MATH 1500
Section 6.2 HW Solutions: 7, 13, 18, 25, 31, 37, 41, 42, 43, 44, 47, 51, 52

7. $\dfrac{1}{38}+\dfrac{1}{38}=\dfrac{2}{38}=\dfrac{1}{19}$

13. a. E = "the numbers add up to 9" = {(3, 6), (4, 5), (5, 4), (6, 3)}

   $Pr(E) = \dfrac{4}{36}=\dfrac{1}{9}\approx 0.1111$

   b. $Pr(\text{sum is } 2) = Pr((1, 1)) = \dfrac{1}{36}$;

   $Pr(\text{sum is } 3) = Pr((1, 2)) + Pr((2, 1)) = \dfrac{2}{36}$

   $Pr(\text{sum is } 4) = Pr((1, 3)) + Pr((2, 2)) + Pr((3, 1)) = \dfrac{3}{36}$
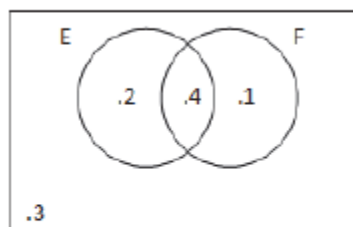
   The probability that the sum is less than 5 is

   $\dfrac{1}{36}+\dfrac{2}{36}+\dfrac{3}{36}=\dfrac{1}{6}\approx 0.1667$.

18. $0.13+0.13+0.20=0.46$

25. $1-\left(\dfrac{2}{3}+\dfrac{1}{4}\right)=\dfrac{1}{12}$

31. $Pr(E\cup F)= Pr(E)+ Pr(F)$
   $= 0.4+0.5$
   $= 0.9$

37.

   a. $Pr(E\cup F)= 0.2+0.4+0.1= 0.7$

   b. $Pr(E\cap F')= 0.2$

41. $10 \text{ to } 1 = \dfrac{10}{10+1} = \dfrac{10}{11}$

42. $4 \text{ to } 5 = \dfrac{4}{4+5} = \dfrac{4}{9}$

43. $.2 = \dfrac{1}{5} \Rightarrow 1 \text{ to } (5-1) = 1 \text{ to } 4$

44. $\dfrac{3}{7} \Rightarrow 3 \text{ to } (7-3) = 3 \text{ to } 4$

47. $2 \text{ to } 9 = \dfrac{2}{2+9} = \dfrac{2}{11}$

51. There are more members (13) than Zodiac signs (12) so two or more members will always have the same Zodiac sign; thus the probability is 1.

52. This event never occurs; if 5 of the people receive the correct coat then so must the remaining person. Thus the probability is 0.