1. 0
2. 8/27
3. 39/4
4. 5/7
5. 4
6. 0.65
7. 1/6
8. 1/2
9. 43
10. $2\sqrt{3}$
11. 13/24
12. 3/2
13. 215/216
14. 195
15. 84
16. 6/25
17. 32
18. 50
19. 1/36
20. 2
21. 91
22. 0.4316
23. 1/10
24. $\pi/21$
25. 784

1. In a standard deck of cards, hearts are red, therefore P(black heart) = 0.
2. P(2 boys) = $\binom{4}{2}(\frac{1}{3})^2(\frac{2}{3}) = \frac{8}{27}$
3. mean = $\frac{5+7+9+3+2+0+8+16}{8} = \frac{25}{4}$ range = 16- 0 = 16 16- $\frac{25}{4} = \frac{39}{4}$
4. The probability they win ANY game is $\frac{2}{7}$. Therefore P(lose) = $\frac{5}{7}$
5. . z = $\frac{4.8-4}{.2} = 4$
6. Draw a picture P(A $\cap$ B') = 0.35, P(A' $\cap$ B) = 0.27, P(A $\cap$ B) = 0.06 and P(A' $\cap$ B') = 0.32. Therefore P(A' $\cup$ B) = 0.65.
7. P(point within 60°sector) = 60°/360° = 1/6
8. 0.5, by the definition of the normal bell curve, the area is distributed evenly around 0.
9. -2 = $\frac{x-47}{2}$ x = 43
10. This is a binomial random variable, so the standard deviation is $\sqrt{np(1-p)}$ where n is the number of trial and p is the probability of success. Thus SD = $\sqrt{50(2/5)(3/5)} = 2\sqrt{3}$
11. P(green ball) = (2/3)(4/8) + (1/3)(5/8) = 13/24
12. The mean of a probability density function, f(x) on [a,b] is $\int_a^b xf(x)dx$ mean = $\int_2^2 x(\frac{3x}{8}^2)dx$ = 3/2
13. The smallest sum you can get is 3, and it occurs only once, thus:
    P(sum > 3) = 1- P(sum = 3)
    = 215/216
14. $\frac{a+c}{2} = 200 \Rightarrow$ a+c = 400 e = 215 $\frac{a+b+c+d+e+f}{6} = 200$
    a+b+c+d+e+f = 1200 b+d+f = 585 Average weight = 585/3 = 195
15. This is another binomial random variable, where the expected value is np. E(X) = 120($\frac{7}{10}$) = 84
16. P(not like either) = 1 – P(P or I)= 1 – (6/25 +12/25 – 3/25) = 6/25
17. ρ = {1,1,2,3,5,8,13,21,34,55,89} IQR = 34-2 = 32
18. The mean is always on the least squares regression, so 8 = 0.25x – 4.5 x = 50
19. The prime numbers on a die are 2,3,5 and they can occur 6 different ways, so
    P(3 different primes) = 6(1/6)(1/6)(1/6) = 1/36
20. Correlations can take on values on [-1,1]. So a = -1, b = 1. 3(-1) + 5(1) = 2
21. $\frac{85+94+77+50+100+92+2x}{8} = 85$ x = 91

22. The area under a probability density function is always 1. Therefore
Area to the left of x = 1 – 0.5684 = 0.4316

23. P(palindrome) = $\frac{9(10)(1)}{9(10)(10)} = \frac{1}{10}$

24. Area of parallelogram = 3(7) = 21
Area of circle = π

P(within 1 unit of (5,2)) = $\frac{\pi}{21}$

25. $\binom{8}{2}\binom{8}{2} = 28(28) = 784$