781	102,475.00	2,595.26	2.53
" 200.00 to 300.00	225	55,210.00	747.67	1.35
Over $300.00	112	47,000.00	372.17	.79
Total	4,140	$288,256.00	$13,757.20	4.77

chargeable thereto. The policy respecting the delivery of small items would appear to be a merchandising problem and as such would require solution in accord with the merchandising policies adhered to by the management.

While the problem does not require the candidate to give corrective suggestions, it seems that it might be well for the management to consider whether it would be practicable to increase the mark-up by slightly more than 3 per cent. to cover the deficiency of 2.97 per cent. as shown in the statement on page 305. This question is a matter of sales policy and should be weighed against the probability of increased sales resistance to higher prices. A plan which would allow quantity discounts on all articles selling for less than $20 might profitably be worked out to reduce the unit cost of delivery.

Receivable and Payable Offsets in Insolvency

Editor, Students' Department,

Sir: As a subscriber to The Journal of Accountancy I present a problem given at a Wisconsin C. P. A. examination which you may be interested in including in the *Students' Department.*

Problem:

The General Machine Company and the Hamilton Machine Company are engaged in related lines of business. The former company has suffered a fire loss and its financial embarrassment has resulted in a receiver being appointed. The failure of this company has affected the financial position of the Hamilton Machine Company which is a creditor of the General Machine Company so it is declared bankrupt. The General Machine Company owes the Hamilton Machine Company $25,000.00 for capital stock issued to the General Machine Company. This stock was subsequently sold by the General Machine Company. The Hamilton Machine Company owes the General Machine Company $25,000.00 for merchandise bought during September and October, 1924.

Accepting the following balance-sheets as correct, calculate the percentage of claim each company can pay.

General Machine Company

Balance-sheet, November 1, 1924

Assets		*Liabilities*	
Cash	$1,200.00	Notes payable	$75,000.00
Accounts receivable	55,000.00	Accounts payable	256,200.00
Plant	250,000.00	Capital stock	100,000.00
Deficit	125,000.00		
	$431,200.00		$431,200.00

Hamilton Machine Company

Balance-sheet November 1, 1924

Assets		*Liabilities*	
Accounts receivable	$75,000.00	Accounts payable	$175,000.00
Buildings	20,000.00	Capital stock	150,000.00
Machinery	55,000.00		
Deficit	175,000.00		
	$325,000.00		$325,000.00

The above statements show realizable value of all assets except the accounts between the two companies.

Yours truly,

A. E. Bark.

Milwaukee, Wisconsin.

Solution:

The point involved in this problem is that the two companies should not be allowed to offset the amounts of $25,000 due by each company to the other; if the offset were made the result would be that the General Machine Company would pay the Hamilton Machine Company in full although it paid other creditors only a fraction of the amounts due them; and similarly the Hamilton Machine Company would pay the General Machine Company in full and its other creditors only fractional amounts.

It is necessary to determine what percentage each company can pay its creditors, including, in each case, the other company on the same basis as the other creditors. But the amount each company can pay depends on what it will collect from the other company, thus presenting a mathematical problem of interdependent variables.

The financial condition of the two companies is summarized as follows:

	General Mach. Co.	Hamilton Mach. Co.
Assets:		
At realizable values:		
Cash	$1,200.00	
Accounts receivable (except other company)	30,000.00	$50,000.00
Plant	250,000.00	
Buildings		20,000.00
Machinery		55,000.00
Total	$281,200.00	$125,000.00
At book value:		
Account receivable—other company	25,000.00	25,000.00
Total	$306,200.00	$150,000.00
Liabilities:		
Notes payable	$75,000.00	
Accounts payable	256,200.00	$175,000.00
Total	$331,200.00	$175,000.00

Solution by Algebra

Let G = Per cent. General Machine Company can pay.
Let H = Per cent. Hamilton Machine Company can pay.

Then (1) $G = \frac{281{,}200 + (H \times 25{,}000)}{331{,}200}$

(2) $G = \frac{2812 + H\ 250}{3312}$

(3) $G = .8490338 + .07548309\ H$

and (4) $H = \frac{125{,}000 + (G \times 25{,}000)}{175{,}000}$

(5) $H = \frac{125 + G\ 25}{175}$

(6) $H = .714285 + .1428571\ G$

Substituting for H in (3), the value of H as stated in (6)

(7) $G = .8490338 + .07548309\ (.714285 + .1428571\ G)$

(8) $G = .8490338 + .0539164 + .0107833\ G$

(9) $G - .0107833\ G = .8490338 + .0539164$

(10) $.9892167\ G = .9029502$

(11) $G = .9127931$

(6) $H = .714285 + .1428571\ G$

(12) $H = .714285 + (.1428571 \times .9127931)$

(13) $H = .714285 + .130399$

(14) $H = .844684$

Proof

(1) $$G = \frac{281{,}200 + (25{,}000 \times H)}{331{,}200}$$

$$= \frac{281{,}200 + (25{,}000 \times .844684)}{331{,}200}$$

$$= \frac{281{,}200 + 21{,}117.10}{331{,}200}$$

$$= 302{,}317.10 \div 331{,}200$$

$$= .9127931$$

(4) $$H = \frac{125{,}000 + (25{,}000 \times G)}{175{,}000}$$

$$= \frac{125{,}000 + (25{,}000 \times .9127931)}{175{,}000}$$

$$= \frac{125{,}000 + 22{,}819.83}{175{,}000}$$

$$= 147{,}819.83 + 175{,}000$$

$$= .844685$$

Solution by arithmetic

This problem is interesting in itself, but it is presented here chiefly to afford an opportunity to illustrate a method of solving such problems by repeated approximations and without the aid of algebra.

In the following tabulation each successive approximation of the rate which each company will be able to pay is used in determining the next estimate of the realizable value of that company's account. The approximations are continued until the rate for one company is obtained by two successive approximations, or until the realizable value of one account is repeated.

Table of successive approximations

	First	Second	Third	Fourth	Fifth
GENERAL COMPANY:					
Other assets	$281,200.00	$281,200.00	$281,200.00	$281,200.00	$281,200.00
Hamilton Company	25,000.00	21,158.99	21,117.57	21,117.12	21,117.12
Total	$306,200.00	$302,358.99	$302,317.57	$302,317.12	
Liabilities	$331,200.00	$331,200.00	$331,200.00	$331,200.00	
Ratio	.9245169	.9129197	.9127945	.912793	

HAMILTON COMPANY:	First	Second	Third	Fourth
Other assets	$125,000.00	$125,000.00	$125,000.00	$125,000.00
General Company	23,112.92	22,822.99	22,819.86	22,819.83
Total	$148,112.92	$147,822.99	$147,819.86	$147,819.83
Liabilities	$175,000.00	$175,000.00	$175.000,00	$175,000.00
Ratio	.8463595	.8447028	.8446849	.8446847