



How to Become a Certified Project Management Professional

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## PMP Formulas

Earned Value
$CV = EV - AC$
$CPI = EV / AC$
$SV = EV - PV$
$SPI = EV / PV$
EAC 'no variances' = $BAC / CPI$
EAC 'fundamentally flawed' = $AC + ETC$
EAC 'atypical' = $AC + BAC - EV$
EAC 'typical' = $AC + ((BAC - EV) / CPI)$
$ETC = EAC - AC$
ETC 'atypical' = $BAC - EV$
ETC 'typical' = $(BAC - EV) / CPI$
ETC 'flawed' = new estimate
Percent Complete = $EV / BAC * 100$
$VAC = BAC - EAC$
$EV = \% \text{ complete} * BAC$
$\% \text{ COMPLETE} = EV / BAC * 100$
$\% \text{ SPENT} = AC / BAC * 100$
$CV\% = CV / EV * 100$
$SV\% = SV / PV * 100$
PERT
PERT 3-point = $(Pessimistic + (4 * Most Likely) + Optimistic) / 6$
$PERT \alpha = (Pessimistic - Optimistic) / 6$
PERT Activity Variance = $((Pessimistic - Optimistic) / 6)^2$
PERT Variance all activities = $\_sum((Pessimistic - Optimistic) / 6)^2$
Classes of Estimates
Order of Magnitude estimate = -25% to +75%
Preliminary estimate = -15% to + 50%
Budget estimate = -10% to +25%
Definitive estimate = -5% to +10%
Final estimate = 0%

## Project Selection

$$PV = FV / (1+r)^n$$

$$FV = PV * (1+r)^n$$

NPV = Select biggest number.

ROI = Select biggest number.

IRR = Select biggest number.

Payback Period = Add up the projected cash inflow minus expenses until you reach the initial investment.

BCR = Benefit / Cost

CBR = Cost / Benefit

Opportunity Cost = The value of the project not chosen.

Exp. Value = Probability % x Consequence \$

## Communications

$$\text{Communication Channels} = n * (n-1) / 2$$

## Probability

$$EMV = \text{Probability} * \text{Impact in currency}$$

## Procurement

$$PTA = ((\text{Ceiling Price} - \text{Target Price}) / \text{Buyer's Share Ratio}) + \text{Target Cost}$$

## Depreciation

Straight-line Depreciation:

Depr. Expense = Asset Cost / Useful Life

Depr. Rate = 100% / Useful Life

Double Declining Balance Method:

Depr. Rate = 2 \* (100% / Useful Life)

Depr. Expense = Depreciation Rate \* Book Value at Beginning of Year

Book Value = Book Value at beginning of year - Depreciation Expense

Sum-of-Years' Digits Method:

Sum of digits = Useful Life + (Useful Life - 1) + (Useful Life - 2) + etc.

Depr. rate = fraction of years left and sum of the digits (i.e. 4/15th)

## SIGMA

1 sigma = 68.26%

2 sigma = 95.46%

3 sigma = 99.73%

6 sigma = 99.99%

## Important Values

**Control Limits = 3 sigma from mean**

**Control Specifications = Defined by customer; less than the control limits**

**Float on the critical path = 0 days**

**Pareto Diagram = 80/20**

**Time a PM spends communicating = 90%**

**Crashing a project = Crash least expensive tasks on critical path.**

**JIT inventory = 0% (or very close to 0%.)**

## Network Diagram

Forward Pass

ES = EF of the predecessor node

EF = ES + Dur

Backward Pass

LF = LS of the Successor

LS = LF – Dur

Slack = LF – EF = LS – ES

Free Float = ES(Successor) - EF(Predecessor)

ES	Dur	EF
Node		
LS	Float	LF

*You need to understand the terms and the logic relationships between the inputs, outputs and tools & techniques. Memorizing them is not enough and will lead you nowhere.*

*Refer to the PMBoK 6<sup>th</sup> Edition for more details. &*

*Please do not hesitate to contact me anytime if you have any questions, comments, and feedbacks.*

*Success is yours,*

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