**Self-assessment answers: 1 Counting principles**

**1.** (a)  = 8568

(b) 7! = 5040

(c) 7 × 6 × 5 = 210 *[4 marks]*

**2.** There are two options:

One girl and four boys: = 4950

Two girls and three boys:  = 9900

Total number of possible groups is 4950 + 9900 = 14850 *[5 marks]*

**3.** 8! × 2! = 80640 *[3 marks]*

**4.** Arrange the five vowels first and fit the three consonants into the gaps. *[1 mark]*

Arrange the five vowels: 5! = 120

There are six gaps to fit the three consonants:  = 20 *[1 mark]*

The number of arrangements of the consonants is 3! = 6 *[1 mark]*

The total number of arrangements is 120 × 20 × 6 = 14400 *[1 mark]*

**5.** (a) 8! = 40320 *[1 mark]*

(b) (i) 6! × 3! = 4320 (ii) 2! × 3! × 5! = 1440 *[4 marks]*

(c)  = 30 *[3 marks]*

(d)  *n* = 10 *[4 marks]*