#1 Probability/Statistics – Hustle
MAΘ National Convention 2007

Find the mean of the following numbers:
12, 16, 21, 29, 33, 40, 48, 52, 61, 68

Answer : _____

Round   1   2   3   4   5

#2 Probability/Statistics – Hustle
MAΘ National Convention 2007

Savannah was given the following information about two sets of data:
$$\overline{x} = -28, \quad S_x = 4, \quad \overline{y} = 50, \quad S_y = 7, \quad r = 0.80$$
Using this information, find the equation of the line of best fit in slope intercept form.

Answer : _____

Round 1 2 3 4 5

#3 Probability/Statistics – Hustle
MAΘ National Convention 2007

Given $P(A) = 0.4$, $P(B) = 0.5$, $P(A \mid B) = 0.3$, find the value of $P(B \mid A')$.

Answer : _____

Round 1 2 3 4 5

#4 Probability/Statistics – Hustle
MAΘ National Convention 2007

Find the mean of the following discrete random variable.

X	1	3	4	6	7	9
P(X)	.1	.15	.2	.1	.2	.25

Answer : _____

Round   1   2   3   4   5

#5 Probability/Statistics – Hustle
MAΘ National Convention 2007

Find the variance of the following discrete random variable.

X	1	2	4	5	6
P(X)	.1	.2	.2	.3	.2

Answer : _____

Round   1   2   3   4   5

#6 Probability/Statistics – Hustle
MAΘ National Convention 2007

Jonathan rolls a standard die 96 times to determine if it is a "fair" die. His results are as follows:

Value	1	2	3	4	5	6
# of times rolled	10	15	20	20	12	19

Find the chi-square value of a goodness of fit test to determine if the die is "fair".

Answer : _____

Round   1   2   3   4   5

#7 Probability/Statistics – Hustle
MAΘ National Convention 2007

In the senior class at Smith High School, 24 students take English, 25 take Math and 22 take Science. 8 students take English and Science, 9 take English and Math, and 11 take Math and Science. 5 students take all three classes and each student in the senior class takes at least one class. Find the total number of seniors at Smith High School.

Answer : _____

Round   1   2   3   4   5

#8 Probability/Statistics – Hustle
MAΘ National Convention 2007

Find the median of the following numbers:
16, 33, 52, 68, 12, 29, 40, 61, 48, 21

Answer : _____

Round   1   2   3   4   5

#9 Probability/Statistics – Hustle
MAΘ National Convention 2007

You are given a standard deck of cards (no jokers). You draw a random card from the deck. Find the probability that the card is red or a face card.

Answer : _____

Round   1   2   3   4   5

#10 Probability/Statistics – Hustle
MAΘ National Convention 2007

On a shelf are two urns, Urn A and Urn B. Urn A has 6 red marbles and 9 blue marbles. Urn B has 3 red marbles and 7 blue marbles. Randomly draw a marble from Urn A and place it into Urn B. Then randomly draw a marble from Urn B. Find the probability that the marble drawn from Urn B is red.

Answer : _____

Round   1   2   3   4   5

#11 Probability/Statistics – Hustle
MAΘ National Convention 2007

Michael Jordan made 80% of his free throws during his NBA career. Michael plays in a charity basketball game and shoots 5 free throws during the game. Find the probability that he makes exactly three of them.

Answer : _____

Round   1   2   3   4   5

#12 Probability/Statistics – Hustle
MAΘ National Convention 2007

Mr. Snow gives a Statistics test to his class. The results of the test include a mean of 70 and a standard deviation of 6. Mr. Snow would like to transform the scores so that the mean is 80 and the standard deviation is 4. The transformation equation for this test is in the form $y = ax + b$. Find the value of $(a+b)$.

Answer : _____

Round   1   2   3   4   5

#13 Probability/Statistics – Hustle
MAΘ National Convention 2007

Two students in Mrs. Tucker's class take a test.
The results of the test form a normal distribution
with a mean of 78 and a standard deviation of 5.
The students want to know their individual
scores, but Mrs. Tucker won't tell them. She
tells them that their z-scores for the test are 1.3
and 2.1, respectively. What is the positive
difference between their raw scores?

Answer : _____

Round   1   2   3   4   5

#14 Probability/Statistics – Hustle
MAΘ National Convention 2007

Brian has taken five tests in his Calculus class. His results so far have been an 80, 90, 95, 75, and 83. Find the value of the sixth test so that Brian has an overall average on his six tests of 86.

Answer : _____

Round   1   2   3   4   5

#15 Probability/Statistics – Hustle
MAΘ National Convention 2007

Kyle has always wanted to play tennis like
Andre Agassi. Kyle gets his first serve in 40%
of the time. Kyle goes out to the courts after
school and hits 100 first serves. Let A= the
mean number of first serves Kyle gets in   and let
B= standard deviation of number of first serves
Kyle gets in. Find the value of $\dfrac{A}{B}$.

Answer : _____

Round   1   2   3   4   5

#16 Probability/Statistics – Hustle
MAΘ National Convention 2007

Find the interquartile range of the following numbers:
21, 33, 48, 61, 12, 29, 40, 52, 68, 16

Answer : _____

Round   1   2   3   4   5

#17 Probability/Statistics – Hustle
MAΘ National Convention 2007

A fair coin is tossed. Find the probability that it takes more than 4 tosses to see the first tail.

Answer : _____

Round   1   2   3   4   5

#18 Probability/Statistics – Hustle
MAΘ National Convention 2007

A professor at Florida State University, home of the Seminoles, gives a midterm exam and a final exam for his statistics class. A linear regression equation is used to predict the final exam score based on the midterm score. The equation is $\hat{y} = 35 + .5x$, where x is the midterm exam and $\hat{y}$ is the final exam. Mohammad scores 90 on the midterm exam and 85 on the final exam. What is the value of Mohammad's residual?

Answer : _____

Round   1   2   3   4   5

#19 Probability/Statistics – Hustle
MAΘ National Convention 2007

	College Major			
	Math	Science	English	History
Gender				
Men	62	39	40	53
Women	48	41	60	57

Using the information above, find the following:
Let A= probability of randomly selecting a Man or English major.
Let B= probability of randomly selecting a Woman and Math major.

Find the value of (A-B).

Answer : _____

Round   1   2   3   4   5

#20 Probability/Statistics – Hustle
MAΘ National Convention 2007

Find the standard deviation of the following data set: 1, 4, 7, 10, 13

Answer : _____

Round   1   2   3   4   5

#21 Probability/Statistics – Hustle
MAΘ National Convention 2007

College Major

Gender	Math	Science	English	History
Men	20	30	40	50
Women	40	30	20	10

Using the information above, find the following:
Let A= probability of randomly selecting a science major, given that they are a man.
Let B= probability of randomly selecting a woman, given that they are a History major.
Let C= probability of randomly selecting a man, given that they are not an English major.

Find the value of (A+B+C).

Answer : _____

Round 1 2 3 4 5

#22 Probability/Statistics – Hustle
MAΘ National Convention 2007

Given the following information about two sets of data
$\overline{x} = 65, \quad S_x = 7, \quad \overline{y} = 105, \quad S_y = 12$ and the line of best fit is $y = -1.2x + 27$. Find the coefficient of determination.

Answer : _____

Round   1   2   3   4   5

#23 Probability/Statistics – Hustle
MAΘ National Convention 2007

For the following set of data (in order from lowest to highest):
5, 13, 20, X, 34, 40, 49, 52, 58, Y, 68, 74
The five number summary for this set of data is as follows:
Minimum= 5, $Q_1 = 23$, Median= 44.5,

$Q_3 = 60.5$, Maximum= 74

Find the values of X and Y and use them to find the value of the following: (Y-X).

Answer : _____

Round   1   2   3   4   5

#24 Probability/Statistics – Hustle
MAΘ National Convention 2007

Given the following set of data:
3, 5, 12, 17, 20, 25, 31, 40, 45
Let A= the mean of the data, B= the median of the data, C= the interquartile range of the data, D= the range of the data.

Find the value of the following: $\dfrac{AC}{BD}$.

Answer : _____

Round   1   2   3   4   5

#25 Probability/Statistics – Hustle
MAΘ National Convention 2007

Given a standard deck of cards (no jokers), find the probability of the following events: (Note: All of the following are independent of each other and are separate problems.)

Let A= probability of randomly selecting a face card.
Let B= probability of randomly selecting a black ten.
Let C= probability of randomly selecting a black card.

Find the value of $\dfrac{A+B}{C}$.

Answer : _____

Round   1   2   3   4   5