

Statistics Review / Practice Test

Show All Work!!!

Name: _____ KEY

Date: _____ Period: _____

Copper Mountain Ski Resort has measured the depth of the snowpack (in inches) each February for the past 20 years. The results are given in the following table.

37	52	25	48	26	41	22	15	39	37
52	40	50	37	58	59	51	26	12	20

1. Find the mean, median, mode and range for the data (showing your work).

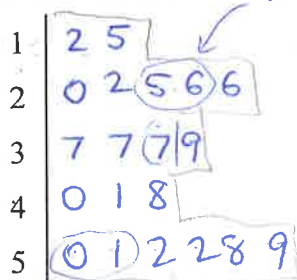
Mean = $\frac{747}{20} = 37.35$ Mode = 37

Median = 38 Range = $59 - 12 = 47$

~~37+39~~ $\frac{37+39}{2} = 38$

2. Draw a stem and leaf plot

$Q_1 = \frac{25+26}{2} = 25.5$



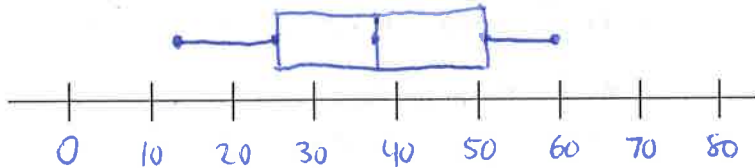
KEY: | / 5 = 15"

$Q_3 = \frac{50+51}{2} = 50.5$

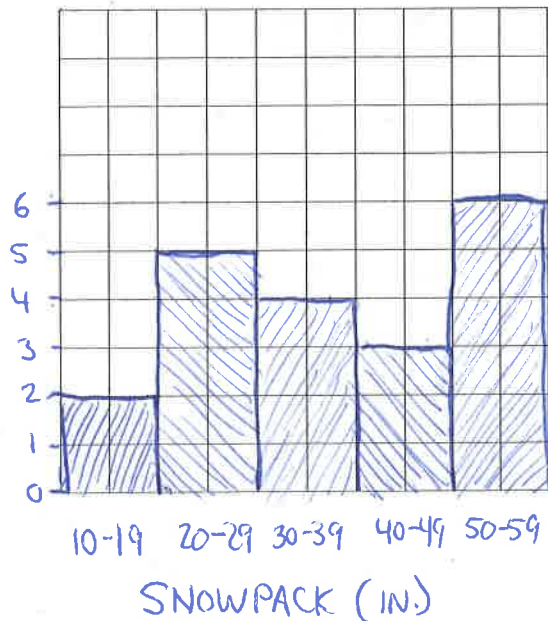
3. Find the 5-number summary

- Minimum: 12
- Q1: 25.5
- Median: 38
- Q3: 50.5
- Maximum: 59

4. Draw a box and whisker plot



5. Draw a histogram of the data.
Label your graph.



6. Find the 6 missing numbers that have:

Mean = 60, Median = 50, Mode = 20 and Range = 100

Support your work by showing how your numbers meet the criteria.

5 NUMBERS ADD TO 260
SO LAST NUMBER = $360 - 260 = 100$

MODE = 20
AT LEAST TWO ARE 20
RANGE = 100
 $100 + 20 = 120$ HIGH
 $120 - 20 = 100$ RANGE

MEAN = 60
x 6 NUMBERS
 $360 = \text{TOTAL SUM}$

20 20 45 55 100 120

MUST ADD TO 100 FOR MEDIAN

7. Find the mean and standard deviation of the data set 10, 6, 0, 12, 7 to the nearest tenth. SHOW what you did to find the answers to each part.

Hint: $s = \sqrt{\frac{\sum(x-\bar{x})^2}{n-1}}$ MEAN = $\bar{x} = \frac{10+6+0+12+7}{5} = \frac{35}{5} = 7$

X	$X - \bar{X}$	$(X - \bar{X})^2$
10	$10 - 7 = 3$	$3^2 = 9$
6	$6 - 7 = -1$	$(-1)^2 = 1$
0	$0 - 7 = -7$	$(-7)^2 = 49$
12	$12 - 7 = 5$	$5^2 = 25$
7	$7 - 7 = 0$	$0^2 = 0$
		$\Sigma = 84$

$$S = \sqrt{\frac{84}{5-1}}$$

$$S = \sqrt{\frac{84}{4}}$$

$$S = \sqrt{21}$$

$$S = 4.58$$

Mean = 7

s = 4.58

$$\bar{x} = 72$$

$$s = 8$$

8. Given a mean test score of 72 and a standard deviation of 8 calculate the following:

a) What would your z-score be if you scored an 85 on the test?

$$z = \frac{x - \bar{x}}{s} = \frac{85 - 72}{8} = \underline{\underline{1.625}}$$

b) What would your z-score be if you scored an 93 on the test?

$$z = \frac{93 - 72}{8} = \underline{\underline{2.625}}$$

c) What would your test score be if you had a z-score of -1.2?

$$8(-1.2) = \left(\frac{x - 72}{8}\right) 8$$

$$-9.6 = x - 72$$

$$x = \underline{\underline{62.4}}$$

d) What would your test score be if you had a z-score of 2.4?

$$8(2.4) = \left(\frac{x - 72}{8}\right) 8$$

$$19.2 = x - 72$$

$$x = \underline{\underline{91.2}}$$

9. On an anatomy test, Miguel's z-score is 2.15 and Juanita's is 2.5. Which student performed better on the test and why?

JUANITA PERFORMED BETTER BECAUSE HER Z-SCORE IS FURTHER ABOVE THE MEAN THAN MIGUEL'S Z-SCORE.

10. If the average height of the Ducks men's basketball team is 78" with a standard deviation of 3.5" and the Ducks women's team is 72" with a standard deviation of 2.5". Compare the heights of a male that is 74" tall to a female that is 69" with respect to their teammates.

USE Z-SCORES TO COMPARE. MEN'S: $z = \frac{74 - 78}{3.5} = -1.14$

WOMEN'S: $z = \frac{69 - 72}{2.5} = -1.20$

THE MALE IS A LITTLE TALLER COMPARED TO HIS TEAMMATES THAN THE FEMALE BECAUSE HIS Z-SCORE IS CLOSER TO THE MEAN.

11. You took two tests yesterday and scored 86 on each of them. The class average for the math test was 79, with a standard deviation of 5. The class average for the history test was 83, with a standard deviation of 3. Compared to other students in these classes, explain which test did you do the best?

USE Z-SCORES TO COMPARE.

$z_{\text{MATH}} = \frac{86 - 79}{5} = 1.4$

$z_{\text{HISTORY}} = \frac{86 - 83}{3} = 1.0$

ASSUMING A NORMAL DISTRIBUTION, YOU DID BETTER ON THE MATH TEST THAN THE HISTORY TEST WHEN COMPARED TO THE OTHER STUDENTS.

1.4 IS FURTHER ABOVE THE MEAN THAN 1.0.

12. Your overall grade is determined from the following percentages: Homework 20%, Tests 70%, Final 10%. You have scored 275 out of 350 points on homework this semester. Your test scores (each out of 100 points) have been 87, 85, 96 and 89.

- a. What do you need on your 5th test (not final) to have a 90% average on your test scores?

$$5 \cdot \left(\frac{87 + 85 + 96 + 89 + x}{5} \right) = (90) \cdot 5$$

$$357 + x = 450$$

$$x = 93$$

YOU NEED A 93 ON THE 5TH TEST.

- b. Assuming you made a 95 on your 5th test, what would you need to make on the final to earn an 90% A.

HWK AVG: $\frac{275}{350} = 0.786$ 78.6%

TEST AVG: $\frac{87 + 85 + 96 + 89 + 95}{5} = 90.4\%$

$$\frac{20(78.6) + 70(90.4) + 10(x)}{20 + 70 + 10} = 90$$

$$\frac{7900 + 10x}{100} = 90$$

$$7900 + 10x = 9000$$

$$10x = 1100$$

$$x = 110$$

- c. Assuming you made a 95 on your 5th test, what would you need to make on the final to earn an 80% B.

$$\frac{7900 + 10x}{100} = 80$$

$$7900 + 10x = 8000$$

$$10x = 100$$

$$x = 10$$

YOU WOULD ONLY NEED TO SCORE A "10" ON THE FINAL TO EARN A "B".

$x = 110$
 > 100
 SO IT'S NOT POSSIBLE TO GET AN "A"