

**Prob/Stat – Hustle
National MAΘ 2008**

1. $8/3$
2. 740
3. \$0.80
4. $48/125$
5. 15
6. $\frac{3}{4}$
7. -1
8. 2.0
9. 2
10. ${}_{13}C_2$
11. $11/16$
12. 15.9%
13. 0.004
14. 50,400
15. 210
16. A,E,B,D,C (in order)
17. $8/45$
18. 5%
19. NONE
20. 2
21. $9/25$
22. 7
23. 0
24. C
25. $8/13$

1. Range = 24 , Median = 9. $24/9 = 8/3$
2. $1 = \frac{x-720}{20}$
 $x = 740$
3. $\frac{2}{5}(8) + \frac{3}{5}(-4) = \0.80
4. $C(3,2)\left(\frac{4}{5}\right)^2\left(\frac{1}{5}\right) = \frac{48}{125}$
5. 30 numbers, 90th percentile = 27th number = 15
6. Lines form a triangle with base = 3, height = $\frac{1}{2}$. $A = (1/2)(3)(1/2) = \frac{3}{4}$
7. Residual = Observed – Predicted = $15 - (-1.8(2000)+3616) = -1$
8. Using Empirical Rule = Middle 95% between $z = -1.96$ and $z = 1.96$, rounded to the nearest tenth = 2.0
9. $2.8 \frac{10}{\sqrt{196}} = 28/14 = 2$
10. Thirteen Hearts, picking 2 of them = ${}_{13}C_2$
11. $1 - P(\text{no heads}) - P(\text{1 head}) = 1 - 1/16 - 4/16 = 11/16$
12. Empirical Rule: From -3 to 0 sd's = $99.7/2 = 49.85$, from -1 to 0 sd's = $68/2 = 34$.
 $49.85-34=15.85 \Rightarrow 15.9\%$
13. $\sqrt{\frac{(0.20)(0.80)}{10,000}} = \frac{\sqrt{.16}}{100} = 0.004$
14. $\frac{10!}{3!3!2!} = 50,400$
15. $x_1 = 110, s_1 = 10. (110)(2)-30 = 190 = x_2. 2(10) = 20 = s_2. 190+20 = 210$
16. $A = 1, B = 0, C = -1, D = -0.5, E = 0.5. A,E,B,D,C$
17. $(2/3)(1/3)(4/5) = 8/45$
18. $\sqrt{\frac{.5(1-0.5)}{100}} = 0.05 = 5\%$
19. $M = 150, Q_1=25, Q_3=325, IQR = 300$. There are no values more extreme.
20. #2, #3 = 2
21. $36/100 = 9/25$
22. $1+2+4=7$
23. $(-2)(0)(1)(2) = 0$
24. C (weather usually has patterns within a certain time period)
25. $64/104 = 8/13$