Got it! Here are the **detailed solutions** for all **10 Income Statement questions**. Each solution follows its respective question with full step-by-step calculations.

Income Statement – Detailed Solutions

Q1:

Final Income Statement (2024)

Particulars	Amount ($)
Sales Revenue	100,000
(-) COGS	(40,000)
Gross Profit	**60,000**
(-) Operating Expenses	(20,000)
(-) Depreciation	(5,000)
Operating Profit	**35,000**
(-) Interest Expense	(2,500)
Net Profit Before Tax	**32,500**
(-) Tax (25%)	(8,125)
Net Profit	**24,375**

Q2: Multi-Step Income Statement – Solution

Final Income Statement (2024)

Particulars	Amount ($)
Revenue	500,000
(-) COGS (Raw Materials + Labor + Overheads)	(320,000)
Gross Profit	**180,000**

(-) Operating Expenses	(65,000)
(-) Depreciation	(15,000)
Operating Profit	**115,000**
(-) Interest Expense	(10,000)
Net Profit Before Tax	**105,000**
(-) Tax (30%)	(31,500)
Net Profit	**73,500**

Q3: Income Statement with Dividends & Retained Earnings – Solution

Final Income Statement (2024)

Particulars	Amount ($)
Revenue	200,000
(-) COGS	(100,000)
Gross Profit	**100,000**
(-) Operating Expenses	(50,000)
(-) Depreciation	(7,000)
Operating Profit	**43,000**
(-) Interest Expense	(5,000)
Net Profit Before Tax	**38,000**
(-) Tax (20%)	(7,600)
Net Profit	**30,400**
(-) Dividends Paid	(8,000)
Retained Profit	**22,400**

Q4: Comparing Two Years' Profitability – Solution

Year	Revenue ($)	COGS ($)	Expenses ($)	Interest ($)	Tax ($) (25%)	Net Profit ($)
2023	350,000	150,000	90,000	10,000	25,000	**75,000**
2024	400,000	180,000	95,000	12,000	28,250	**84,750**

Percentage Increase in Net Profit:

13%

Q5:

Particulars	Amount ($)
Sales Revenue	300,000
Investment Revenue	25,000
Total Revenue	**325,000**
(-) COGS	(120,000)
Gross Profit	**205,000**
(-) Operating Expenses	(80,000)
(-) Interest Expense	(8,000)
(-) Depreciation	(10,000)
Net Profit Before Tax	**107,000**
(-) Tax (30%)	(32,100)
Net Profit	**74,900**

Q6:

- **Credit Sales in Cash Flow**: **$120,000 deferred to next year**
- **Revenue for this year**: **$600,000 - $120,000 = $480,000**

Particulars	Amount ($)
Adjusted Sales Revenue	480,000
(-) COGS	(250,000)
Gross Profit	**230,000**
(-) Operating Expenses	(120,000)
(-) Interest Expense	(15,000)
(-) Depreciation	(20,000)
Net Profit Before Tax	**75,000**
(-) Tax (25%)	(18,750)
Net Profit	**56,250**

Q7:

Quarter	Revenue ($)	COGS ($)	Expenses ($)	Interest ($)	Tax ($) (20%)	Net Profit ($)
Q1	80,000	40,000	20,000	5,000	3,000	**12,000**
Q2	120,000	50,000	30,000	6,000	6,800	**27,200**
Q3	100,000	60,000	25,000	7,000	1,600	**6,400**
Q4	150,000	70,000	35,000	8,000	7,400	**29,600**
Annual Total	**450,000**	**220,000**	**110,000**	**26,000**	**18,800**	**75,200**

Q8:

Tax Brackets	Taxable Amount ($)	Tax Rate (%)	Tax ($)
First 50,000	50,000	10%	5,000
Next 100,000	100,000	20%	20,000
Remaining	13,000	30%	3,900

Total Tax Paid: $28,900

Particulars	Amount ($)
Revenue	400,000
(-) COGS	(180,000)
Gross Profit	**220,000**
(-) Expenses	(90,000)
(-) Interest	(12,000)
(-) Depreciation	(15,000)
Net Profit Before Tax	**103,000**
(-) Tax	(28,900)
Net Profit	**74,100**

Q9:

Particulars	Amount ($)
Sales Revenue	800,000
(-) COGS	(300,000)
Gross Profit	**500,000**
(-) Operating Expenses	(250,000)
(-) Legal Settlement	(50,000)
(-) Interest Expense	(30,000)
(-) Depreciation	(20,000)
Net Profit Before Tax	**150,000**
(-) Tax (25%)	(37,500)
Net Profit	**112,500**

Q10:

Particulars	Retail ($)	Wholesale ($)	Total ($)

Revenue	500,000	400,000	900,000
(-) COGS	(200,000)	(150,000)	(350,000)
Gross Profit	**300,000**	**250,000**	**550,000**
(-) Expenses	(120,000)	(100,000)	(220,000)
(-) Depreciation	(30,000)		(30,000)
(-) Interest	(20,000)		(20,000)
Net Profit Before Tax	**130,000**	**150,000**	**280,000**
(-) Tax (25%)	(32,500)	(37,500)	(70,000)
Net Profit	**97,500**	**112,500**	**210,000**

Balance Sheet Solutions

Solution 1

Particulars	Amount ($)
Non-Current Assets	**200,000**
(-) Accumulated Depreciation	(40,000)
Net Non-Current Assets	**160,000**
Current Assets	
- Cash	30,000
- Accounts Receivable	50,000
- Inventory	60,000
Total Current Assets	**140,000**
Total Assets	**300,000**
Current Liabilities	(55,000)
Non-Current Liabilities	(90,000)
Total Liabilities	**145,000**

Equity	
- Share Capital	120,000
- Retained Earnings (Balancing figure)	35,000
Total Equity	**155,000**

Solution 2

Particulars	Amount ($)
Fixed Assets	**500,000**
(-) Accumulated Depreciation	(100,000)
Net Fixed Assets	**400,000**
Current Assets	
- Cash	40,000
- Accounts Receivable	80,000
- Inventory	100,000
Total Current Assets	**220,000**
Total Assets	**620,000**
Current Liabilities	(70,000)
Non-Current Liabilities	(150,000)
Total Liabilities	**220,000**
Equity	
- Share Capital	200,000
- Retained Profit (Balancing figure)	200,000
Total Equity	**400,000**

Solution 3

- **Depreciation Calculation**:

120,000

- **Net Machinery Value**:

= 480,000

Particulars	Amount ($)
Net Machinery Value	480,000
Current Assets	
- Cash	50,000
- Inventory	75,000
- Accounts Receivable	85,000
Total Current Assets	**210,000**
Total Assets	**690,000**
Liabilities	
- Current Liabilities	(60,000)
- Long-Term Liabilities	(250,000)
Total Liabilities	**310,000**
Equity	
- Share Capital	300,000
- Retained Earnings	95,000
Total Equity	**395,000**

Solution 4

- **Retained Earnings Calculation**:

Total Assets - Liabilities - Share Capital= 85,000

Solution 5

- **Revaluation Surplus**:

600,000−500,000=100,000600,000 - 500,000 = 100,000

Particulars	Amount ($)
Revalued Property	600,000

(-) Depreciation	(20,000)
Net Fixed Assets	**580,000**
Current Assets	**150,000**
Total Assets	**730,000**
Liabilities	(250,000)
Equity	
- Share Capital	300,000
- Retained Earnings	80,000
- Revaluation Surplus	100,000
Total Equity	**480,000**

Solution 6

- **New Share Capital**:

300,000+100,000=400,000300,000 + 100,000 = 400,000

- **New Long-Term Liabilities**:

200,000−100,000=100,000200,000 - 100,000 = 100,000

Particulars	Amount ($)
Fixed Assets	700,000
(-) Accumulated Depreciation	(100,000)
Net Fixed Assets	**600,000**
Current Assets	**250,000**
Total Assets	**850,000**
Liabilities	
- Current Liabilities	(150,000)
- Long-Term Loan (After Conversion)	(100,000)
Total Liabilities	**250,000**
Equity	

- Share Capital	400,000
- Retained Earnings	120,000
Total Equity	**520,000**

Solution 7

- **Closing Cash Balance**:

20,000+150,000+50,000−100,000=120,00020,000 + 150,000 + 50,000 - 100,000 = 120,000

Particulars	Amount ($)
Net Fixed Assets	480,000
Current Assets	
- Cash	120,000
- Other Current Assets	180,000
Total Current Assets	**300,000**
Total Assets	**780,000**
Liabilities	**300,000**
Equity (Balancing figure)	**480,000**

Solution 8

- **Updated Inventory Value**:

100,000+50,000−80,000=70,000100,000 + 50,000 - 80,000 = 70,000

Solution 9

- **Depreciation Impact**:

500,000−50,000=450,000500,000 - 50,000 = 450,000

- **Updated Current Assets**:

200,000×1.10=220,000200,000 \times 1.10 = 220,000

- **Updated Liabilities**:

80,000×0.95=76,00080,000 \times 0.95 = 76,000

- **Retained Earnings Adjusted**:

250,000+20,000=270,000250,000 + 20,000 = 270,000

Solution 10

- **Dividends Paid**:

20,000

- **Retained Earnings After Dividends**:

200,000−20,000=180,000200,000 - 20,000 = 180,000

Particulars	Amount ($)
Total Assets	**800,000**
Total Liabilities	(300,000)
Equity	
- Share Capital	350,000
- Retained Earnings	180,000
Total Equity	**530,000**

Ratio Analysis Answers

1.

Solution:
Gross Profit = Sales Revenue - COGS
Gross Profit = $500,000 - $300,000 = $200,000

Gross Profit Margin = (Gross Profit / Sales Revenue) × 100
Gross Profit Margin = (200,000 / 500,000) × 100 = 40%

Gross Profit Margin = 40%

2.

Solution:
Net Profit = Sales Revenue - COGS - Operating Expenses - Interest Expenses - Tax

Expenses
Net Profit = $400,000 - $250,000 - $80,000 - $10,000 - $15,000 = $45,000

Net Profit Margin = (Net Profit / Sales Revenue) × 100
Net Profit Margin = (45,000 / 400,000) × 100 = 11.25%

Net Profit Margin = 11.25%

3.

Solution:
ROCE = (Net Profit / Capital Employed) × 100
ROCE = ($60,000 / $500,000) × 100 = 12%

ROCE = 12%

4.

Solution:
Current Ratio = Current Assets / Current Liabilities
Current Ratio = $200,000 / $150,000 = 1.33

Current Ratio = 1.33

5.

Solution:
Quick Assets = Current Assets - Inventory
Quick Assets = $250,000 - $80,000 = $170,000

Acid Test Ratio = Quick Assets / Current Liabilities
Acid Test Ratio = $170,000 / $150,000 = 1.13

Acid Test Ratio = 1.13

6.

Solution:
Trade Receivables Turnover = Credit Sales / Average Trade Receivables
Trade Receivables Turnover = $600,000 / $120,000 = 5

Trade Receivables Turnover = 5 times

7.

Solution:
Trade Payables Turnover = Credit Purchases / Average Trade Payables
Trade Payables Turnover = $400,000 / $100,000 = 4

Trade Payables Turnover = 4 times

8.

Solution:
Rate of Inventory Turnover = COGS / Average Inventory
Rate of Inventory Turnover = $500,000 / $100,000 = 5

Rate of Inventory Turnover = 5 times

9.

Solution:
Gearing Ratio = Total Liabilities / Shareholders' Equity
Gearing Ratio = $600,000 / $400,000 = 1.5

Gearing Ratio = 1.5

Cash Flow Answers

Answers

1.

Solution:

Month	Opening Balance	Receipts (Cash)	Receipts (Credit)	Purchases (Paid)	Rent	Wages	Utilities	Marketing	Net Cash Flow	Closing Balance
January	$20,000	$10,000	$40,000	$25,000	$5,000	$10,000	$2,000	$5,000	-$7,000	$13,000
February	$13,000	$18,000	$42,000	$30,000	0	$10,000	$2,000	$6,000	$12,000	$25,000
March	$25,000	$13,750	$41,250	$27,500	0	$10,000	$2,000	$5,500	$10,000	$35,000

Closing Balance for each month:

- January: $13,000
- February: $25,000
- March: $35,000

2.

Solution:

Month	Opening Balance	Receipts (Cash)	Receipts (Credit)	Purchases (Paid)	Rent	Wages	Utilities	Marketing	Net Cash Flow	Closing Balance
April	$30,000	$32,000	$48,000	$48,000	$6,000	$12,000	$3,000	$12,000	-$11,000	$19,000
May	$19,000	$36,000	$45,000	$54,000	0	$12,000	$3,000	$13,500	-$6,500	$12,500
June	$12,500	$29,750	$55,250	$51,000	0	$12,000	$3,000	$12,750	$8,000	$20,500

Closing Balance for each month:

- April: $19,000
- May: $12,500
- June: $20,500

3.

Solution:

Month	Opening Balance	Receipts (Cash)	Receipts (Credit)	Purchases (Paid)	Rent	Wages	Utilities	Marketing	Net Cash Flow	Closing Balance
July	$25,000	$30,000	$70,000	$55,000	$8,000	$15,000	$4,000	$8,000	-$10,000	$15,000
August	$15,000	$30,000	$90,000	$66,000	0	$15,000	$4,000	$9,600	-$4,600	$10,400
September	$10,400	$45,500	$84,500	$71,500	0	$15,000	$4,000	$10,400	$14,000	$24,400
October	$24,400	$44,000	$66,000	$61,000	0	$15,000	$4,000	$8,800	$12,200	$36,600
November	$36,600	$52,500	$52,500	$57,500	0	$15,000	$4,000	$8,400	$20,100	$56,700
December	$56,700	$51,750	$63,250	$57,500	0	$15,000	$4,000	$9,200	$29,300	$86,000

Closing Balance for each month:

- July: $15,000
- August: $10,400
- September: $24,400
- October: $36,600
- November: $56,700
- December: $86,000

Certainly! Here are the answers for the last two cash flow forecast questions:

Answers

4.

Solution:

Month	Opening Balance	Receipts (Cash)	Receipts (Credit)	Purchases (Paid)	Rent	Wages	Utilities	Marketing	Net Cash Flow	Closing Balance
January	$10,000	$24,500	$45,500	$28,000	$4,500	$8,000	$1,500	$3,500	$6,500	$16,500
February	$16,500	$26,000	$39,000	$26,000	0	$8,000	$1,500	$3,250	$7,250	$23,750
March	$23,750	$40,000	$40,000	$32,000	0	$8,000	$1,500	$4,000	$7,500	$31,250

Closing Balance for each month:

- January: $16,500
- February: $23,750
- March: $31,250

5.

Solution:

Month	Opening Balance	Receipts (Cash)	Receipts (Credit)	Purchases (Paid)	Rent	Wages	Utilities	Marketing	Net Cash Flow	Closing Balance
August	$15,000	$40,500	$49,500	$45,000	$5,000	$10,000	$2,500	$10,800	-$2,800	$12,200
September	$12,200	$42,750	$52,250	$47,500	0	$10,000	$2,500	$11,400	-$2,150	$10,050

Closing Balance for each month:

- August: $12,200
- September: $10,050

Investment Appraisal Answers

Sure! Here are the solutions in a simple format for easy copying into Google Docs:

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1. NPV Calculation

Initial Investment: $50,000
Cash Flows:
Year 1: $20,000
Year 2: $15,000
Year 3: $10,000
Discount Rate: 8%

Discount Factors (8%):

- Year 1: 0.9259
- Year 2: 0.8573
- Year 3: 0.7938

NPV Calculation:
NPV = (20,000 / 1.08) + (15,000 / 1.08^2) + (10,000 / 1.08^3) - 50,000
NPV = (18,518.52 + 12,957.11 + 7,513.15) - 50,000
NPV = 39,988.78 - 50,000 = -10,011.22

NPV = -$10,011.22

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2. Payback Period Calculation

Initial Investment: $150,000
Cash Inflows:
Year 1: $60,000
Year 2: $50,000
Year 3: $40,000
Year 4: $30,000

Payback Period Calculation:

- Year 1: $60,000
- Year 2: $60,000 + $50,000 = $110,000
- Year 3: $110,000 + $40,000 = $150,000 (Fully Paid Back in Year 3)

Payback Period = 3 years

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3. NPV Calculation

Initial Investment: $120,000
Cash Flows:
Year 1: $50,000
Year 2: $40,000
Year 3: $30,000
Year 4: $20,000
Discount Rate: 10%

Discount Factors (10%):

- Year 1: 0.9091
- Year 2: 0.8264
- Year 3: 0.7513
- Year 4: 0.6830

NPV Calculation:
NPV = (50,000 / 1.10) + (40,000 / 1.10^2) + (30,000 / 1.10^3) + (20,000 / 1.10^4) - 120,000
NPV = (45,454.55 + 33,456.76 + 22,539.84 + 13,660.44) - 120,000
NPV = 115,111.59 - 120,000 = -4,888.41

NPV = -$4,888.41

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4. ARR Calculation

Initial Investment: $200,000
Annual Profits: $50,000 for 6 years

ARR Calculation:
ARR = (Average Annual Profit / Initial Investment) × 100
ARR = (50,000 / 200,000) × 100 = 25%

ARR = 25%

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5. NPV Calculation

Initial Investment: $500,000
Cash Flows:
Year 1: $150,000
Year 2: $100,000
Year 3: $75,000
Year 4: $50,000
Year 5: $25,000
Discount Rate: 15%

Discount Factors (15%):

- Year 1: 0.8696
- Year 2: 0.7561
- Year 3: 0.6575
- Year 4: 0.5718
- Year 5: 0.4972

NPV Calculation:
NPV = (150,000 / 1.15) + (100,000 / 1.15^2) + (75,000 / 1.15^3) + (50,000 / 1.15^4) + (25,000 / 1.15^5) - 500,000
NPV = (130,434.78 + 70,917.73 + 49,275.01 + 28,590.48 + 12,431.47) - 500,000
NPV = 291,649.47 - 500,000 = -208,350.53

NPV = -$208,350.53

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6. Payback Period Calculation

Initial Investment: $250,000
Cash Flows:
Year 1: $70,000
Year 2: $80,000
Year 3: $60,000
Year 4: $40,000
Year 5: $30,000

Payback Period Calculation:

- Year 1: $70,000
- Year 2: $70,000 + $80,000 = $150,000
- Year 3: $150,000 + $60,000 = $210,000
- Year 4: $210,000 + $40,000 = $250,000 (Fully Paid Back in Year 4)

Payback Period = 4 years

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7. NPV Calculation

Initial Investment: $300,000
Cash Flows:
Year 1: $100,000
Year 2: $100,000
Year 3: $75,000
Year 4: $50,000
Discount Rate: 12%

Discount Factors (12%):

- Year 1: 0.8929
- Year 2: 0.7972
- Year 3: 0.7118
- Year 4: 0.6355

NPV Calculation:
NPV = (100,000 / 1.12) + (100,000 / 1.12^2) + (75,000 / 1.12^3) + (50,000 / 1.12^4) - 300,000
NPV = (89,285.71 + 79,734.36 + 53,535.73 + 31,777.88) - 300,000
NPV = 254,333.68 - 300,000 = -45,666.32

NPV = -$45,666.32

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8. ARR Calculation

Initial Investment: $120,000
Annual Profits: Year 1: $30,000, Year 2: $40,000, Year 3: $50,000, Year 4: $60,000

ARR Calculation:
Average Annual Profit = (30,000 + 40,000 + 50,000 + 60,000) / 4 = 45,000
ARR = (45,000 / 120,000) × 100 = 37.5%

ARR = 37.5%

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9. NPV Calculation

Initial Investment: $500,000
Cash Flows: Year 1-5: $120,000 each year
Discount Rate: 10%

Discount Factors (10%):

- Year 1: 0.9091
- Year 2: 0.8264
- Year 3: 0.7513
- Year 4: 0.6830
- Year 5: 0.6209

NPV Calculation:
NPV = (120,000 / 1.10) + (120,000 / 1.10^2) + (120,000 / 1.10^3) + (120,000 / 1.10^4) + (120,000 / 1.10^5) - 500,000
NPV = (109,090.91 + 109,090.91 + 109,090.91 + 81,818.18 + 74,509.09) - 500,000
NPV = 483,600.00 - 500,000 = -16,400.00

NPV = -$16,400.00

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10. ARR Calculation

Initial Investment: $500,000
Annual Rental Income: $80,000 per year for 10 years
Sale Price after 10 years: $600,000

ARR Calculation:
Average Annual Profit = (80,000 × 10 + 600,000) / 10 = 1,400,000 / 10 = 140,000
ARR = (140,000 / 500,000) × 100 = 28%

ARR = 28%

Budget Answers

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1. Solution:

- **Sales Variance** = Actual Sales - Budgeted Sales
  Sales Variance = $520,000 - $500,000 = **$20,000 Favorable**

- **COGS Variance** = Budgeted COGS - Actual COGS
  COGS Variance = $300,000 - $310,000 = **$10,000 Unfavorable**

- **Operating Expenses Variance** = Budgeted Operating Expenses - Actual Operating Expenses
  Operating Expenses Variance = $100,000 - $95,000 = **$5,000 Favorable**

- **Profit Variance** = (Actual Sales - Actual COGS - Actual Operating Expenses) - (Budgeted Sales - Budgeted COGS - Budgeted Operating Expenses)
  Profit Variance = ($520,000 - $310,000 - $95,000) - ($500,000 - $300,000 - $100,000) = $115,000 - $100,000 = **$15,000 Favorable**

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2. Solution:

- **Sales Volume Variance** = (Actual Sales - Budgeted Sales) × Budgeted Contribution per Unit
  Sales Volume Variance = ($290,000 - $300,000) × ($300,000 - $50,000) / $300,000 = -$10,000 × 0.8333 = **$8,333 Unfavorable**

- **Sales Price Variance** = (Actual Sales Price - Budgeted Sales Price) × Actual Units Sold
  Sales Price Variance = ($290,000 / $290,000 × 100%) - $50,000 = **Sales Price Unfavorable**

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3. Solution:

- **Material Price Variance** = (Actual Price - Standard Price) × Actual Quantity
  Material Price Variance = (48,0009,500−50,00010,000)×9,500=(5.05−5)×9,500=0.05×9,500=$475\left(\frac{48,000}{9,500} - \frac{50,000}{10,000}\right) \times 9,500 = (5.05 - 5) \times 9,500 = 0.05 \times 9,500 = \$475 **Favorable**

- **Material Usage Variance** = (Actual Quantity - Standard Quantity) × Standard Price
  Standard Quantity = (9,500 units × 5) = 47,500
  Material Usage Variance = (9,500 units - 10,000 units) × $5 = −500×5=−$2,500-500 \times 5 = -\$2,500 **Unfavorable**

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4. Solution:

- **Sales Price Variance** = (Actual Selling Price - Budgeted Selling Price) × Actual Units Sold
  Sales Price Variance = ($22 - $20) × 16,000 = $2 × 16,000 = **$32,000 Favorable**

- **Sales Volume Variance** = (Actual Units Sold - Budgeted Units Sold) × Budgeted Selling Price
  Sales Volume Variance = (16,000 - 15,000) × $20 = 1,000 × $20 = **$20,000 Favorable**

- **Variable Cost Variance** = (Actual Variable Cost per Unit - Budgeted Variable Cost per Unit) × Actual Units Sold
  Variable Cost Variance = ($11 - $12) × 16,000 = −1×16,000=−$16,000-1 \times 16,000 = -\$16,000 **Favorable**

- **Fixed Cost Variance** = Actual Fixed Costs - Budgeted Fixed Costs
  Fixed Cost Variance = $32,000 - $30,000 = **$2,000 Unfavorable**

---

5. Solution:

- **Total Sales Variance** = (Actual Sales - Budgeted Sales) × Budgeted Contribution per Unit
  Total Sales Variance = (23,000 units × $14) - (25,000 units × $15) = $322,000 - $375,000 = **$53,000 Unfavorable**

- **Sales Volume Variance** = (Actual Units Sold - Budgeted Units Sold) × Budgeted Selling Price
  Sales Volume Variance = (23,000 - 25,000) × $15 = −2,000×15=−$30,000-2,000 \times 15 = -\$30,000 **Unfavorable**

- **Sales Price Variance** = (Actual Selling Price - Budgeted Selling Price) × Actual Units Sold
  Sales Price Variance = ($14 - $15) × 23,000 = −1×23,000=−$23,000-1 \times 23,000 = -\$23,000 **Unfavorable**

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6. Solution:

- **Material Price Variance** = (Actual Price - Standard Price) × Actual Quantity
  Material Price Variance = (38,0009,500−40,00010,000)×9,500=(4−4)×9,500=0\left(\frac{38,000}{9,500} -

\frac{40,000}{10,000}\right) \times 9,500 = (4 - 4) \times 9,500 = 0 **No Variance**

- **Material Efficiency Variance** = (Actual Quantity - Standard Quantity) × Standard Price
  Standard Quantity = 9,500 units × $4 = $38,000
  Material Efficiency Variance = (9,500 - 10,000) × $4 = −500×4=−$2,000-500 \times 4 = -\$2,000 **Unfavorable**

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7. Solution:

- **Labor Rate Variance** = (Actual Rate - Standard Rate) × Actual Hours Worked
  Labor Rate Variance = (74,0009,500−75,00010,000)×9,500=(7.79−7.50)×9,500=0.29×9,500=2,755\left(\frac{74,000}{9,500} - \frac{75,000}{10,000}\right) \times 9,500 = (7.79 - 7.50) \times 9,500 = 0.29 \times 9,500 = 2,755 **Unfavorable**

- **Labor Efficiency Variance** = (Actual Hours Worked - Standard Hours Allowed) × Standard Rate
  Standard Hours Allowed = 9,500 hours
  Labor Efficiency Variance = (9,500 - 10,000) × $7.50 = −500×7.50=−$3,750-500 \times 7.50 = -\$3,750 **Unfavorable**

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8. Solution:

- **Contribution Margin Variance** = (Actual Contribution - Budgeted Contribution)
  Actual Contribution = Actual Sales - Actual Variable Costs = $450,000 - $270,000 = $180,000
  Budgeted Contribution = Budgeted Sales - Budgeted Variable Costs = $400,000 - $240,000 = $160,000
  Contribution Margin Variance = $180,000 - $160,000 = **$20,000 Favorable**

- **Overall Profit Variance** = Actual Profit - Budgeted Profit
  Actual Profit = Actual Contribution - Actual Fixed Costs = $180,000 - $55,000 = $125,000
  Budgeted Profit = Budgeted Contribution - Budgeted Fixed Costs = $160,000 - $50,000 = $110,000
  Overall Profit Variance = $125,000 - $110,000 = **$15,000 Favorable**

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9. Solution:

- **Labor Cost Variance** = (Actual Labor Cost - Budgeted Labor Cost)
  Labor Cost Variance = $74,000 - $75,000 = **$1,000 Favorable**

- **Labor Efficiency Variance** = (Actual Hours Worked - Standard Hours Allowed) × Standard Rate
  Standard Hours Allowed = 8,000 hours
  Labor Efficiency Variance = (7,500 - 8,000) × $9.375 = −500×9.375=−$4,687.50-500 \times 9.375 = -\$4,687.50 **Favorable**

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10. Solution:

- **Sales Variance** = (Actual Sales - Budgeted Sales) × Budgeted Contribution per Unit
  Sales Variance = (32,000 units × $9.50) - (30,000 units × $10) = $304,000 - $300,000 = **$4,000 Favorable**

- **Volume Variance** = (Actual Units Sold - Budgeted Units Sold) × Budgeted Selling Price
  Volume Variance = (32,000 - 30,000) × $10 = 2,000 × $10 = **$20,000 Favorable**

- **Price Variance** = (Actual Selling Price - Budgeted Selling Price) × Actual Units Sold
  Price Variance = ($9.50 - $10) × 32,000 = −0.50×32,000=−$16,000-0.50 \times 32,000 = -\$16,000 **Unfavorable**
