Sean Reilly

6.1: 8, 12, 16, 26, 28, 48, 52, 72 (7th edition)

8.

26 * 25 * 24 = 15,600

12.

2^7 – 2^0 = 127

16.

62500 + 3750 + 100 + 1 = 66351

26.

a) 10 * 9 * 8 * 7 = 5040

b) 10 * 10 * 10 *5 = 5000

c) The remaining digit must be different from 9 and can be at any of the 4 positions. Then there are 9 * 4 = 36 such strings.

28.

10 * 10 * 10 * 26 * 26 * 26 * 2 = 35,152,000

48.

16 + 32 – 4 = 44

52.

38 + 23 – 7 = 54

72.

Basis: Let m = 2. Therefore P(2) is true because there are n_1 ways to do first task and n_2 ways to do the second task, then by definition there will be n_1n_2 ways to do the procedure, which is the product of 2 tasks.

Inductive: if P(m) is true, then so is P(m+1). In other words, if the product rule holds for m tasks, then it holds for m+1 tasks. So assume that P(m) is true for some m≥2; we'll try to prove P(m+1). To that end suppose that we have m+1 tasks, and that task T_k can be performed in n_k ways, here k=1,…,m+1. We'd like to show that the entire set of m+1 tasks can be performed in $n_1n_2…n_mn_m$+1 ways. By mathematical induction P(m) is true for all positive integers n(n>=2)