

Holy Spirit High School
Math 2201 Chapter 5 Statistical Reasoning SAMPLE Test

- c) How many students scored greater than 70? (1 mark) 2+4=6
- c) Construct a frequency polygon. (2 marks)
- d) Is the data normally distributed? Explain how you know. (2 marks)

No. The data does

not follow a bell curve

12. The hours of 5 different employees at two local fast food restaurants are given below.
 a) Calculate standard deviation for the hours for both companies below. (6 marks)

Monster Burgers
 26, 34, 45, 10, 30

Super Chicken
 13, 15, 34, 16, 22

x	$x - \bar{x}$	$(x - \bar{x})^2$
26	-5	25
34	3	9
45	14	196
10	-21	442
30	-1	1

x	$x - \bar{x}$	$(x - \bar{x})^2$
13	-7	49
15	-5	25
34	14	196
16	-4	16
22	2	4

$$\sigma = \sqrt{\frac{673}{5}}$$

$$\sigma = 11.6$$

$$\sigma = \sqrt{\frac{290}{5}}$$

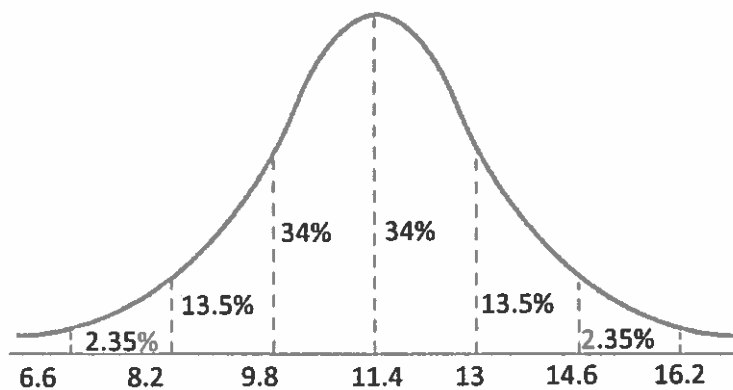
$$\sigma = 7.6$$

- b) Max has a car loan and wants to work consistent hours to ensure he can cover his payments, to which company would you recommend that he apply and explain why. (1 mark)

Max should apply to Super chicken if he wants more consistent hours. This is because the standard deviation is lower which indicates that the data is more tightly clustered around the mean.

13. The average life expectancy of a certain breed of cat was determined to be 11.4 years with a standard deviation of 1.6 years.

- a) Draw a normal distribution curve that represents this information. (2 marks)



- b) What is the probability that a given cat will live less than 9.8 years? (1 mark)

The probability is 16%

- c) What is the probability that a given cat will live more than 9.8 years? (1 mark)

84%

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- d) What is the probability that a cat will live less than 8 years? (1.5 marks)

$$z = \frac{x - \mu}{\sigma}$$

$$z = \frac{8 - 11.4}{1.6}$$

$$z = -2.125$$

Approx. 1.7%

- e) What is the probability that a cat will live between 8 and 10 years? (2.5 marks)

$$z = \frac{x - \mu}{\sigma}$$

$$z = \frac{10 - 11.4}{1.6}$$

$$z = -0.875$$

Approx. 19%

So we would expect 17.3% to live between 8 and 10 years..

14. Treena and Maggie both wrote a provincial exam in math. Treena wrote in January and Maggie wrote in June. Their results are given below.

Student	Student's Mark %	Provincial Mean %	Provincial Standard Deviation %
Treena	84	71	5.3
Maggie	82	66	6.2

- a). Determine which girl's result is better when compared the others who wrote the same exam.

Treena

$$z = \frac{x - \mu}{\sigma}$$

$$z = \frac{84 - 71}{5.3}$$

$$z = 2.45$$

Maggie did better because she is farther above the mean and has a higher z-score

Maggie

$$z = \frac{x - \mu}{\sigma}$$

$$z = \frac{82 - 66}{6.2}$$

$$z = 2.58$$

- b). If the results of each exam are normally distributed, what percent of people who wrote the exam in January scored better than Treena?

99.29% is the percentage that corresponds to her z -score so the % that did better is 0.71% of students