ctive 1: Data Collection

orize the following questions as either qualitative or itative. Write only the letter in the table, not the whole ions.

. What science class are you currently taking?
. What was your math ACT score?
. What is your ring size?
. Are you Hispanic or Non-Hispanic?
. What is your favorite food?
. How many clubs are you in this year?
. Is your first language English, Spanish or French? If other, please specify.
. What kind of computer do you have?

Quantitative #	Qualitative
c.f.	a.d.e.g.h.

Your principal is surveying you and your classmates. She asks every student in the school, "Have you ever done drugs?"

Does this survey a sample or a population?

Population

Is this a bias survey question? If so, specify which biases contain and why.

Yes, social desirabili

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mean = 7

eball team scored the following number of runs in its s during the current season: 6, 2, 5, 9, 11, 4, 5, 8, 6, 7, ere is one more game in the season. If the team wants l the season with an average of at least 7 runs per , what is the least number of runs the team must score final game of the season?

$\frac{84}{12} = 7$

4-68 = 16 runs

A drug company is developing a new drug to regulate diabetes. To test the drug, which type of study should company implement? Defend your answer in two to th sentences.

Sample

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tive 2: Analyzing Data

st scores from Ms. Johnson's math class are listed

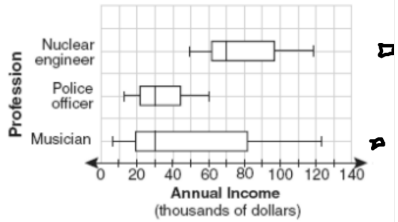
72, 73, 68, 71, 82, 85, 95, 85, 86, 89, 91, 92, 99

uct a box and whisker plot with the data.

ze the data using Mean, Outliers, Center, and Spread.

ctliers - none
enter - mean → $\bar{x}$ → 83.69
nge 99-68 = 31
-QR Q3-Q1 = 19

The accompanying box-and-whisker plots can be used to compare the annual incomes of three professions.



Compare and contrast the annual incomes using SOCS

Mean of N.E. is higher than M
- Range of M. is biggest.

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ice officer was studying traffic patterns in one part of In this study, he recorded the speeds of 17 cars ing in a 40 mph zone. Here are the speeds in miles our:

34, 40, 42, 43, 45, 46, 37, 38, 52,
39, 47, 44, 41, 39, 64, 52, 25

e a histogram of this data where the width of each al is 4. Using this histogram, determine the shape of stribution and if it contains any outliers.

skewed right
Yes, outlier of 64, 25

The frequency table below shows the number of hours students study each week.

Study	Frequency
0 – 4	|||
5 – 9	|||
10 – 14	|||||
15 – 19	||||||||
20 – 24	|||||
25 – 29	||||
30 – 34	|||
35 – 39	|
40 +	|

What shape does this distribution have?

Symmetrical

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he table below shows the midterm and final exam grades r a ten students. Compare and contrast the mean and andard deviation of the grades and give a brief analysis of e grades.

Midterm	68	78	92	90	88	82	94	83	71	62
Final	62	77	99	87	85	84	95	98	72	64

mean = $\bar{x}$ = 80.8
s.d. = σ = 10.31
mean = 82.3
s.d. = 12.64
Mean is lower for midterm
Students averaged higher for final.

Students are told that attending class regularly will he improve their scores in that class. Below are the score students who did attend class regularly and scores for who did not.

Attended Class Regularly					Did Not Attend Regu			
141	161	171	182	196	85	95	95	1
143	162	172	184	196	150	156	125	1
154	167	178	192	208	174	177	208	1
152	164	176	190	210				

Compare and contrast the mean and standard deviatio the two groups and make a conclusion about class performance. Justify your conclusion using statistics.

Attend Regularly – mean
s.d. –
Not Regularly – mean.
s.d. –

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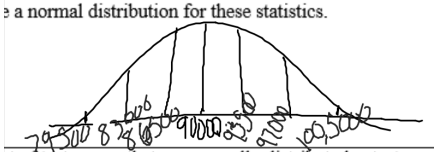
ctive 3: Normal Distribution and Percentiles

fetime of a premium car tire is normally distributed. ean lifetime is 90,000 miles, with a standard tion of 3,500 miles.

e a normal distribution for these statistics.



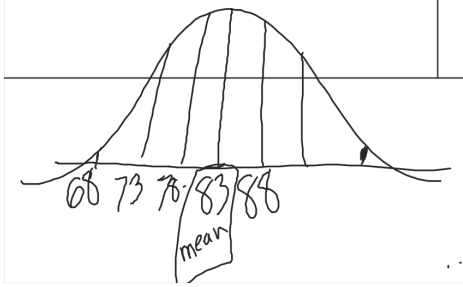
a) Using the normal distribution you created in the previous problem, what percentage of the tires are expected to last between 90,000 and 97,000 miles?

47.5%

b) If a sample of 20,000 tires is collected, how many will last between 90,000 and 97,000 miles?

.475 × 20000 = 9500

et of test scores that are normally distributed, a test of 68 is 3 standard deviations below the mean. A of 88 is 1 standard deviation above the mean. What is ean of the data?



In the 2011 – 2012 school year, the mean score on the critical reading of the SAT was 480 with a standard deviation of 102 for seniors. If Penny scores a 684 on t SAT, what is her percentile ranking?

97.5 percentile

88 − 68 = 20

20 / 4 = 5

480

582

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