

PM Primary Formulas™

Based on PMBOK® Guide – Sixth Edition

The ultimate PMP®
reference sheet.

	Variable	Abbreviation / Name	Formula
COMM	Project Manager Communication		90 %
	Communication channels		$n(n-1) / 2$ $n = \#$ of stakeholders
QUAL	Normal Distribution	1 standard deviation = 1 SD = 1 sigma = 1σ	$1\sigma = 68.26\%$ $3\sigma = 99.73\%$ $2\sigma = 95.46\%$ $6\sigma = 99.99985\%$
SCHEDULE/COST – Estimating	Three point estimate for activity duration (EAD) or cost	P = pessimistic, M = most likely, O = optimistic	For triangular distribution or simple average: $EAD = (P + M + O) / 3$ For beta distribution, PERT or weighted average: $EAD = (P + 4M + O) / 6$
	Standard Deviation of activity (or cost)	$SD_{activity}$ (or $\sigma_{activity}$)	For beta distribution: $(P - O) / 6$
	Variance of activity (or cost)	$Var_{activity}$ (or $\sigma^2_{activity}$)	For beta distribution: $((P - O) / 6)^2$
	Standard Deviation of Project	$SD_{project}$ (or $\sigma_{project}$)	$\sqrt{Var_1 + Var_2 + Var_3 + \dots}$
	Project Duration	<i>critical path activities only:</i>	$(EAD_1 + EAD_2 + EAD_3 + \dots) \pm (\# \text{ of sigma's} * SD_{project})$
	Estimating in Initiating	Rough Order of Magnitude	-25% to +75% from actual
	Estimating early in Planning	Budgetary / Top Down / Analogous	-10% to +25% from actual
	Estimating late in Planning	Definitive / Bottom-up	-5% to +10% or +/-10% from actual
RISK	Expected Monetary Value	EMV	Probability * Impact [\$]
	Net Benefit	Net Benefit	$\Sigma EMV - \text{cost}$

	Variable	Abbreviation	Description	Formula
COST – Earned Value	Actual Cost	AC	Actual cost incurred for work performed (to date)	
	Earned Value	EV	Value of work performed (to date)	Σ (PV of completed work)
	Planned Value	PV	Budget assigned for work performed (to date)	
	Cost Variance	CV	Measure of cost performance	$CV = EV - AC$
	Cost Performance Index	CPI	Measure of cost efficiency	$CPI = EV / AC$
	Schedule Variance	SV	Measure of schedule performance	$SV = EV - PV$
	Schedule Performance Index	SPI	Measure of schedule efficiency	$SPI = EV / PV$
COST – Forecasting	Budget At Completion	BAC	Budget assigned for planned work	PROJECT COST BASELINE
	Estimate To Complete	ETC (for atypical variance)	Assumes future work to be performed as budgeted	$ETC = BAC - EV$
		ETC (for typical variance)	Assumes past performance to continue throughout	$ETC = (BAC - EV) / CPI$ or $ETC = EAC - AC$
	Estimate At Completion	EAC	Use when original est. is flawed	$EAC = AC + \text{Bottom-up ETC}$
		EAC (for atypical variance)	Assumes future work to be performed as budgeted	$EAC = AC + BAC - EV$
		EAC (for typical variance)	Assumes past performance to continue throughout	$EAC = AC + ETC = AC + (BAC - EV) / CPI$ or $EAC = BAC / CPI$
	Variance At Completion	VAC	Forecast of variance	$VAC = BAC - EAC$
To-Complete Performance Index	TCPI	Cost performance necessary to achieve BAC or new EAC goal Work remaining divided by funds remaining	$TCPI = (BAC - EV) / (BAC - AC)$ BASED ON BAC or $TCPI = (BAC - EV) / (EAC - AC)$ BASED ON NEW EAC	