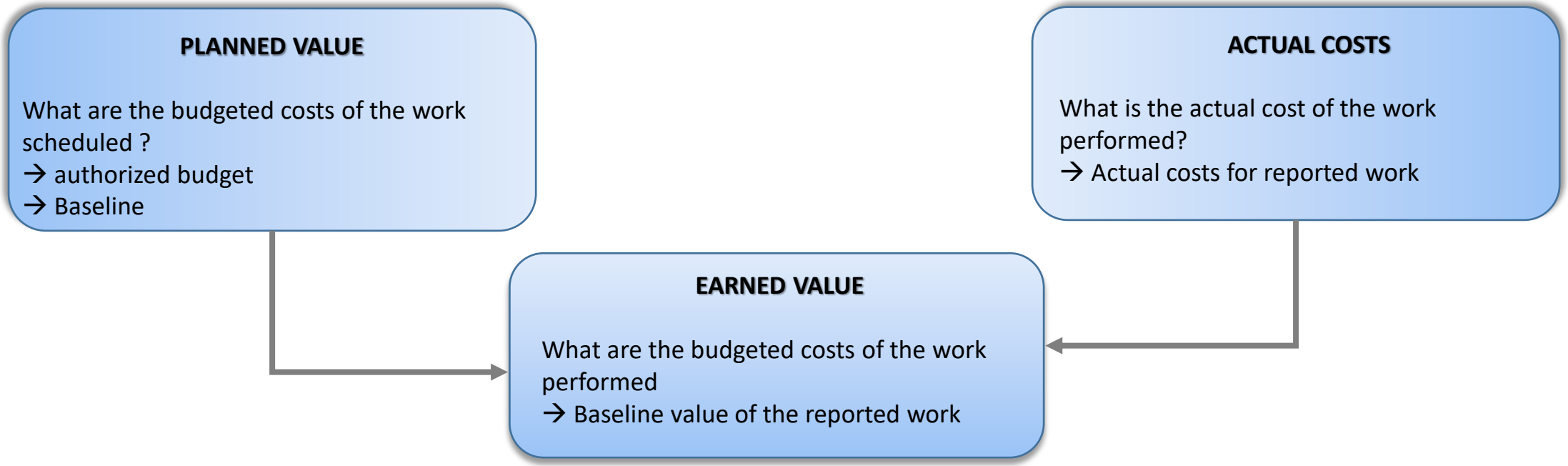
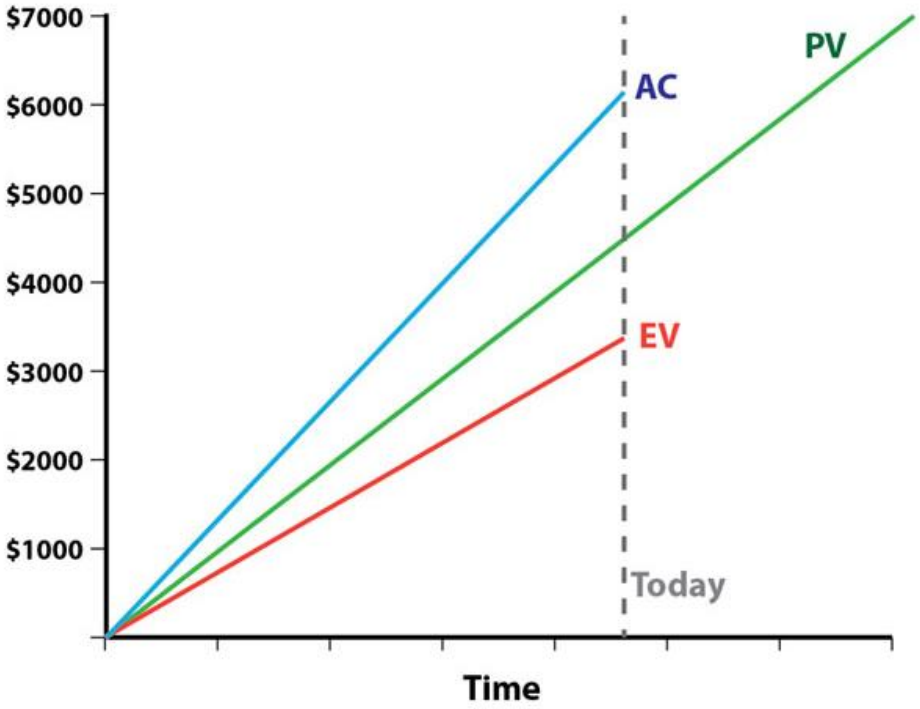
Earned Value Management



EVM Formula	Good	Bad
SV = EV – PV	+ Variance(ahead of Schedule)	- Variance (behind schedule)
CV = EV – AC	+ Variance (under budget)	- Variance (over budget)
SPI = EV / PV	>1 (ahead of Schedule)	<1 (behind schedule)
CPI = EV / AC	> 1 (under budget)	< 1 (over budget)

1 - With reference to the diagram below, it can be inferred that the project is currently:



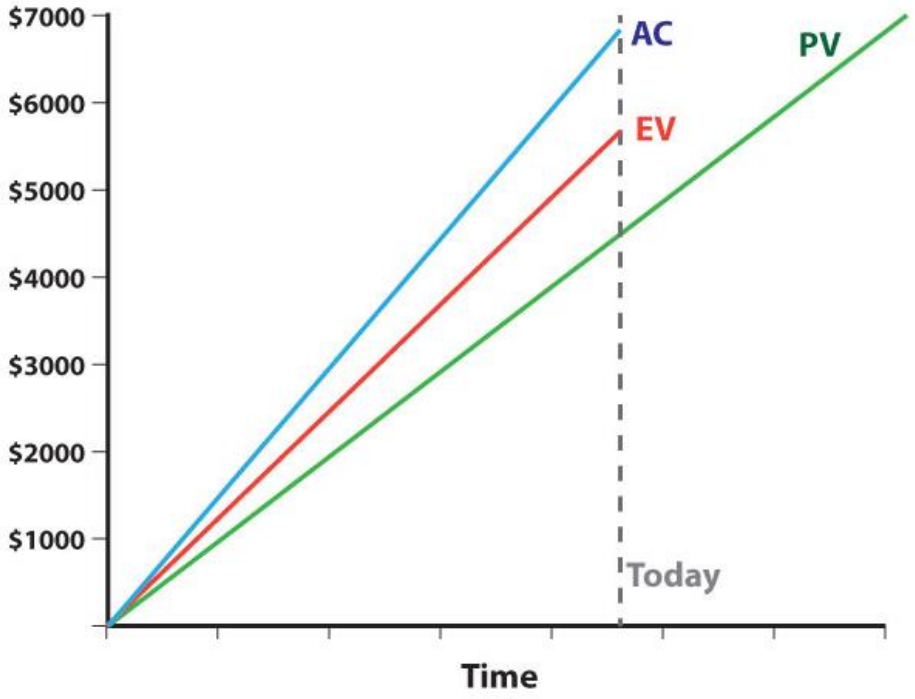
1. ahead of schedule and under budget
2. ahead of schedule and over budget
3. behind schedule and under budget
4. behind schedule and over budget

Solution : Answer 4 as :

SV = EV-PV = 3500-4500
=-1000
→ Negative variance
so behind schedule

CV = EV-AC =3500-6000
= -2500
→ Negative variance
so over budget

2 - With reference to the diagram below, it can be inferred that the project is currently:



1. ahead of schedule and under budget
2. ahead of schedule and over budget
3. behind schedule and under budget
4. behind schedule and over budget

Solution : Answer 2 as :

SV = EV-PV = 5500-4500
= 1000
→ Positive variance
so ahead of schedule

CV = EV-AC =5500-6500
= -1000
→ Negative variance
so over budget

3. You have been selected to project manage the construction of a sports center and the project is 3 months into phase 2, which is to complete the final fit (all the interiors) of the ground floor, fit out all the electrics, plumbing and gasworks for the first and second floors and finalise the installation of the roof and air conditioning system.

When going through all the progress reports previously given to the Project Sponsor and stakeholders, and those sent to the previous PM, you realise that this project phase had:

- a planned value of $280,000
- an earned value of $250,000 and
- actual costs amounting to $295,000

What are the implications for your project?

a) This project is on track to deliver and is within its budget
b) This project is behind schedule but is within its budget
c) This project is on schedule but over budget
d) This project is behind schedule and over budget

SV = EV-PV = -30k →
Negative variance
so behind schedule

CV = EV-AC = -45k
Negative variance
so over budget

4. If a project has a Cost Performance Index (CPI) of 0.90, this means that:

a. 90% of the work planned to date has been completed
b. 90% of the budget planned to date has been spent
c. 111% of the budget planned to date has been spent
d. 111% of the project budget has been spent

Solution: C

The Cost Performance Index (CPI) represents the performance of the project in terms of budget up to the moment. If it is smaller than 1, the project is currently over budget (i.e. has spent more than what has been planned).

5. A project with both Schedule Performance Index (SPI) and Cost Performance Index (CPI) of 0.80. The project is currently:

a. ahead of schedule and under budget
b. behind schedule and under budget
c. ahead of schedule and over budget
d. behind schedule and over budget

Solution: D

CPI < 1 = over budget and SPI < 1 = behind schedule, so the project is both “behind schedule and over budget”.

6. You are the project manager of a housing project in which a total of 10 houses are to be build over 10 months (1 house per month). The total budget for the housing project is $1,000,000. The project is now at the end of the 6th month with 5 houses built and $500,000 spent. The project is behind schedule owing to a work strike for a month. The Cost Performance Index (CPI) for the project is:

A. 1.0
B. 0.9
C. 1.1
D. 1.2

Solution: A
The formula to be used to calculate CPI is: **CPI = EV / AC**
CPI = $500,000 / $500,000 = 1.0

7. Rick, a project manager, is updating the status of his project. Based on the performance indices, he expects the project to finish a month earlier than the planned finish date. However, he expects the project to exceed the budgeted costs. What can you say about the schedule performance index (SPI) of the project?

A. The SPI is less than 1.0.
B. The SPI equals the CPI.
C. The SPI is greater than 1.0.
D. The SPI is equal to 1.0

Solution: C
A project that is ahead of schedule will have a SPI value greater than 1.0, since it indicates that more work was completed than was planned.

8. A project is estimated to cost $50,000 with a timeline of 50 days. After 25 days, the project manager finds that 50 percent of the project is complete and actual costs are $50,000. What is the Cost Performance Index (CPI)?

A. The CPI is 1
B. The CPI is 1.5
C. The CPI is 2
D. The CPI is 0.5

Solution: D
The Cost performance Index (CPI) is given by the formula **CPI = EV/AC**
Since 50% of the project is complete, Earned Value = 50% of $50,000 = $25,000. Hence CPI = 25,000/50,000 = 0.5.

9. You are a project manager who is in charge of an important project for your company. The project is 40 percent complete after three months and has cost $350,000. The budget for the project is $950,000 and is scheduled to last eight months. How is the project performing?
(Vous êtes un chef de projet responsable d'un projet important pour votre entreprise. Le projet est achevé à 40% après trois mois et a coûté 350 000 $. Le budget du projet est de 950 000 $ et devrait durer huit mois. Comment se déroule le projet?)

A. The project is behind schedule and over budget.
B. The project is ahead of schedule and under budget.
C. The project is behind schedule and under budget
D. The project is ahead of schedule and over budget.

Solution: B
CPI=EV/AC.
CPI = (950000*40%)/350000 = 380000/350000 = 1.09 (under budget).
SPI=EV/PV. SPI = 380000/(950000*0.375) = 380000/356,250 = 1.07 (ahead of schedule).

10.	**Develop and install ten printer drivers.** • Budget - $100,000 ($10K per printer driver) • Time – 10 weeks (1 printer driver per week) **At end of week 5:** • 4 printer drivers developed and installed • $47,500 spent to date
10.1	Determine (at Week5) **PV =** **EV =** **AC =**
10.2	Calculate : **CPI =** **Conclusion ?**
10..3	Calculate : **SPI =** **Conclusion ?**

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10.1	Determine (at Week5) **PV =** $50000 **EV =** $40000 **AC =**$47500
10.2	Calculate : **CPI =EV / AC= 40000/47500=0.84** **Conclusion ?** We are **OVER Budget**
10.3	Calculate : **SPI = EV / PV = 40000/50000=0.80** **Conclusion ?** We are **BEHIND Schedule**