

Master budget sequence & formulas

- ✓ **Sales budget:** $\text{units} \times \text{price} = \text{revenue}$; the foundation for all budgets
- ✓ **Production budget (units)** = budgeted sales + desired ending inventory – beginning inventory
- ✓ **Direct materials usage** = units to produce $\times$ materials per unit ($\times$ cost = DM cost)
- ✓ **DM purchases** = materials required + desired ending materials inventory – beginning materials inventory ($\times$ cost)
- ✓ **Direct labor hours** = production units $\times$ DL hours per unit ($\times$ rate = DL cost)
- ✓ **Overhead** = (variable overhead rate $\times$ activity) + fixed overhead
- ✓ **COGM** = total manufacturing costs + beginning WIP – ending WIP
- ✓ **COGS** = beginning FG + COGM – ending FG
- ✓ **Contribution margin per unit** = sales price – variable cost per unit, including variable S&A
Total CM = total sales – total variable costs
- ✓ **Break-even units** = $\frac{\text{total fixed costs}}{\text{unit CM}}$
- ✓ **Operating-budget output:** budgeted income statement
- ✓ **Master-budget outputs:** budgeted income statement, cash budget, capital-expenditure budget, and budgeted balance sheet

Financial budgets

- ✓ **Cash budget:** short-term (often monthly); sections = receipts, disbursements, financing; consolidates the sales, production, and capital-expenditure budgets
- ✓ **Capital budget:** long-term asset investments (3–10+ years); major cash outflows; generates depreciation
- ✓ **Pro forma statements:** scenario/“what-if”; start from the budgeted statements, then adjust
- ✓ **Policy timing:** credit policy shifts the timing of inflows; purchasing policy shifts the timing of outflows

Forecasting techniques

- ✓ **Simple regression:** $Y = a + bX$ (a = intercept, b = slope)
- ✓ **Multiple regression:** $Y = a + b_1X_1 + \dots + b_nX_n + \varepsilon$
Assumes linearity; risk of overfitting
- ✓ **Expected value:** $EV = \sum [P(x) \times x]$; a probability-weighted average (probabilities sum to 1); ignores spread and variance
- ✓ **Learning curve:** each doubling of cumulative output reduces the cumulative average time or cost to the learning-curve % of the prior level; a valid curve is above 50% and below 100% (typically 70–90%; a lower % = faster learning)
- ✓ **Financing-need methods:** forecasted financial statements, percentage of sales, cash-flow projection, sensitivity/scenario analysis, regression