PMP Formulas mentioned in the PMBOK Guide 5th Edition

Name (Abbreviation)	Formula	Interpretation
No. of Communication Channels	$$n(n-1)/2$$ n = number of members in the team	**n** should include the project manager *e.g. if the no. of team members increase from 4 to 5, the increase in communication channels: **5**(5-1)/2 – **4**(4-1)/2 = 4*
Schedule Performance Index (SPI)	$$SPI = EV/PV$$ EV = Earned Value PV = Planned Value	< 1 behind **schedule** = 1 on schedule > 1 ahead of schedule
Cost Performance Index (CPI)	$$CPI = EV/AC$$ EV = Earned Value AC = Actual Cost	< 1 Over **budget** = 1 On budget > 1 Under budget *sometimes the term 'cumulative CPI' would be shown, which actually is the CPI up to that moment*
Schedule Variance (SV)	$$SV = EV - PV$$ EV = Earned Value PV = Planned Value	< 0 Behind **schedule** = 0 On schedule > 0 Ahead of schedule
Cost Variance (CV)	$$CV = EV - AC$$ EV = Earned Value AC = Actual Cost	< 0 Over **budget** = 0 On budget > 0 Within budget
Estimate at Completion (EAC) if original is flawed	$$EAC = AC + New\ ETC$$ AC = Actual Cost New ETC = New Estimate to Completion	if the original estimate is based on wrong data/assumptions or circumstances have changed
Estimate at Completion (EAC) if BAC remains the same	$$EAC = AC + BAC - EV$$ AC = Actual Cost BAC = Budget at completion EV = Earned Value	the variance is caused by a one-time event and is not likely to happen again

Name (Abbreviation)	Formula	Interpretation
Estimate at Completion (EAC) if CPI remains the same	**EAC = BAC/CPI** BAC = Budget at completion CPI = Cost performance index	if the CPI would remain the same till end of project, i.e. the original estimation is not accurate
Estimate at Completion (EAC) if substandard performance continues	**EAC = AC + (BAC - EV)/(CPI*SPI)** AC = Actual Cost BAC = Budget at completion EV = Earned Value CPI = Cost Performance Index SPI = Schedule Performance Index	*use when the question gives all the values (AC, BAC, EV, CPI and SPI), otherwise, this formula is not likely to be used*
To-Complete Performance Index (TCPI)	**TCPI = (BAC – EV) / (BAC – AC)** BAC = Budget at completion EV = Earned value AC = Actual Cost **TCPI = Remaining Work /Remaining Funds** BAC = Budget at completion EV = Earned value CPI = Cost performance index	< 1 Under **budget** = 1 On budget > 1 Over budget
Estimate to Completion	**ETC = EAC -AC** EAC = Estimate at Completion AC = Actual Cost	

Name (Abbreviation)	Formula	Interpretation
Variance at Completion	$$VAC = BAC - EAC$$ BAC = Budget at completion EAC = Estimate at Completion	< 0 Under **budget** = 0 On budget > 0 Over budget
PERT Estimation	$$(O + 4M + P)/6$$ O= Optimistic estimate M= Most Likely estimate P= Pessimistic estimate	
Standard Deviation	$$(P - O)/6$$ O= Optimistic estimate P= Pessimistic estimate	this is a rough estimate for the standard deviation
Float/Slack	$$LS - ES$$ LS = Late start ES = Early start $$LF - EF$$ LF = Late finish EF = Early finish	= 0 **On critical path** < 0 Behind schedule

The above 17 PMP formulas are all that you'll need for the PMP Exam. Learn them and understand their application. You will be able to solve the calculation questions in the certification exam.

However, if you are still struggling with PMP® formulas or you want some more guided descriptions on how to apply them with PMP® practice questions, you are advised to explore the PM Exam Formulas Study Guide authored by Cornelius Fitchner (the same author of the acclaimed online PMP® Exam Prep course which I used to clear my PMP® exam – the PM PrepCast™).