

FORMULA SHEET FOR PCEA AND CCEA EXAMS

FORMULA GROUP #	CEBoK MODULE #	FORMULA AND/OR EXCEL/SCRATCHPAD FUNCTION	PARAMETERS & NOTES
1	5	$y = a(1+r)^n$ (discrete compounding) $y = ae^{bx}$ (continuous compounding)	a: y-intercept r: rate n: number of time periods Associated with exponential growth/decay and exponential CERs
2	6	VAR.P, VAR.S, STDEV.P, STDEV.S	Excel/Scratchpad functions for population and sample variance and standard deviation, respectively
3	7	$y = ax^b$ $LCS = 2^b$ $b = \ln(LCS)/\ln(2)$ $LMP = (F+L+2\sqrt{FL})/4$ (ALM heuristic) Total Cost = ax^{b+1} (CUMAV only)	Learning curve formulas y: cumulative average unit cost of the first x units (CUMAV Theory), or cost of the x th unit (Unit Theory) x: Cumulative number of units, or unit number a: Theoretical first unit cost (T1) LCS: Learning Curve Slope LMP: Lot Midpoint F: First Unit L: Last Unit ALM: Algebraic Lot Midpoint
4	8	SLOPE, INTERCEPT, LINEST, FORECAST, CORREL, RSQ	Excel/Scratchpad functions for linear regression, forecasts, and correlation
5	10	$\mu: (a+b+c)/3$ $\sigma^2: (a^2+b^2+c^2-ab-ac-bc)/18$	A: Low B: Most Likely C: High Mean and variance of a triangular distribution
6	10	$CV = \sigma/\mu$ or s_x/\bar{X} or SEE/\bar{Y}	σ : pop. standard deviation μ : mean s: sample standard deviation SEE: Standard Error of the Estimate CV: Coefficient of Variation

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7	11	MUA: Negotiated, based on moving average of Delta Weight $\Delta \text{Weight} = 1 - \text{DPW}/\text{FPW}$ Scrap Rate = $(\text{Weight of Scrap}) / (\text{Weight of Final Product})$	MUA: Material Usage Allowance DPW: Delivered Product Weight FPW: Final Product Weight
8	14	$\text{Margin} = \text{Fee} / (1 + \text{Fee})$ (Return on Sales) $\text{Fee} = \text{Margin} / (1 - \text{Margin})$ (Return on Cost)	Fee: Profit as a percentage of cost Margin: Profit as a percentage of revenue, or "sales"
9	15	$\text{EAC} = \text{ACWP} + \text{BCWR}/\text{CPI}$ $\text{EAC}_{\text{worst case}} = \text{ACWP} + \text{BCWR}/(\text{CPI} * \text{SPI})$ $\text{BCWR} = \text{BAC} - \text{EV}$ $\text{TCPI} = \text{BCWR} / (\text{BAC} - \text{ACWP})$ $\text{CV} = \text{EV} - \text{ACWP}$ $\text{SV} = \text{EV} - \text{BCWS}$ $\text{CPI} = \text{EV}/\text{ACWP}$ $\text{SPI} = \text{EV}/\text{BCWS}$	EAC: Estimate-at-Complete ACWP: Actual Cost of Work Performed BCWR: Budgeted Cost of Work Remaining CPI: Cost Performance Index SPI: Schedule Performance Index BAC: Budget-at-Complete EV: Earned Value (also known as Budgeted Cost of Work Performed (BCWP)) TCPI: To-Complete Performance Index BCWS: Budgeted Cost of Work Scheduled