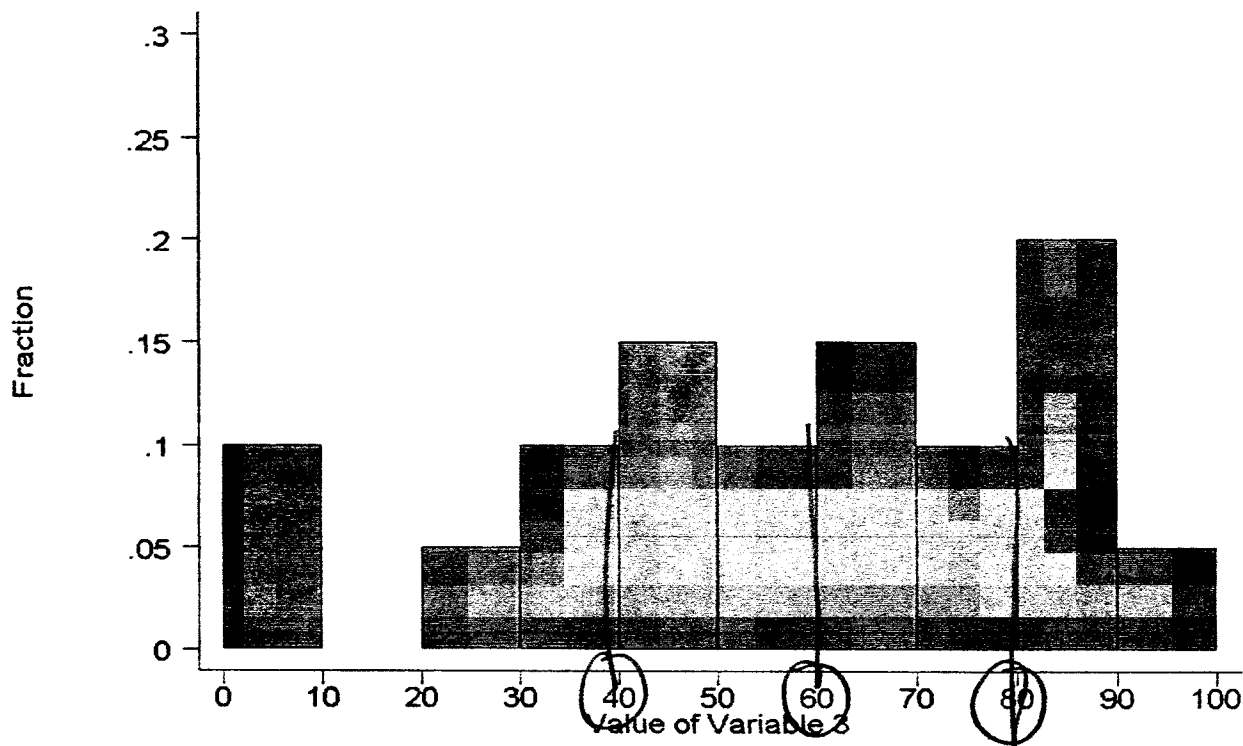


1. Using the graphic below, please answer the following questions:



- i. The median for this histogram is (2 points):
- a. A value less than 50
 - b. Exactly 50
 - ☒ c. Exactly 60
 - d. A value between 50 and 60
 - e. not calculable because this is NOT a histogram
- ii. The inter-quartile range for this histogram is (3 points):
- a. 30
 - ☒ b. 40
 - c. 50
 - d. 60
 - e. not calculable because this is NOT a histogram

2. You are on the verge of investing some of your hard-earned money in the stock market and you cannot decide between two funds, let's call them A and B. Your investment adviser, I'll call him The Oracle, gives you some information on their performance (as measured by percentage return) over the last 200 trading days:

Fund A:

Variable	Obs	Mean	Std. Dev.	Min	Max
dailyret	200	7.000000	9.0000	-26.00	43.00

Fund B:

Variable	Obs	Mean	Std. Dev.	Min	Max
dailyret	200	4.000000	3.00000	-10.00	17.00

Assume they are both very close to normally distributed, so for our purposes they should be considered normal variables. Please answer the following questions:

A. The Oracle advises you that while there are periods of time when you may get very low (near zero) returns on your investment, you should avoid negative returns at all costs. Keeping his advice and the information above (i.e. mean, standard deviation, normally distributed) in mind, which Fund will have the larger proportion of negative (less than zero) percentage returns? (circle one, 2 points)

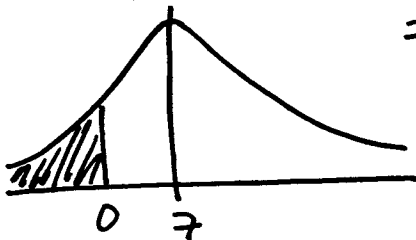
FUND A

FUND B

Show the numerical calculations that helped you to arrive at your conclusion. (8 points)

USE Z SCORES

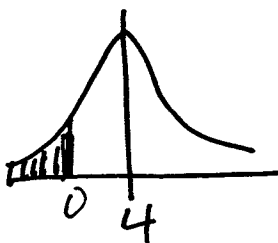
FUND A



$$z = \frac{0 - 7}{9} = -0.777 \approx -0.78$$

area is .2177
or 21.77%

FUND B



$$z = \frac{0 - 4}{3} = -1.33$$

area is .0918
or 9.18%

$$21.77 > 9.18$$

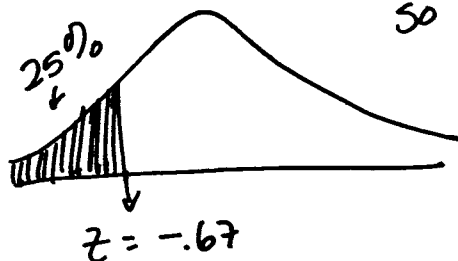
(using information from the problem, but not the solution for part A)

B. Please give the five number summary for variable dailyret for Fund B and show your work for full credit (10 points). Please list the values from lowest to highest. If you do not have enough information for a complete answer, please write "not enough information", give as much of the five number summary as you can from the information given above, and tell us what you would need to give a complete answer.

MIN	Q1	MEDIAN	Q3	MAX
-10	1.99	4	6.01	17

1) mean = median for normal

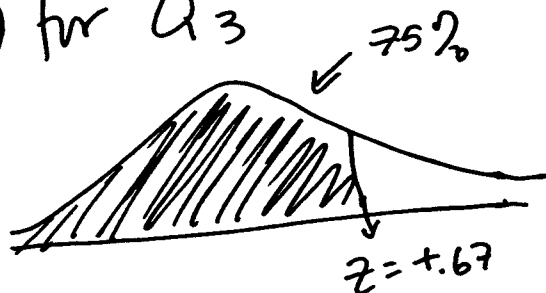
2) for Q_1



$$\text{so } z = \frac{x - \mu}{\sigma} \text{ then } -.67 = \frac{x - 4}{3}$$

$$\text{solve for } x = 1.99$$

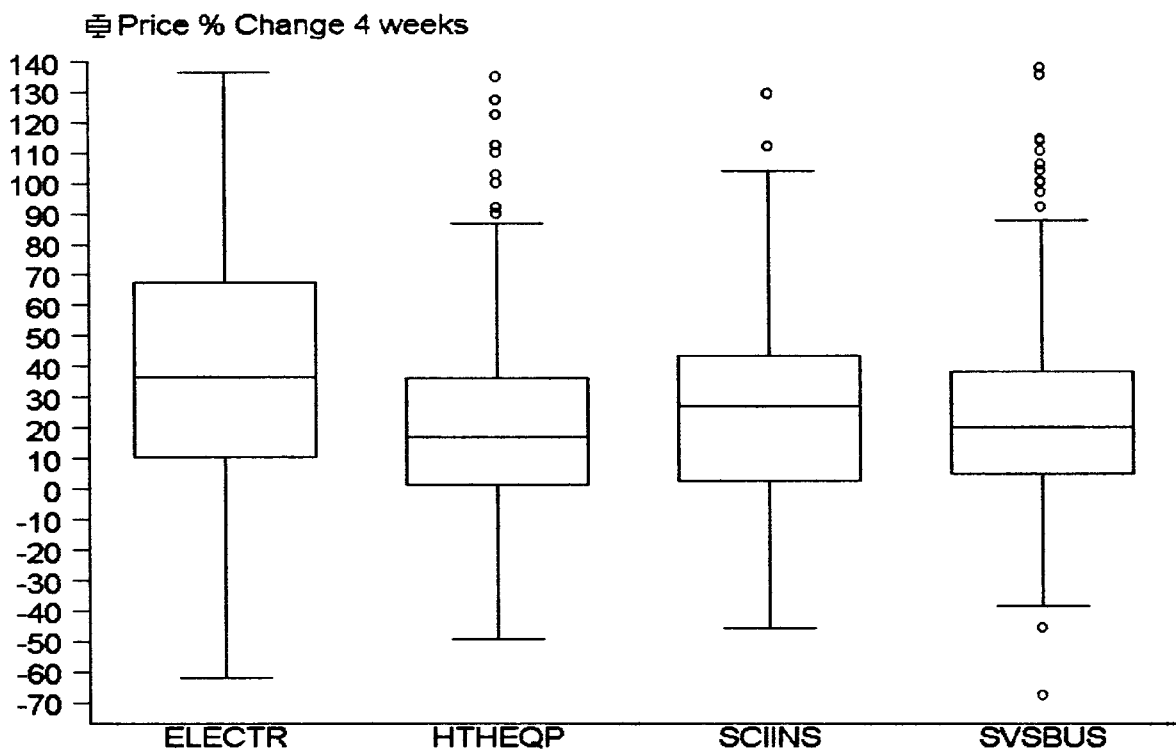
3) for Q_3



$$+.67 = \frac{x - 4}{3}$$

$$\text{solve for } x = 6.01$$

3. The box plots below summarize the percentage change in stock price for 4 industries (each industry has many companies) for January 2001. Please answer the following questions on the basis of this graphic.



(a) For the Health Equipment industry (HTHEQP), the 75th percentile for percentage change in stock price is (3 points):

- ☒ A. Slightly less than 40%
☐ B. Between 40% and 75%
☐ C. About 75%
☐ D. A little over 90%
☐ E. not calculable from this graphic

(b) Is the distribution of percentage change in stock price nearly symmetrical for any these industries? (circle one, 2 points)

- ☒ YES ☐ NO ☐ NEED MORE INFORMATION

(c) Please tell us how you arrived at your answer in part (b) above, use numerical calculations where appropriate (5 points)

ELECTR

median is nearly centered between 25th + 75th
 min + max are nearly equal distance from
 25th + 75th
 no outlier causing skewness

4. Congratulations! You graduated from UCLA and got a job as the marketing director for a large grocery store chain with an internet site that allows its customers to purchase products on-line. Your supervisor is wondering whether allowing customers to use special store coupons during their on-line purchases will increase the average dollar amount each customer spends on-line.

You decide to randomly sample 200 existing on-line customers. Then you gathered information about their purchasing behavior and demographics. Finally, using a random method, you give 100 of the on-line customers special store coupons for use during their next on-line purchase and you do not give the other 100 any special store coupons. You find that 75 of the 100 or 75% of the customers who were given the special store coupons made a purchase and they purchased an average of \$28 worth of groceries. The 100 who did not receive the special store coupons purchased an average of \$25 worth of groceries. Approximately 75 of the 100 without the special store coupons made an online purchase.

Data on 250,000 existing online customers reveals that the average dollar amount of groceries purchased is \$43. Data on all 2,500,000 online and non-online customers reveals that the average dollar amount of groceries purchased is \$41.

Please answer the following questions:

- a. (2 points) The parameter is:
 - i. $\$41 \times 2,500,000$ or $\$102,500,000$
 - ii. 28 dollars
 - iii. $\$28 \times 250,000$ or $\$7,000,000$
 - iv. 43 dollars
 - v. $\$43 \times 250,000$ or $\$10,750,000$
- b. (2 points) The population is:
 - i. 2.5 million customers
 - ii. $\$28 \times 250,000$ or $\$7,000,000$
 - iii. 250,000 online customers
 - iv. 200 customers
 - v. $\$41 \times 2,500,000$ or $\$102,500,000$
- c. (2 points) The sample is:
 - i. 2.5 million customers
 - ii. 200 customers
 - iii. 100 customers given special store coupons
 - iv. 100 customers not given special store coupons
 - v. 250,000 online customers
- d. (2 points) The statistic of most interest to your supervisor is:
 - i. $\$41 \times 2,500,000$ or $\$102,500,000$
 - ii. $\$43 \times 200$ or $\$8,600$
 - iii. 43 dollars
 - iv. $\$28 \times 250,000$ or $\$7,000,000$
 - v. 28 dollars
- e. (2 points) This study is:
 - i. a Randomized Controlled Experiment
 - ii. a Randomized Experiment without Controls, but it is blind
 - iii. a Randomized Experiment without Controls, but it is double-blind
 - iv. an Observational Study with controls
 - v. an Observational Study that uses a random probability method for sample selection.