MATH 1500
Section 6.3 HW Solutions: 3, 5, 7, 11, 13, 19, 21, 23, 35, 37

3. a. $\dfrac{C(5,\,2)}{C(11,\,2)} = \dfrac{10}{55} = \dfrac{2}{11} \approx 0.1818$

b. $1 - \dfrac{C(5,\,2)}{C(11,\,2)} = 1 - \dfrac{10}{55} = \dfrac{9}{11} \approx 0.8182$

5. a. $\dfrac{C(6,4)+C(7,4)}{C(13,4)} = \dfrac{15+35}{715}$

$= \dfrac{50}{715} = \dfrac{10}{143} \approx 0.0699$

b. $\dfrac{C(6,4)+C(6,3)C(7,1)}{C(13,4)} = \dfrac{15+20\cdot 7}{715}$

$= \dfrac{15+140}{715}$

$= \dfrac{155}{715}$

$= \dfrac{31}{143} \approx 0.2168$

7. $1 - \dfrac{C(5,\,3)}{C(7,\,3)} = 1 - \dfrac{10}{35}$

$= \dfrac{5}{7} \approx 0.7143$

11. $1 - \dfrac{C(4,\,3)}{C(10,\,3)} = 1 - \dfrac{4}{120} = \dfrac{29}{30} \approx 0.9667$

13. $\dfrac{C(10,\,7)}{C(22,\,7)} = \dfrac{5}{7106} \approx 0.0007$

19. $1 - \dfrac{30\times 29\times 28\times 27}{30^4} = \dfrac{47}{250} = 0.188$

21. $1-\dfrac{P(20,8)}{20^8} \approx 0.8016$

23. Pr(at least one birthday on June 13)

$$=1-\left(\frac{364}{365}\right)^{25} \approx 0.06629$$

Because in Table 1 no particular date is being matched. Any two (or more) identical birthdays count as a success.

35.
$$1-\frac{4\cdot 4\cdot 4}{5\cdot 5\cdot 5}=1-\frac{64}{125}$$
$$=\frac{61}{125}\approx 0.488$$

37.
$$1-\frac{12\cdot 11\cdot 10}{15\cdot 14\cdot 13}=1-\frac{1320}{2730}$$
$$=\frac{1410}{2730}\approx 0.5165$$

His chances are increased.