|  |  |
| --- | --- |
| NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_ | **Statistics and Probability** |
| Final Test Review | **DATE: Wednesday, May 03, 2017** |

1. It has been reported that only 35% of students get enough sleep. Cindy’s survey asked students at Deering if they thought they got enough sleep. Of 45 people she asked, 42% said they got enough sleep. Does she have evidence (at 95% confidence) that Deering HS students are different than the national average? Show all work (create a 95 confidence interval of each).
2. Cindy also asked students how many hours of sleep they got last night. The average of the 45 people was 7.2 hours with a standard deviation of 2.1 hours. Create a 90% confidence interval for the true average # of hours students sleep. Show all work and explain your answer in context.

3.In the last poll, 45% of people approved of Obama. Find the sample size you should have if you want to be 95% certain you are within 3% of correct response.

My sock drawer has 12 black socks, 4 gray socks and 6 white ones. If I take two out:

|  |  |
| --- | --- |
| P(both black) | P(neither is black): |
| P(match [same color]) | |

35% of American adults are obese. Show work.

If three people are selected randomly:

|  |  |  |
| --- | --- | --- |
| P(all obese) | P(none are obese) | P(at least one is obese) |

On the planet Ziron, parents always have 2 kids. The kids could be male, female, or ziron (an interesting combination of the other two).

1. Draw a tree diagram for all possibilities of 2 kids.
2. Answer the following questions based on picking on your tree diagram:
   1. P(not having a ziron on either birth):
   2. P(both the same type):

An apartment building has the following apartments:

|  |  |  |  |
| --- | --- | --- | --- |
|  | 1 bedroom | 2 bedroom | 3 bedroom |
| 1st floor | 4 | 1 | 0 |
| 2nd floor | 1 | 3 | 2 |
| 3rd floor | 0 | 4 | 1 |

1. If an apartment is selected at random, find:
   1. P(it has 2 bedrooms):
   2. P(it is on the 3rd floor or has 2 or more bedrooms):

The data below are how many wins the Warriors have gotten in the last bunch of years.

73,67,51,47,53

Find:

* Mean: \_\_\_\_\_\_\_\_
* Median: \_\_\_\_\_\_\_\_
* Mode: \_\_\_\_\_\_\_\_
* Range: \_\_\_\_\_\_\_\_
* *(6 points)*Standard Deviation (show all work on table below):

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

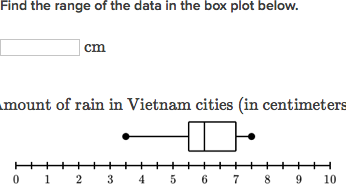
Create a frequency distribution and then make a histogram.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| 12 | 16 | 20 | 23 | 25 | 30 |
| 12 | 16 | 20 | 23 | 27 | 34 |
| 13 | 18 | 21 | 24 | 29 | 34 |
| 14 | 18 | 21 | 25 | 29 | 35 |
| 15 | 19 | 23 | 25 | 30 | 37 |

Using the data on the miles per gallon, find the:

* Median:
* Quarter 1:
* The percentile of the car that gets 24 mpg.
* Find which car has a percentile of 60%
* What is the range?

Write three sentences about the following boxplot: It is the amount of rain in Vientam cities in May.



Show all work.

The average length of adult crocodiles in a swamp is 12 feet. If the lengths are normally distributed with a standard deviation of 1.8, find:

P(a crocodile is more than 11 feet long):



P(a crocodile is between 10 and 11 feet):



Sampling:

We want to find the avg amount adults sleep. Adults under 50 tend to sleep longer than adults over 50. In our adult population, adults under 50, make up 60% and adults over 50 are 40%. We want a sample of 50 adults. How would you conduct your sample

Design an experiment:

We want to see if a sleep bracelet that emits an electronic pulse will help people sleep better. We have 40 volunteers who are willing to try the device out. Of the 40 volunteers, 20 identify as good sleepers, 20 identify as poor sleepers.

1. What is the explanatory variable? What is the response variable?.
2. How are you going to do the experiment? Can it be blind/double blind?