

**Pretest
Adult General Education**

Data Collection in a General Context

Mathematics

MTH-4152-1

Diversified Basic Education Program

Adult Booklet

Version 2022 – Powwow* Edition

*

Many Indigenous communities held a powwow annually to meet, dance, sing, socialize and honour their cultures. Powwows are open to all – indigenous and non-indigenous people!

Information mentioned in the pretest are accurate, but all numerical values are made up by the author, based on her limited experience with powwows.

Adult learner's Name: _____

Permanent Code:

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Centre Code:

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Date of the Examination: _____

2022

By SJ Jessica Lee
For FNRAEC

Many Thanks to Jennifer Deer, Josh Dedam and Barry Bonspille for their feedback.

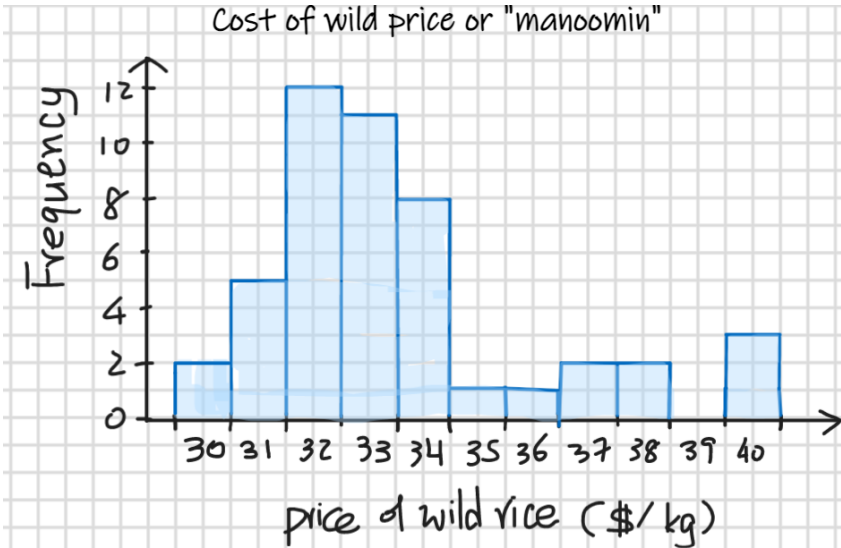
Qualitative interpretation of linear correlation

Correlation coefficient	Strength of the correlation
$ r = 0$	No correlation
$0 < r < 0.5$	Weak
$0.5 \leq r < 0.7$	Moderate
$0.7 \leq r < 0.95$	Strong
$0.95 \leq r < 1$	Very strong
$ r = 1$	Perfect

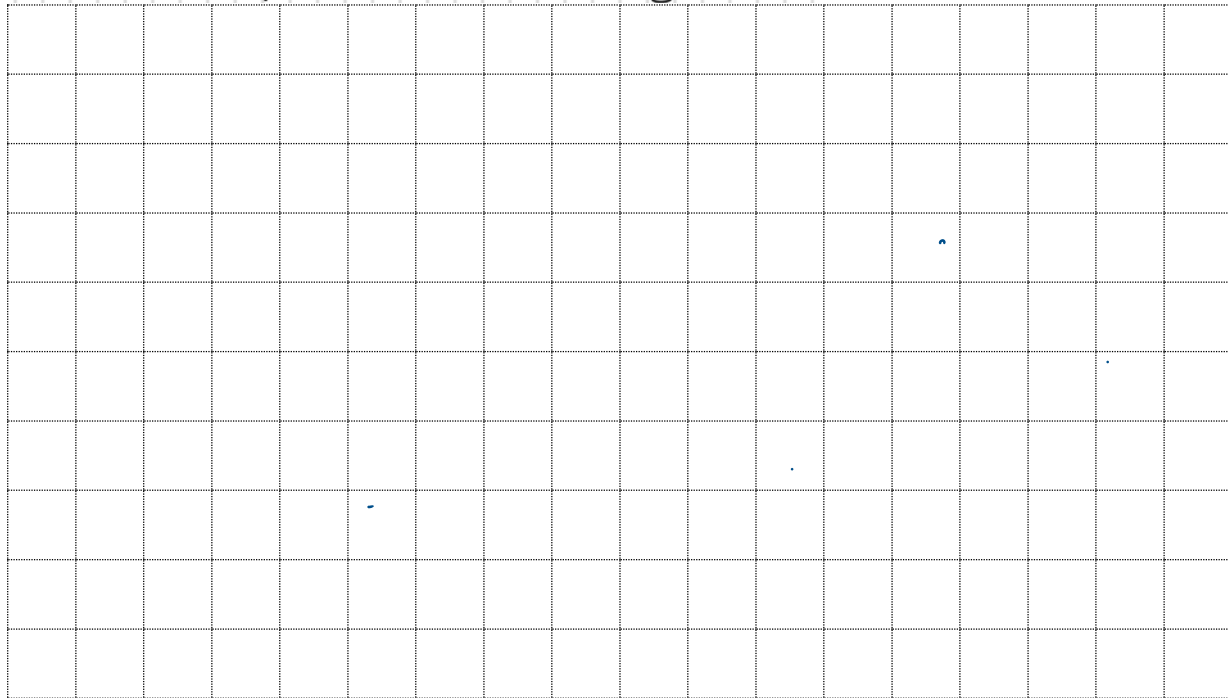
*You will have something similar for your exam. You do not need to memorize this.

Section A: 20 marks

1. Wild rice or "manoomin" by the Ojibwe, can be seen in many dishes in powwows. They taste great and are packed of nutrients such as protein, magnesium, zinc! Not surprisingly, wild rice is not cheap! Jose saw a local farm selling organic wild rice for \$38/kg. The graph below shows the prices of this and other companies selling wild rice.



Use it to calculate the percentile rank of the organic wild rice and determine if this organic wild rice is cheaper or more expensive, compared to others.



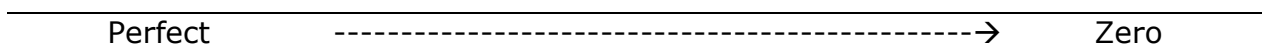
4	3	2	1	0
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3.

a) Rank the following correlation coefficient from perfect to zero.

1. $r = -0.9$	2. $r = 0.5$	3. $r = 1$	4. $r = -0.3$	5. $r = 0.1$
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Answer:



b)

Identify the scenario that is most likely going to give you a negative and moderate correlation.

1. Care a tree received and the height of a tree.
2. Chance of rain and the number of people attending an outdoor powwow.
3. Cost of the ingredients and the price of a product.
4. Loudness of the drums and the spicy level of the food.

Answer:

5	4	3	2	1	0
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Section B: 80 Marks (Show all your work.)

Task 1: Walleye nuggets

Walleye, a type of fish pictured right, is widely distributed in North America. And they are the main source of proteins for many First Nations.



[This Photo](#) by Unknown Author is licensed under CC BY-SA

There are two stands selling the famous walleye nuggets (fresh walleye cut into bite-sized pieces, lightly breaded and fried). Use the online ratings to help you decide which stand to buy from. All ratings are recorded in a scale of 1 to 5, where 1 means horrible and 5 means excellent.

Ratings for the "Mighty Walleye" stand	Rating for the "Walleye popcorn" stand												
<table border="1"> <caption>Ratings for Mighty Walleye</caption> <thead> <tr> <th>Rating</th> <th>Frequency</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2</td> </tr> <tr> <td>2</td> <td>2</td> </tr> <tr> <td>3</td> <td>3</td> </tr> <tr> <td>4</td> <td>3</td> </tr> <tr> <td>5</td> <td>2</td> </tr> </tbody> </table>	Rating	Frequency	1	2	2	2	3	3	4	3	5	2	<p>3, 3, 3, 4, 4, 2, 4, 2, 5, 3, 3, 4</p>
Rating	Frequency												
1	2												
2	2												
3	3												
4	3												
5	2												

Calculate the mean, mean deviation and range for each stall. Then use these values to help you decide which stall has better walleye nuggets! Justify your choice.



Task 2: Beadings

At least 8000 years (possibly even earlier, with the recent discovery near Fredericton, New Brunswick, artifacts dating near 12,700 years ago¹) before the arrival of the Europeans in North America (or Turtle Island to many Indigenous Nations), Indigenous people were creating elaborate arts by weaving beads into patterns². And this practice continues to present days, such as the work (picture right, photo reprinted with permission) by Tekaronhiahkhwa Standup.



Adsila wants to start selling her creations at powwows. As an entrepreneur, she is struggling to price her work - not too high to attract buyers and not too low to depreciate her arts. She collected information on others work and decides to use that to price her own work.

Length (cm)	Number of beads (hundreds)	Number of hours	Price (\$)
5.4	450	3	65
4.8	880	4.2	100
6.1	300	1.8	40
7	1000	5	140
2.5	310	0.5	30
3.9	450	1.7	35
5.8	580	2.5	55
6	800	4	80
4.2	210	0.9	30
8.4	370	1.5	42
6.5	260	0.2	15
10	1200	4.5	99

Adsila has already determined that relationship between the number of beads and price can be described with $y = 0.1x + 2.55$ and $r = 0.82$

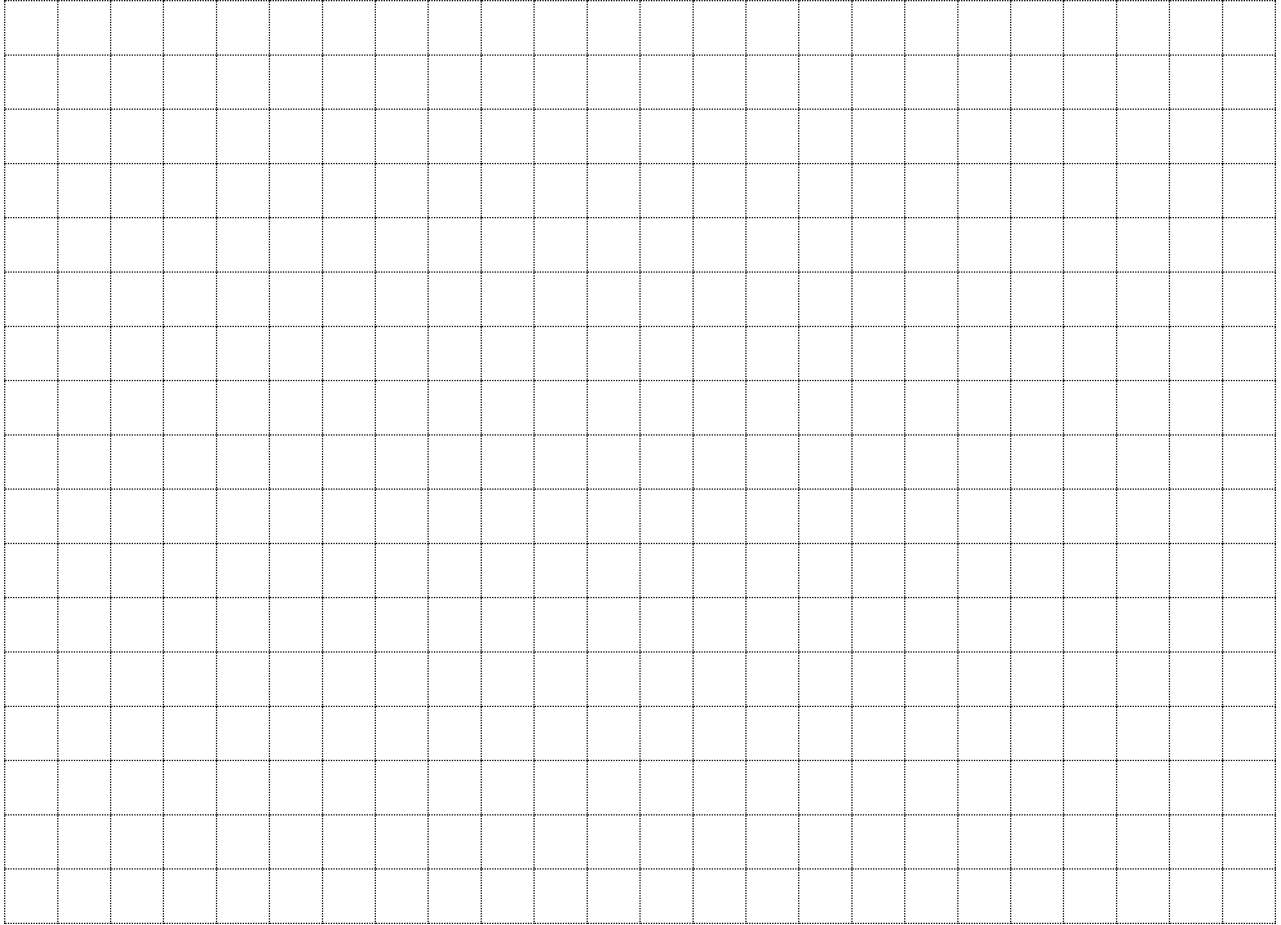
Describe the correlation between the number of hours and price as an algebraic model.

If Adsila's work took 3.3 hours and 728 beads, estimate the price algebraically using each model.

Based on the correlation coefficient, which model is better? Justify your answer.

¹ <https://www.cbc.ca/news/canada/new-brunswick/artifacts-new-brunswick-1.4068145>

² <https://www.cbc.ca/kids/articles/do-you-know-what-beading-is>



Task 3: Dancers

Powwows are First Nations events where people gather to sing, dance, and drum. This activity held important significances for many Indigenous people and many First Nations consider their songs and dances to be sacred! To an untrained eye, the dance is deceptively simple. While in fact, each dancer is imitating nature, following the song, and synchronizing their movements with the drumbeats!

Some powwows hold competitions for dancers and celebrate the best dancers in each category! Below are some statistics for dancers in men's traditional dance category (this dance tells stories of warrior's exploits, deeds and achievements³).



Photo by Andrew James on Unsplash

Dancer #	Age	Years of training	Height (cm)	Average number of competitions in a year	Score (max 20)
1	40	20	168	2	15
2	43	11	160	8	16
3	38	13	158	6	18
4	25	7	173	1	11
5	20	5	178	3	10
6	18	8	180	8	15
7	19	2	170	10	14
8	21	10	167	5	12
9	28	21	174	6	19
10	33	22	176	8	20
11	38	30	170	4	20
12	49	17	169	3	18
13	49	15	162	2	17
14	26	10	175	1	13
15	18	3	177	5	18

Estimate the direction and the strength of the correlation between:

score and the number of years of training

score and the average number of competitions in a year.

Then determine which is a better factor for the score. Justify your answer.

³ Learn more about powwow dancers - <https://www.thecanadianencyclopedia.ca/en/article/powwow-dances>

