However the tails of the distribution are unlikely to occur very often so the 95% concept may be used in which case the range becomes mean ± 2σ. If this is thought to be realistic the revised formula below can be used.

$$\frac{\text{Pessimistic time} - \text{Optimistic time}}{4} = \sigma$$

Self review questions *Numbers in brackets refer to paragraph numbers*

1 What types of time estimates are made for activity durations? (2)
2 What is the critical path? (3)
3 What are the ESTs and LSTs? (3)
4 How is the critical path determined? (4)
5 What is float? (5)
6 When multiple time estimates of activity durations are available how can an estimate be calculated of the probability of completing the network in a given time? (8)

Exercises with answers

1. Find the critical path of the following network using the EST/LSTs.

Activity	Preceding activity	Duration (days)
1	–	4
2	1	7
3	1	5
4	1	6
5	2	2
6	3	3
7	5	5
8	2, 6	11
9	7, 8	7
10	3	4
11	4	3
12	9, 10, 11	4

2. Calculate the floats of the network in question 1.
3. The standard deviations of the activities on the critical path in question 1 are: 1, 2, 1.5, 3, 2.5 and 3 respectively. Based on these values calculate the probability of achieving a scheduled time of 40 days for the project duration.