

## PMP Formulas

Lines of Communication ☆	$(n * (n-1))/2$ <p>n = Number of Stakeholders</p>
Estimated Value ☆	$(O+4M+P)/6$ <p>O= Optimistic M= Most Likely P= Pessimistic</p>
Total Float (TF) ☆	$TF = LF-EF = LS-ES$ <p>LF = Late Finish EF = Early Finish LS = Late Start ES = Early Start</p> <p>TF=0 Is the Critical Path</p>
Standard Deviation ( $\sigma$ ) of a single activity	$\sigma=(P-O)/6$ <p>P = Pessimistic O = Optimistic</p>
Standard Deviation Variance for a Single Activity ( $\sigma$ )^2	$\sigma^2 = ((P-O)/6)^2$ <p>P = Pessimistic O = Optimistic</p>
Standard Deviation for series of activities	$\sqrt{\sum \sigma^2} = \sqrt{\text{sum}((P-O)/6)^2}$ <p>O=Optimistic P=Pessimistic</p>
Project Variance (V)	$V = \text{Total } \sigma = \text{Total } (P-O)/6$ <p>P=Pessimistic O=Optomistic</p>
Project Standard Deviation	$=\sqrt{V}$ <p>V=Project Variance</p>
Average (Mean)	$(O+M+P)/3$ <p>O=Optimistic M=Most Likely P= Pessimistic</p>

☆ = Highly likely to appear on the exam.

<b>Earned Value (EV)</b>	<b><math>EV = PV * \% \text{ Complete}</math></b> EV = Earned Value (BCWP) PV = Planned Value (BCWS)
<b>Schedule Variance (SV) ★</b>	<b><math>SV = EV - PV</math></b> EV = Earned Value (BCWP) PV = Planned Value (BCWS)  Negative = Bad Zero = On Target Positive = Good
<b>Schedule Performance Index (SPI) ★</b>	<b><math>SPI = EV / PV</math></b> EV = Earned Value (BCWP) PV = Planned Value (BCWS)  < 1 Bad = 1 On Target > 1 Good
<b>Schedule Variance Percentage (SV%)</b>	<b><math>SV\% = SV / PV</math></b> PV = Planned Value (BCWS)
<b>Cost Variance (CV) ★</b>	<b><math>CV = EV - AC</math></b> EV = Earned Value (BCWP) AC = Actual Cost (ACWP)  Negative = Bad Zero = On Target Positive = Good
<b>Cost Performance Index (CPI) ★</b>	<b><math>CPI = EV / AC</math></b> EV = Earned Value (BCWP) AC = Actual Cost (ACWP)  < 1 Bad = 1 On Target > 1 Good
<b>Cumulative Cost Performance Index (CPI<sup>c</sup>)</b>	<b><math>CPI^c = EV^c / AC^c</math></b>  EV <sup>c</sup> = Cumulative Earned Value AC <sup>c</sup> = Cumulative Actual Cost

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<b>Budget At Completion (BAC)</b>	<b><math>BAC = PV^c</math></b> $PV^c$ = Total Cumulative Planned Value at Completion
<b>Variance At Completion (VAC)</b>	<b><math>VAC = BAC - EAC</math></b>  BAC = Budget at completion EAC = Estimate at completion
<b>Estimate To Complete (ETC)</b> Based On Atypical Variances	<b><math>ETC = BAC - EV^c</math></b>  BAC = Budget At Completion $EV^c$ = Cumulative Earned Value
<b>Estimate To Complete (ETC)</b> Based On Typical Variances	<b><math>ETC = (BAC - EV^c) / CPI^c</math></b>  BAC = Budget At Completion $EV^c$ = Cumulative Earned Value $CPI^c$ = Cumulative Cost Performance Index
<b>Estimate At Completion (EAC)</b> Using A New Estimate	<b><math>EAC = AC + ETC</math></b>  AC = Actual Cost (ACWP) ETC = Estimate To Complete
<b>Estimate At Completion (EAC) ★</b> Using Remaining Budget	<b><math>EAC = AC + BAC - EV</math></b>  AC = Actual Cost (ACWP) BAC = Budget At Completion EV = Earned Value
<b>Estimate At Completion (EAC)</b> Using Cost Performance Index	<b><math>EAC = (AC + (BAC - EV) / CPI)</math></b>  Or <b><math>EAC = BAC / CPI</math></b>  AC = Actual Cost (ACWP) BAC = Budget At Completion EV = Earned Value CPI = Cost Performance Index
<b>To-Complete Performance Index (TCPI) ★</b>	If BAC is still valid: <b><math>TCPI = (BAC - EV) / (BAC - AC)</math></b>  If BAC is no longer valid: <b><math>(BAC - EV) / (EAC - AC)</math></b>

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<b>Cost of Quality (COQ)</b>	<b><math>COQ = EFTW + COPQ = POC + PONC</math></b>  EFTW = Essential 1st Time Work COPQ = Cost of Poor Quality POC = Price of Conformance PONC = Price of Non-conformance
<b>Present Value (PV)</b>	<b><math>PV = FA / (1 + i^n)</math></b>  FA = Future Amount i = interest rate n = number of years

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