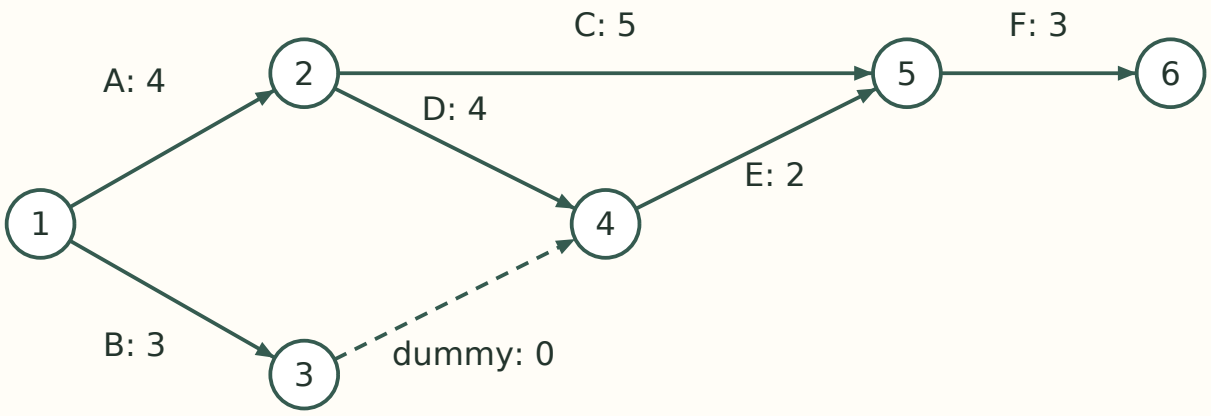
Critical paths

6 questions | 15 marks

Equivalent correct methods earn the corresponding marks.

1. Find the critical path and its duration for the displayed network. [3 marks]



Activity-on-arrow network; durations are in days.

$\mathrm{A}-\mathrm{C}-\mathrm{F}=12;\ \mathrm{A}-\mathrm{D}-\mathrm{E}-\mathrm{F}=13;\ \mathrm{B}-\mathrm{dummy}-\mathrm{E}-\mathrm{F}=8.$

The maximum is 13.

Answer: A-D-E-F, 13 days.

2. Complete paths have durations 9, 15, 12 and 15 weeks. Find the completion time and number of critical paths. [2 marks]

Take the largest complete-path duration.

Both 15-week routes are controlling.

Answer: 15 weeks and two critical paths.

3. A project starts with P (3 hours) and Q (5 hours) in parallel. R (4 hours) follows P and S (2 hours) follows Q. T (1 hour) follows both R and S. Find all critical paths. [3 marks]

$3+4+1=8$.

$5+2+1=8$.

Answer: P-R-T and Q-S-T, both 8 hours.

4. A path contains a zero-duration dummy. Can it still be critical? [2 marks]

A critical route is determined by total duration and dependency structure.

A dummy may be needed to connect that controlling route.

Answer: Yes.

5. A network shows three connected zero-float activities beginning at the project start but not reaching the finish. Is that list enough to name a complete critical path? [2 marks]

A critical path must run continuously from the start event to the finish event.

Continue tracing the controlling arrows.

Answer: No.

6. The critical path has duration 24 hours. A non-critical path takes 21. If an activity appearing only on the non-critical path is extended by 4 hours, what is the revised completion time? [3 marks]

The changed path becomes $21+4=25$.

The new maximum is $\max(24,25)=25$, so the critical path changes.

Answer: 25 hours.