List of Important Formulas in PMP

Name	Formula	Interpretation
1. 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*
2. Schedule Performance Index (SPI)	**SPI = EV/PV** EV = Earned Value PV = Planned Value	< 1 behind **schedule** = 1 on schedule > 1 ahead of schedule
3. 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*
4. Schedule Variance (SV)	**SV = EV – PV** EV = Earned Value PV = Planned Value	< 0 Behind **schedule** = 0 On schedule > 0 Ahead of schedule
5. Cost Variance (CV)	**CV = EV – AC** EV = Earned Value AC = Actual Cost	< 0 Over **budget** = 0 On budget > 0 Within budget
6. 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
7. 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
8. Estimate at Completion	**EAC = BAC/CPI**	if the CPI would remain the same till end of project, i.e. the original estimation is not accurate

Name	Formula	Interpretation
(EAC) **if CPI remains the same**	BAC = Budget at completion CPI = Cost performance index	
9. **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*
10. **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 Values for the TCPI index of less then 1.0 is good because it indicates the efficiency to complete is less than planned. How efficient must the project team be to complete the remaining work with the remaining money?
11. **Estimate to Completion**	**ETC = EAC -AC** EAC = Estimate at Completion AC = Actual Cost	
12. **Variance at Completion**	**VAC = BAC – EAC** BAC = Budget at completion EAC = Estimate at Completion	< 0 Over **budget** = 0 On budget > 0 Under budget
13. **PERT Estimation**	**(O + 4M + P)/6**	O= Optimistic estimate M= Most Likely estimate P= Pessimistic estimate
14. **Standard Deviation**	**(P – O)/6** O= Optimistic estimate P= Pessimistic estimate	*this is a rough estimate for the standard deviation*

Name	Formula	Interpretation
15. 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
16. Variance	[(P - O)/6]squared	
17. Est. At Completion (EAC)	• BAC / CPI, • AC + ETC -- Initial Estimates are flawed • AC + BAC - EV -- Future variance are Atypical • AC + (BAC - EV) / CPI -- Future Variance would be typical	
18. Percentage complete	EV/ BAC	
19. Net Present Value	Bigger is better (NPV)	
20. Present Value PV	FV / (1 + r)^n	
21. Internal Rate of Return	Bigger is better (IRR)	
22. Benefit Cost Ratio	Bigger is better ((BCR or Benefit / Cost) revenue or payback VS. cost) Or PV or Revenue / PV of Cost	
23. Payback Period	• Less is better • Net Investment / Avg. Annual cash flow.	
24. BCWS	PV	
25. BCWP	EV	
26. ACWP	AC	
27. Order of Magnitude	-25% - +75% (-50 to +100% PMBOK)	

Name	Formula	Interpretation
Estimate		
28. Budget Estimate	-10% - +25%	
29. Definitive Estimate	-5% - +10%	
30. Expected Monetary Value	Probability * Impact	
31. Point of Total Assumption (PTA)	((Ceiling Price - Target Price)/buyer's Share Ratio) + Target Cost	
32. Sigma	• 1Sigma = 68.27% • 2Sigma = 95.45% • 3Sigma= 99.73% • 6Sigma = 99.99985%	
33. Return on Sales (ROS)	Net Income Before Taxes (NEBT) / Total Sales OR Net Income After Taxes (NEAT) / Total Sales	
34. Return on Assets (ROA)	• NEBT / Total Assets OR • NEAT / Total Assets	
35. Return on Investment (ROI)	• NEBT / Total Investment OR • NEAT / Total Investment	
36. Working Capital	Current Assets - Current Liabilities	
37. Discounted Cash Flow	Cash Flow X Discount Factor	