Exercise Lecture 2: Probability - Part II

1. $2 \times 3 \times 4 \times 4 \times 10 = 960$

2. $500 \times 499 = 249500$

3. $6! = 720$

4. $\dfrac{5!}{(5-3)!} = 60$

5. i. $\binom{20}{8} = \dfrac{20!}{(20-8)!\,8!} = \dfrac{\overset{10}{20} \times 19 \times \overset{3}{18} \times 17 \times \cancel{16} \times \cancel{15} \times \overset{2}{14} \times 13}{\cancel{8} \times \cancel{7} \times \cancel{6} \times \cancel{5} \times \cancel{4} \times \cancel{3} \times \cancel{2} \times 1} = 125970$

   ii. $\dfrac{20!}{(20-8)!} = 20 \times 19 \times 18 \times 17 \times 16 \times 15 \times 14 \times 13$

6. (a) $4 \times 3 \times 6 = 72$

   (b) $\binom{13}{3} = \dfrac{13!}{(13-3)!\,3!} = \dfrac{13 \times 12 \times 11}{3 \times 2 \times 1} = 286$