

25,27,33

(10.2) pg 694 #3, 13-17, 38, 39, 43-46, 49, 50, 51
3.) 10 5.) 84 7.) 1 13.) ${}_{12}C_5 = 792$

${}_4C_4 \cdot 48C_1$
14.) 48 15.) ${}_4C_1 \cdot 48C_4 = 778,320$ 16.) ${}_{13}C_5 + {}_{13}C_5 = 2574$

17.) ${}_4C_1 \cdot {}_{48}C_4 + {}_{48}C_5 = 2,490,624$ 38.) Permutation
1 queen or no queen ${}_{12}P_2 = 132$ ways

39.) Combination
 ${}_{280}C_5 = 13,836,30,060$

$$43.) {}_n C_n = \frac{n!}{(n-n)! \cdot n!} = \frac{n!}{0! \cdot n!} = \frac{n!}{1 \cdot n!} = \frac{n!}{n!} = 1 \checkmark$$

$$45.) {}_n C_1 = {}_n P_1$$
$$\frac{n!}{(n-1)! \cdot 1!} = \frac{n!}{(n-1)!}$$
$$\frac{n!}{1 \cdot (n-1)!} = \frac{n!}{(n-1)!}$$
$$\frac{n!}{(n-1)!} = \frac{n!}{(n-1)!} \checkmark$$

$$46.) {}_n C_R = {}_n C_{n-R}$$
$$\frac{n!}{(n-R)! \cdot R!} = \frac{n!}{(n-(n-R))! \cdot (n-R)!}$$
$$\frac{n!}{(n-R)! \cdot R!} = \frac{n!}{(n-R)! \cdot (n-R)!}$$
$$\frac{n!}{(n-R)! \cdot R!} = \frac{n!}{R! \cdot (n-R)!} \checkmark$$

49.) ${}_{18}C_3 = 816$

50.) ${}_{20}C_{14} + {}_{20}C_{15} + {}_{20}C_{16} + {}_{20}C_{17} + {}_{20}C_{18} + {}_{20}C_{19} + {}_{20}C_{20} = \boxed{60,460}$

51) a) ${}_{20}C_5 = 15504$

b) ${}_{15}C_5 = 3003$

c) ${}_{10}C_5 = 252$, ${}_5C_2 = 10$, ${}_3C_1 = 3$

d) 351,982, 350,700