1. If a computer program A runs in 20 seconds and a computer program B runs in 40 seconds, which of the following statements is true:

   (a) Program A is 50% faster than program B.
   (b) Program A is 100% faster than program B.

2. You are interested in improving the performance of a program. You have identified, via an execution trace, a fraction of the program that takes up 35% of its execution time. You are able to make improvements to this fraction so that it runs 15 times faster than it currently does. Using Amdahl’s law, compute the overall speedup of the program after making your improvement.

3. Using Amdahl’s law, compute the overall speedup for each option below:

   (a) Make 80% of a program run 20 times faster.
   (b) Make 20% of a program run 80 times faster.
   (c) Make 90% of a program run 10 times faster.
   (d) Make 10% of a program run 90 times faster.

   Which option gives the best overall speedup?

4. Using Amdahl’s law, compute the overall speedup for each option below:

   (a) Make 80% of a program run 20% faster.
   (b) Make 20% of a program run 80% faster.
   (c) Make 90% of a program run 10% faster.
   (d) Make 10% of a program run 90% faster.

   Which option gives the best overall speedup?