#1 Probability & Statistics – Hustle
MAΘ National Convention 2016

The USA Rugby team has a 3/5 probability of winning a game. What is the probability, in fraction form of the USA Rugby team winning exactly 1 out of 3 games? Assume independence of game outcomes.

Answer : _____

Round 1 2 3 4 5

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#2 Probability & Statistics – Hustle
MAΘ National Convention 2016

In a uniform distribution where $0 \le x \le 1$, find $P(0.28 \le x < 0.74)$. Give answer as a decimal.

Answer : _____

Round 1 2 3 4 5

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#3 Probability & Statistics – Hustle
MAΘ National Convention 2016

For the following set of data, find Q3/Q1 as a simplified improper fraction.:

8,12,10,6,6,0,20,24

Answer : _____

Round 1 2 3 4 5

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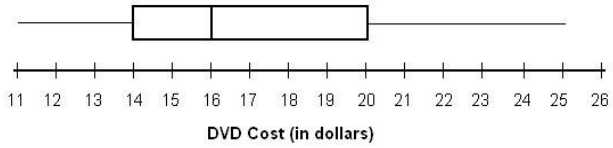
Round 1 2 3 4 5

#4 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the IQR of the following distribution:



Answer : _____

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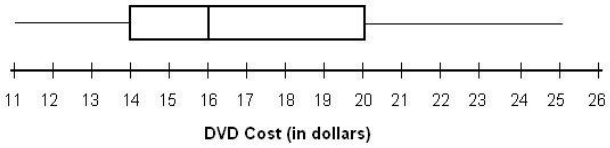

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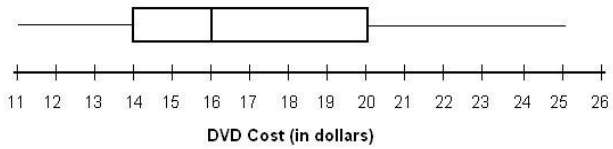

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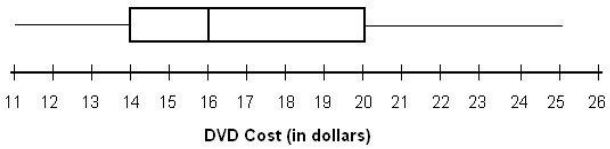

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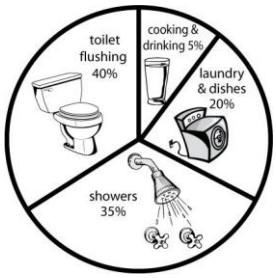
#5 Probability & Statistics – Hustle
MAΘ National Convention 2016

A pie chart is primarily used for what type of data?



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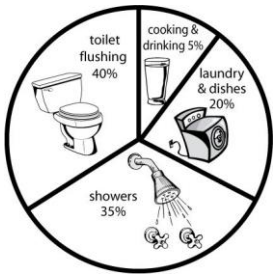

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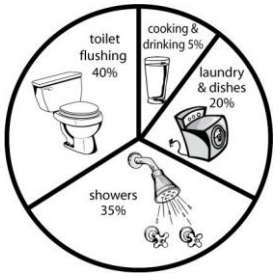

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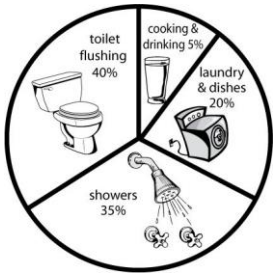

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#6 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the residual of the data point $(10,36)$ from the least-squares regression equation $\hat{y} = \frac{3}{2}x + 18$.

Answer : _____

Round 1 2 3 4 5

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#7 Probability & Statistics – Hustle
MAΘ National Convention 2016

Freshmen admitted to the University of St. Louis have a national mean SAT math score of 650 with a standard deviation of 32 points. Assuming the scores are normally distributed and using the empirical rule, what score must you earn to be in the 84^{th} percentile?

Answer : _____

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#8 Probability & Statistics – Hustle
MAΘ National Convention 2016

Everett wants to conduct a sample survey on the students in his preschool. He divides all the students into 6 groups based on their ages. He then samples all of the students in three randomly selected age groups. By what name is this type of sampling known?

Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

#9 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the expected value, written as a decimal, of the following discrete random variable:

x	-5	8	10	12
P(x)	0.1	0.25	0.3	0.35

Answer : _____

Round 1 2 3 4 5

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#10 Probability & Statistics – Hustle
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Find the width of the 95% confidence interval, rounded to the nearest whole number:

$$\bar{X} = 34$$
$$\sigma = 10$$
$$n = 16$$

Answer : _____

Round 1 2 3 4 5

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#11 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the appropriate test statistic:

$$\bar{X} = 4$$
$$\mu = 6$$
$$s = 12$$
$$n = 36$$

Answer : _____

Round 1 2 3 4 5

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#12 Probability & Statistics – Hustle
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In how many ways may 1st, 2nd, and 3rd places be awarded to a group of 6 runners in a race? Assume no ties.

Answer : _____

Round 1 2 3 4 5

#12 Probability & Statistics – Hustle
MAΘ National Convention 2016

In how many ways may 1st, 2nd, and 3rd places be awarded to a group of 6 runners in a race? Assume no ties.

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In how many ways may 1st, 2nd, and 3rd places be awarded to a group of 6 runners in a race? Assume no ties.

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Answer : _____

Round 1 2 3 4 5

#13 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the outliers in the following data set:

15,10,12,9,5,8,1,4,11,11,12,6,7,7,28

Answer : _____

Round 1 2 3 4 5

#13 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the outliers in the following data set:

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Answer : _____

Round 1 2 3 4 5

#14 Probability & Statistics – Hustle
MAΘ National Convention 2016

How many of the following random variables are continuous?

- Weight of a water balloon
- Quantity of bats in a ballpark
- Length of a hot dog
- Time spent at the beach
- Volume of lemonade in a glass
- Number of cars at a drive-in

Answer : _____

Round 1 2 3 4 5

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#15 Probability & Statistics – Hustle
MAΘ National Convention 2016

The explanatory variable is found on the ___-axis on a scatterplot. Solve for that variable in the following equations:

$$\frac{x!4!}{(x-1)!}=192$$

$$16=2y^3$$

Answer : _____

Round 1 2 3 4 5

#15 Probability & Statistics – Hustle
MAΘ National Convention 2016

The explanatory variable is found on the ___-axis on a scatterplot. Solve for that variable in the following equations:

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Round 1 2 3 4 5

#16 Probability & Statistics – Hustle
MAΘ National Convention 2016

Everett is busy eating M&M's. M&M's are supposed to have 24 candies in each bag. He samples 6 bags of candy and finds that they have 16, 17, 16, 15, 16, and 17 candies in each bag. This is an example of which of the following? Write the letter of your answer choice:

A. High variability, low bias
B. Low variability, low bias
C. High variability, high bias
D. Low variability, high bias

Answer : _____

Round 1 2 3 4 5

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MAΘ National Convention 2016

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Round 1 2 3 4 5

#17 Probability & Statistics – Hustle
MAΘ National Convention 2016

An urn contains 5 gold coins, 6 pieces of silver, and 4 bronze statues. Find the probability that you pull a gold coin on the first draw and a bronze statue on the second draw. Assume no replacement of any item drawn.

Answer : _____

Round 1 2 3 4 5

#17 Probability & Statistics – Hustle
MAΘ National Convention 2016

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#18 Probability & Statistics – Hustle
MAΘ National Convention 2016

The "Blue Thunder" monster truck competes at every Monster Jam competition for Freestyle Points. His Freestyle Points are normally distributed with a mean of 28 points and a standard deviation of 2 points. Using this information and the empirical rule, what is the probability that Blue Thunder earns between 24 and 34 Freestyle Points? Give your answer as a percentage.

Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

#19 Probability & Statistics – Hustle
MAΘ National Convention 2016

A school wants to perform a significance test to test the claim that more than 50% of its students are satisfied with the lunch provided. What type of possible error is described below?

The school finds that they do not have convincing evidence against the null hypothesis that the proportion of students who are satisfied with their lunch is 50%. In fact, a much higher percentage of students ARE satisfied with the provided lunch.

Answer : _____

Round 1 2 3 4 5

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Round 1 2 3 4 5

#20 Probability & Statistics – Hustle
MAΘ National Convention 2016

When drawing a single card from a standard deck of playing cards, let A = drawing a black jack, and let B = drawing a spade. Find $P(A|B')$.

Answer : _____

Round 1 2 3 4 5

#20 Probability & Statistics – Hustle
MAΘ National Convention 2016

When drawing a single card from a standard deck of playing cards, let A = drawing a black jack, and let B = drawing a spade. Find $P(A|B')$.

Answer : _____

Round 1 2 3 4 5

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Answer : _____

Round 1 2 3 4 5

#21 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the value of $|z^*|$ for the critical value z^* for a 99.7% confidence interval, using the empirical rule.

Answer : _____

Round 1 2 3 4 5

#21 Probability & Statistics – Hustle
MAΘ National Convention 2016

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Round 1 2 3 4 5

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MAΘ National Convention 2016

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Answer : _____

Round 1 2 3 4 5

#21 Probability & Statistics – Hustle
MAΘ National Convention 2016

Find the value of $|z^*|$ for the critical value z^* for a 99.7% confidence interval, using the empirical rule.

Answer : _____

Round 1 2 3 4 5

#22 Probability & Statistics – Hustle
MAΘ National Convention 2016

In a large simple random sample of 400 penguins, the population proportion of penguins who prefer to be fed by men is found to be 25%. What is the standard deviation of feeding preference of this penguin population? Give your answer as a fraction.

Answer : _____

Round 1 2 3 4 5

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#22 Probability & Statistics – Hustle
MAΘ National Convention 2016

In a large simple random sample of 400 penguins, the population proportion of penguins who prefer to be fed by men is found to be 25%. What is the standard deviation of feeding preference of this penguin population? Give your answer as a fraction.

Answer : _____

Round 1 2 3 4 5

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#23 Probability & Statistics – Hustle
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How many distinct permutations are there for the letters in the word BALLOON?

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#24 Probability & Statistics – Hustle
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A sample data set has a coefficient of determination of 88%. Find the least possible correlation between the data. Answer must be exact.

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#25 Probability & Statistics – Hustle
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