**Statistics Unit**

**PRACTICE TEST**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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| --- | --- | --- | --- |
| Learning Goal | Novice | Apprentice | Expert |
| I can calculate the measures of central tendency and standard deviation |  |  |  |
| I can use normal distribution to find patterns in a population |  |  |  |
| I can use z-scores and confidence intervals to describe my data |  |  |  |

**Learning Goal #1: I can calculate the measures of central tendency and standard deviation**

***Novice***

For the following groups of numbers, calculate the mean, median and mode for each.

1. 45, 66, 33, 75, 78, 99, 66, 45, 86, 34

|  |  |
| --- | --- |
| Mean |  |
| Median |  |
| Mode |  |
| Range |  |

1. Brian is wanting to do an average of 120 sit ups daily for a week. Below is his Monday – Saturday sit up total. How many sit ups does he need to do on Sunday to get to his average goal?

|  |  |
| --- | --- |
| Monday | 145 |
| Tuesday | 100 |
| Wednesday | 97 |
| Thursday | 165 |
| Friday | 89 |
| Saturday | 112 |
| Sunday | ? |

1. Below is the class data for the resting heart rate of all students in FOM 11. Organize the data into a frequency table.

|  |  |
| --- | --- |
| ***Heart Rates*** | ***Frequency*** |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

74, 63, 65, 73, 56, 100, 101, 79, 78, 65, 64, 63, 67, 52, 77, 78, 73, 79, 81, 88, 85, 90, 99, 94, 72, 52

***Apprenticeship***

1. You collect data on the average life span of a grizzly bear. The raw data is listed below. Draw a frequency graph for the below data.



Lifespan of grizzly sample:

18 yr, 25.5 yr, 21.2 yr,

16.1 yr, 12.5 yr, 26.6 yr,

18.9 yr, 25.1 yr, 20.7 yr,

23.1 yr, 25.2 yr, 20.2 yr,

15.9 yr, 15.4 yr, 19.2 yr,

19.8 yr, 25.7 yr, 21.9 yr

**Expert**

1. Find the mean and standard deviation of the jumping height of your dog.



2.4m, 2.1m, 3.1m,

3.3m, 2.9m

**Learning Goal #2: I can use normal distribution to find patterns in a population**

***Novice***

1. Draw a normal distribution curve. Put the percentages of population that will fit into each standard deviation. Label the mean.

***Apprentice***

1. The average number of minutes of screen time in Canada is 204 minutes each day with a standard deviation of 15 minutes. Summerland has a population of 11,615. How many people in Summerland are on their screen less than 189 minutes?
2. The average annual salary at a BC company is $76,700 with a standard deviation of $5,400. What percent of employees make above $92,900?

***Expert***

1. Samsung wants to put a warranty on their plasma TV’s. The plasma Tv’s have a mean lifespan of 7.1 years, with a standard deviation of 1.2 years. For how long should the TV be covered by the warranty, if Samsung wants to repair no more than 2.35% of the TV’s sold?

**Learning Goal #3: I can use z-scores and confidence intervals to describe my data**

***Novice***

1. What is the percentile of a population that is at or below a z score of z = -0.47?
2. What is the percentile of a population that is at or above a z score of z = 2.24?
3. A patient recently diagnosed with Alzheimer’s disease takes a cognitive abilities test and scores a 45. The mean on this test is 52 and the standard deviation is 5. What is the patient’s percentile?
4. In order to determine the mean weight of wild coho salmon 30 coho were caught, weighed, and released. The mean mass of the salmon was 8.4 ± 0.9 kg. The results are accurate 19 out of 20 times.
	1. What is your confidence interval? (State in BOTH methods)
	2. What is the margin of error?
	3. What is your confidence level?

***Apprentice***

1. Pat and Chris both took a spatial abilities test (mean = 80, std. dev. = 8). Pat scores a 76 and Chris scored a 94. What proportion of individuals would score between Pat and Chris?
2. The Welcher Adult Intelligence Test Scale is composed of a number of subtests. On one subtest, the raw scores have a mean of 35 and a standard deviation of 6. Assuming these raw scores form a normal distribution:
	1. What proportion of raw scores are between 28 and 38?
	2. What number represents the 65th percentile (what number separates the lower 65% of the distribution)?

*Expert*

1. Scores on the SAT form a normal distribution with μ = 500 and σ =100 .
	1. What is the minimum score necessary to be in the top 15% of the SAT distribution?
	2. Find the range of values that defines the middle 80% of the distribution of SAT scores.