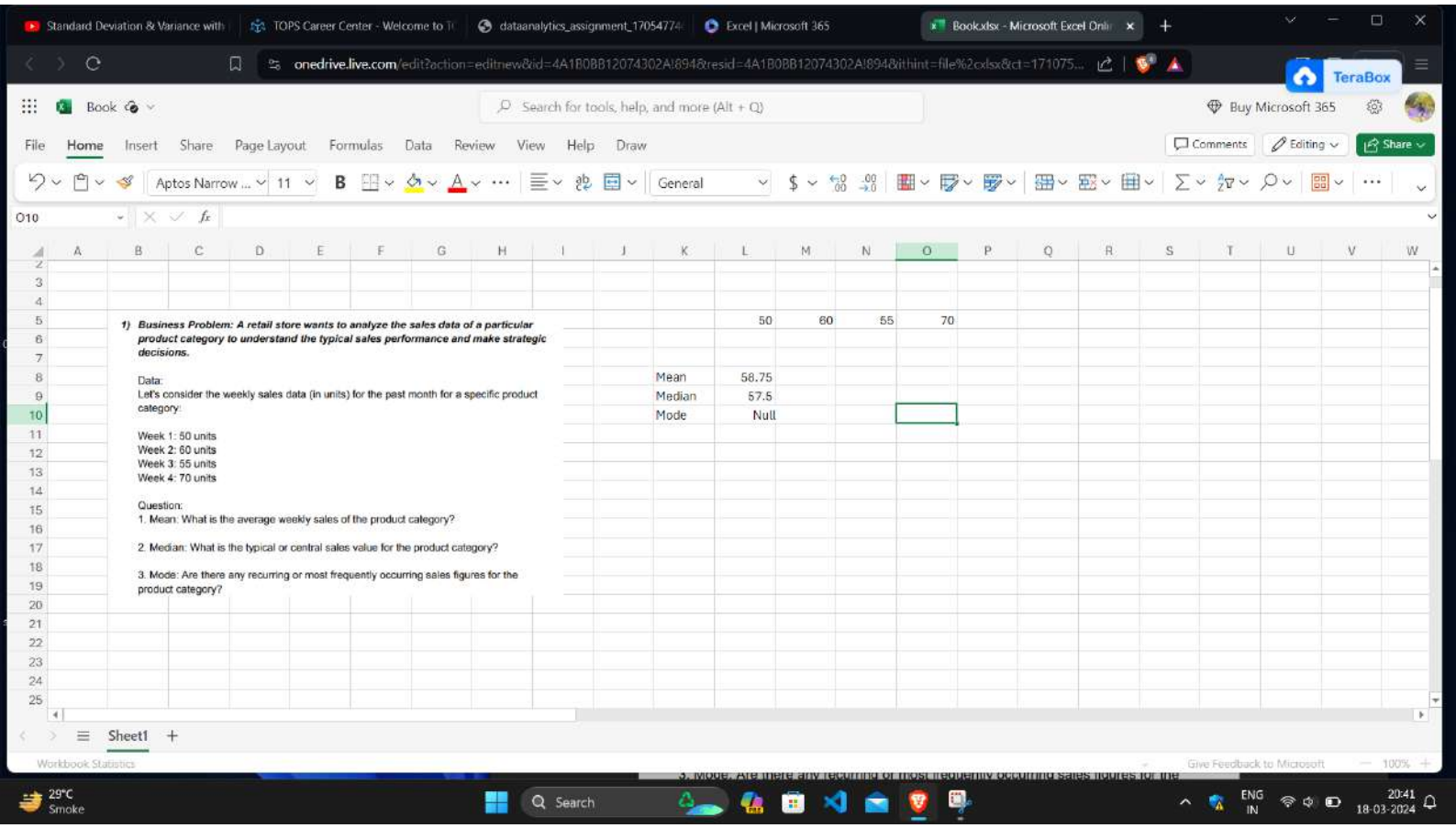
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11
General
O10
1) Business Problem: A retail store wants to analyze the sales data of a particular product category to understand the typical sales performance and make strategic decisions.
Data:
Let's consider the weekly sales data (in units) for the past month for a specific product category:
Week 1: 50 units
Week 2: 60 units
Week 3: 55 units
Week 4: 70 units
Question:
1. Mean: What is the average weekly sales of the product category?
2. Median: What is the typical or central sales value for the product category?
3. Mode: Are there any recurring or most frequently occurring sales figures for the product category?
50 60 55 70
Mean 58.75
Median 57.5
Mode Null
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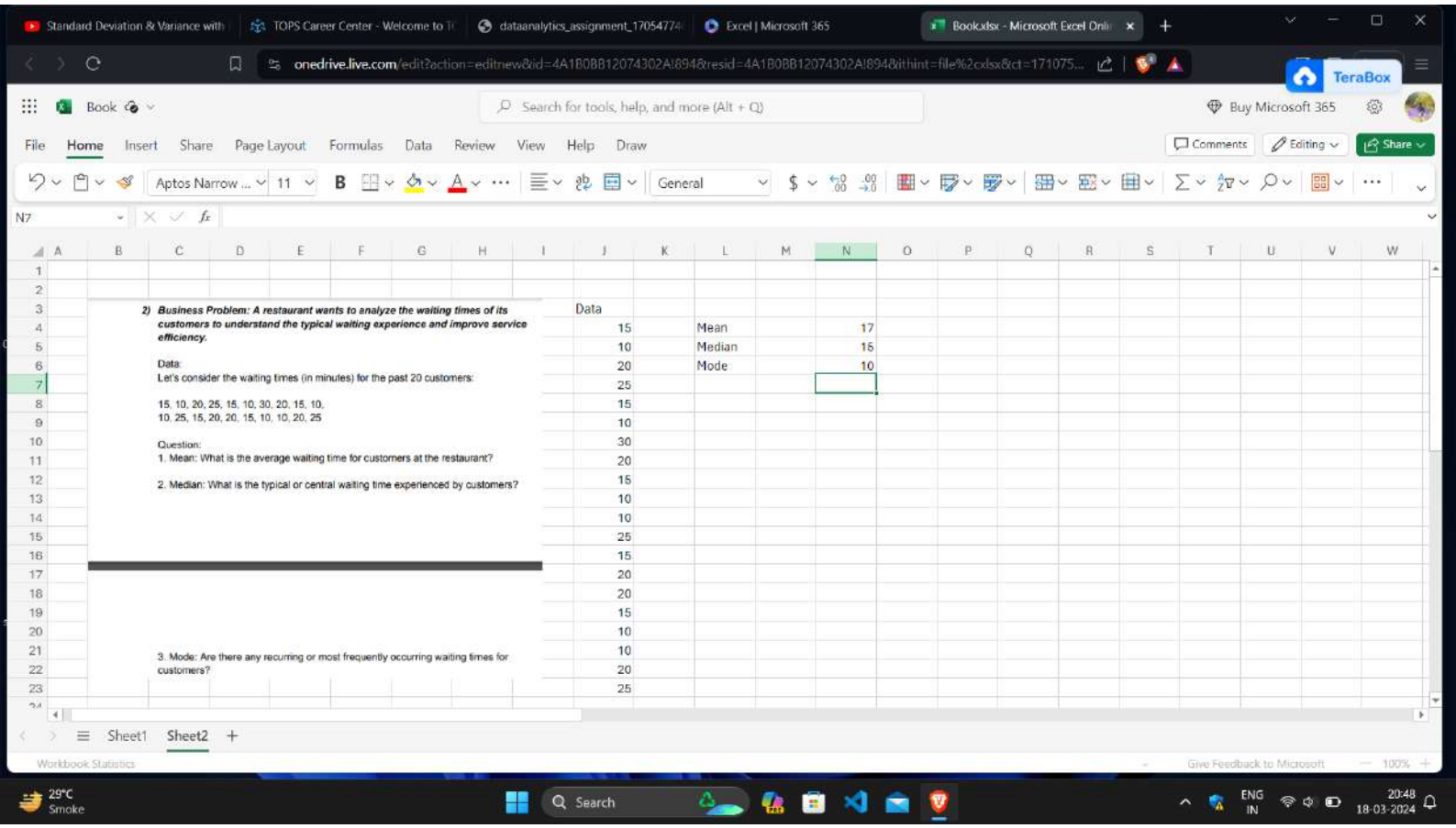


2) ***Business Problem: A restaurant wants to analyze the waiting times of its customers to understand the typical waiting experience and improve service efficiency.***

Data:
Let's consider the waiting times (in minutes) for the past 20 customers:

15, 10, 20, 25, 15, 10, 30, 20, 15, 10,
10, 25, 15, 20, 20, 15, 10, 10, 20, 25

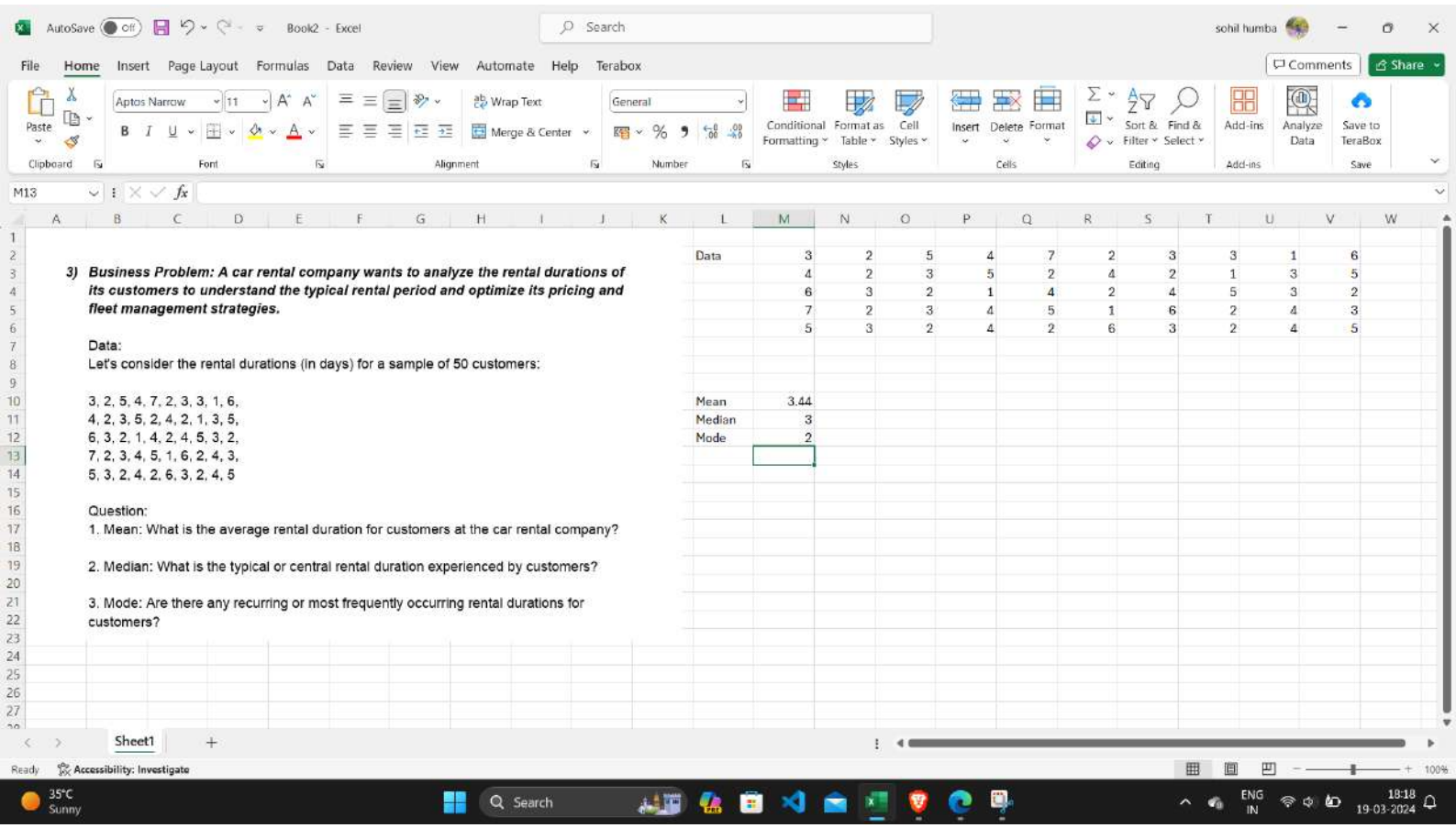
Question:
1. Mean: What is the average waiting time for customers at the restaurant?

2. Median: What is the typical or central waiting time experienced by customers?

3. Mode: Are there any recurring or most frequently occurring waiting times for customers?

Data
15
10
20
25
15
10
30
20
15
10
10
25
15
20
20
15
10
10
20
25

Mean	17
Median	15
Mode	10



3) ***Business Problem: A car rental company wants to analyze the rental durations of its customers to understand the typical rental period and optimize its pricing and fleet management strategies.***

Data:
Let's consider the rental durations (in days) for a sample of 50 customers:

3, 2, 5, 4, 7, 2, 3, 3, 1, 6,
4, 2, 3, 5, 2, 4, 2, 1, 3, 5,
6, 3, 2, 1, 4, 2, 4, 5, 3, 2,
7, 2, 3, 4, 5, 1, 6, 2, 4, 3,
5, 3, 2, 4, 2, 6, 3, 2, 4, 5

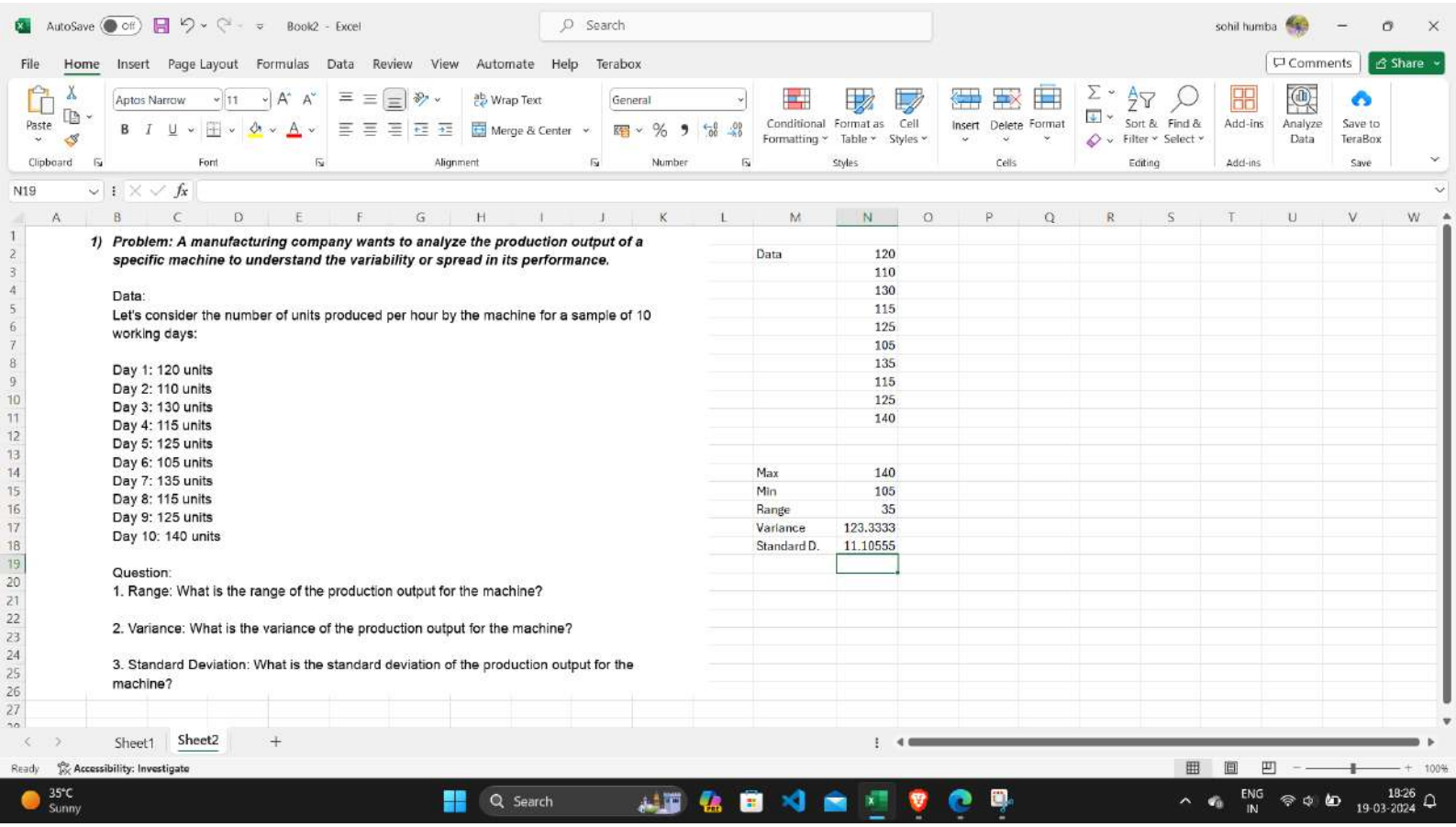
Question:
1. Mean: What is the average rental duration for customers at the car rental company?

2. Median: What is the typical or central rental duration experienced by customers?

3. Mode: Are there any recurring or most frequently occurring rental durations for customers?

Data	3	2	5	4	7	2	3	3	1	6
	4	2	3	5	2	4	2	1	3	5
	6	3	2	1	4	2	4	5	3	2
	7	2	3	4	5	1	6	2	4	3
	5	3	2	4	2	6	3	2	4	5

Mean	3.44
Median	3
Mode	2



1) ***Problem: A manufacturing company wants to analyze the production output of a specific machine to understand the variability or spread in its performance.***

Data:
Let's consider the number of units produced per hour by the machine for a sample of 10 working days:

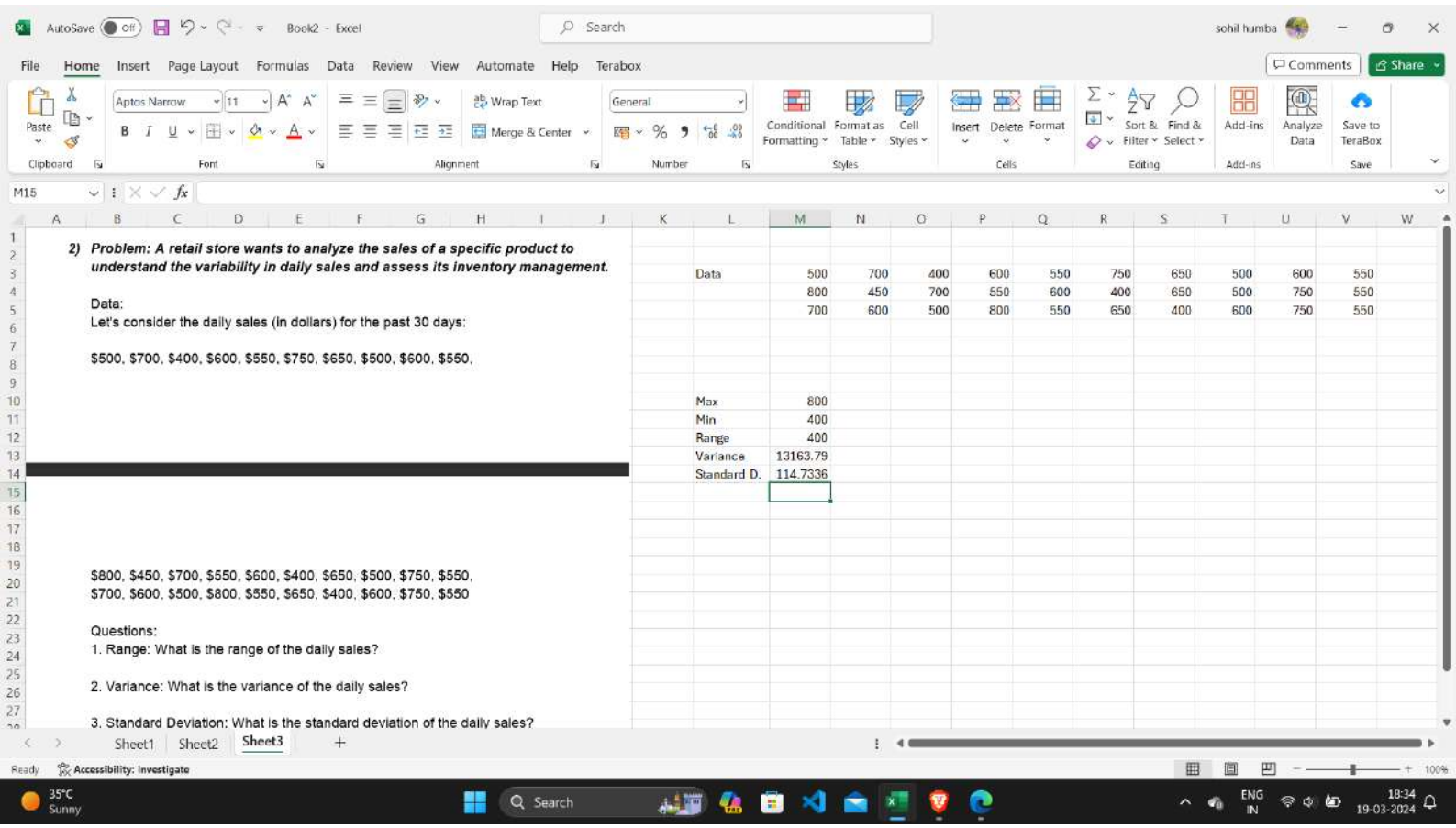
Day 1: 120 units
Day 2: 110 units
Day 3: 130 units
Day 4: 115 units
Day 5: 125 units
Day 6: 105 units
Day 7: 135 units
Day 8: 115 units
Day 9: 125 units
Day 10: 140 units

Question:
1. Range: What is the range of the production output for the machine?

2. Variance: What is the variance of the production output for the machine?

3. Standard Deviation: What is the standard deviation of the production output for the machine?

Data	120
	110
	130
	115
	125
	105
	135
	115
	125
	140
Max	140
Min	105
Range	35
Variance	123.3333
Standard D.	11.10555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Conditional Formatting Format as Table Cell Styles Styles
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M15
2) Problem: A retail store wants to analyze the sales of a specific product to understand the variability in daily sales and assess its inventory management.
Data:
Let's consider the daily sales (in dollars) for the past 30 days:
$500, $700, $400, $600, $550, $750, $650, $500, $600, $550,
$800, $450, $700, $550, $600, $400, $650, $500, $750, $550,
$700, $600, $500, $800, $550, $650, $400, $600, $750, $550
Questions:
1. Range: What is the range of the daily sales?
2. Variance: What is the variance of the daily sales?
3. Standard Deviation: What is the standard deviation of the daily sales?
Data 500 700 400 600 550 750 650 500 600 550
800 450 700 550 600 400 650 500 750 550
700 600 500 800 550 650 400 600 750 550
Max 800
Min 400
Range 400
Variance 13163.79
Standard D. 114.7336
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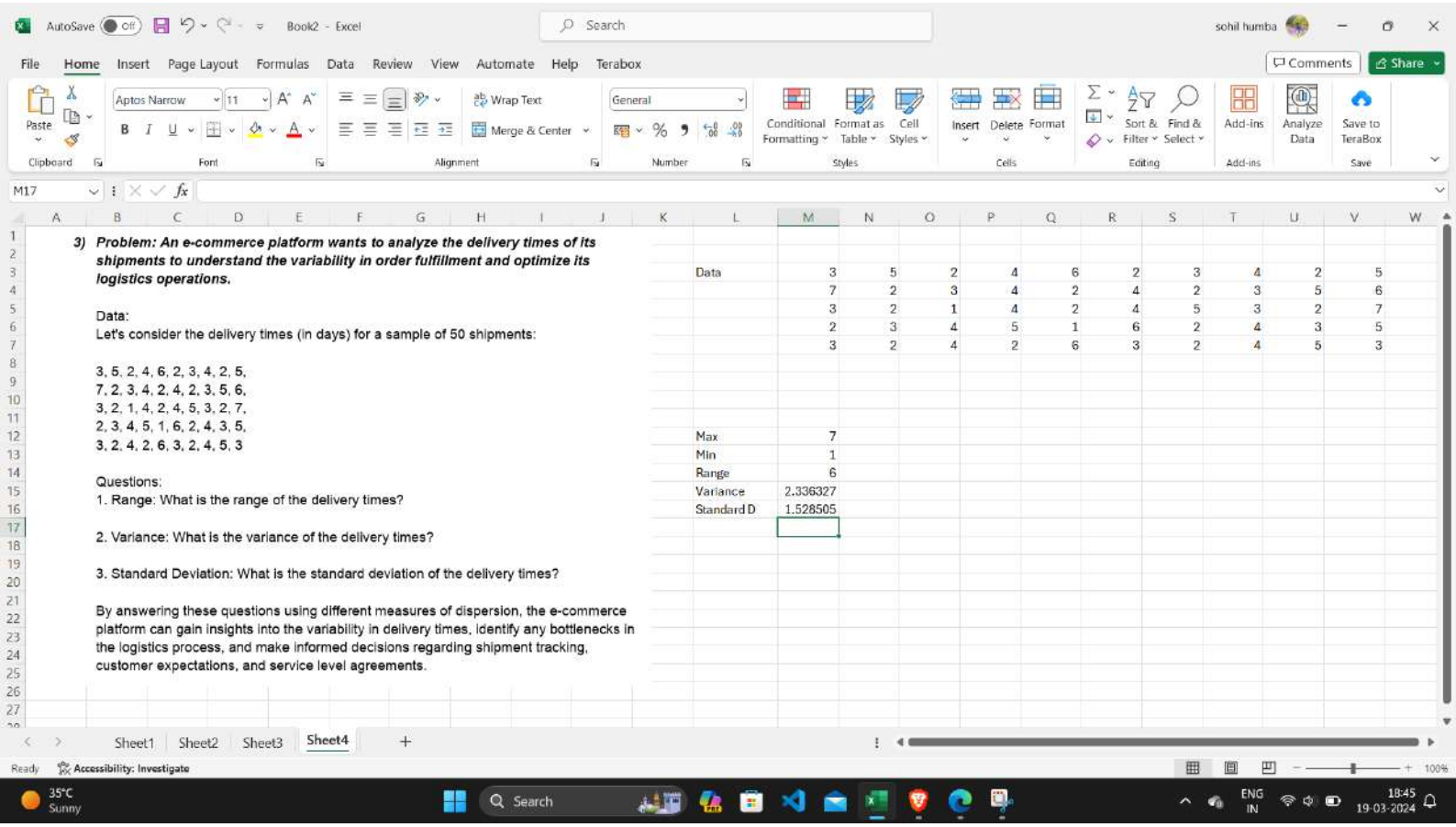


3) ***Problem: An e-commerce platform wants to analyze the delivery times of its shipments to understand the variability in order fulfillment and optimize its logistics operations.***

Data:
Let's consider the delivery times (in days) for a sample of 50 shipments:

3, 5, 2, 4, 6, 2, 3, 4, 2, 5,
7, 2, 3, 4, 2, 4, 2, 3, 5, 6,
3, 2, 1, 4, 2, 4, 5, 3, 2, 7,
2, 3, 4, 5, 1, 6, 2, 4, 3, 5,
3, 2, 4, 2, 6, 3, 2, 4, 5, 3

Questions:
1. Range: What is the range of the delivery times?

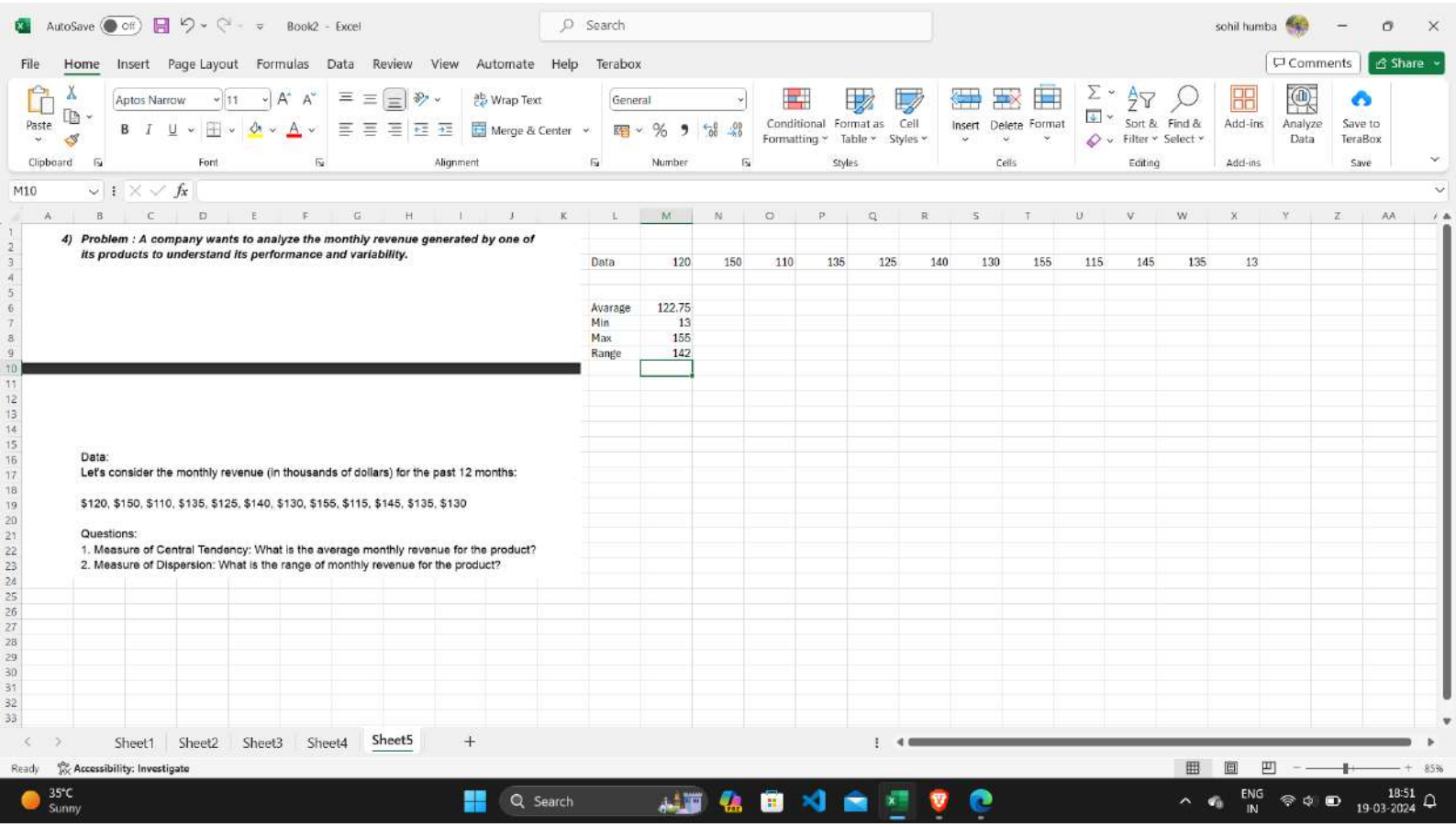
2. Variance: What is the variance of the delivery times?

3. Standard Deviation: What is the standard deviation of the delivery times?

By answering these questions using different measures of dispersion, the e-commerce platform can gain insights into the variability in delivery times, identify any bottlenecks in the logistics process, and make informed decisions regarding shipment tracking, customer expectations, and service level agreements.

Data	3	5	2	4	6	2	3	4	2	5
	7	2	3	4	2	4	2	3	5	6
	3	2	1	4	2	4	5	3	2	7
	2	3	4	5	1	6	2	4	3	5
	3	2	4	2	6	3	2	4	5	3

Max	7
Min	1
Range	6
Variance	2.336327
Standard D	1.528505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M10
4) Problem : A company wants to analyze the monthly revenue generated by one of its products to understand its performance and variability.
Data 120 150 110 135 125 140 130 155 115 145 135 13
Avarage 122.75
Min 13
Max 155
Range 142
Data:
Let's consider the monthly revenue (in thousands of dollars) for the past 12 months:
$120, $150, $110, $135, $125, $140, $130, $155, $115, $145, $135, $130
Questions:
1. Measure of Central Tendency: What is the average monthly revenue for the product?
2. Measure of Dispersion: What is the range of monthly revenue for the product?
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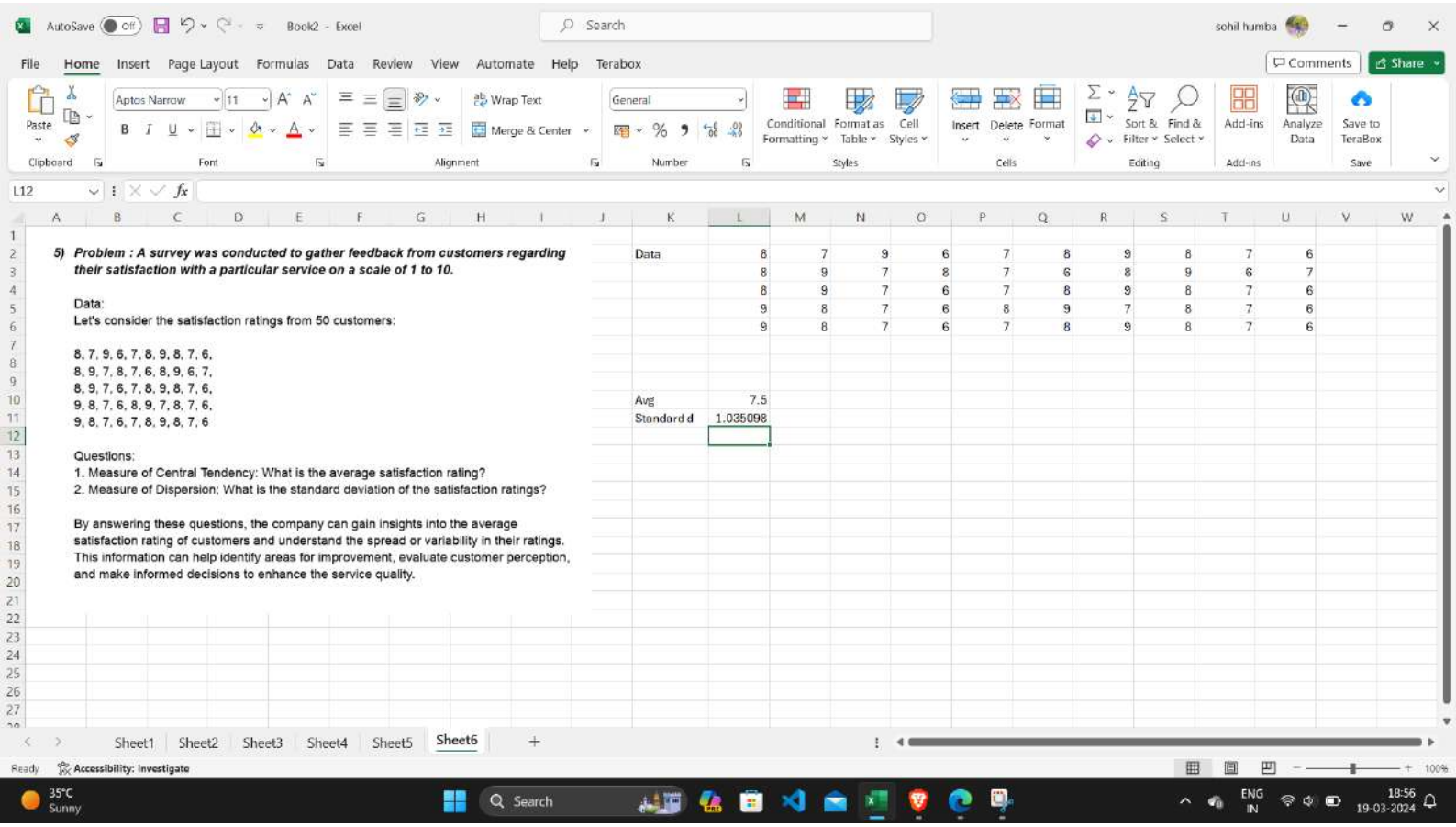


5) ***Problem : A survey was conducted to gather feedback from customers regarding their satisfaction with a particular service on a scale of 1 to 10.***

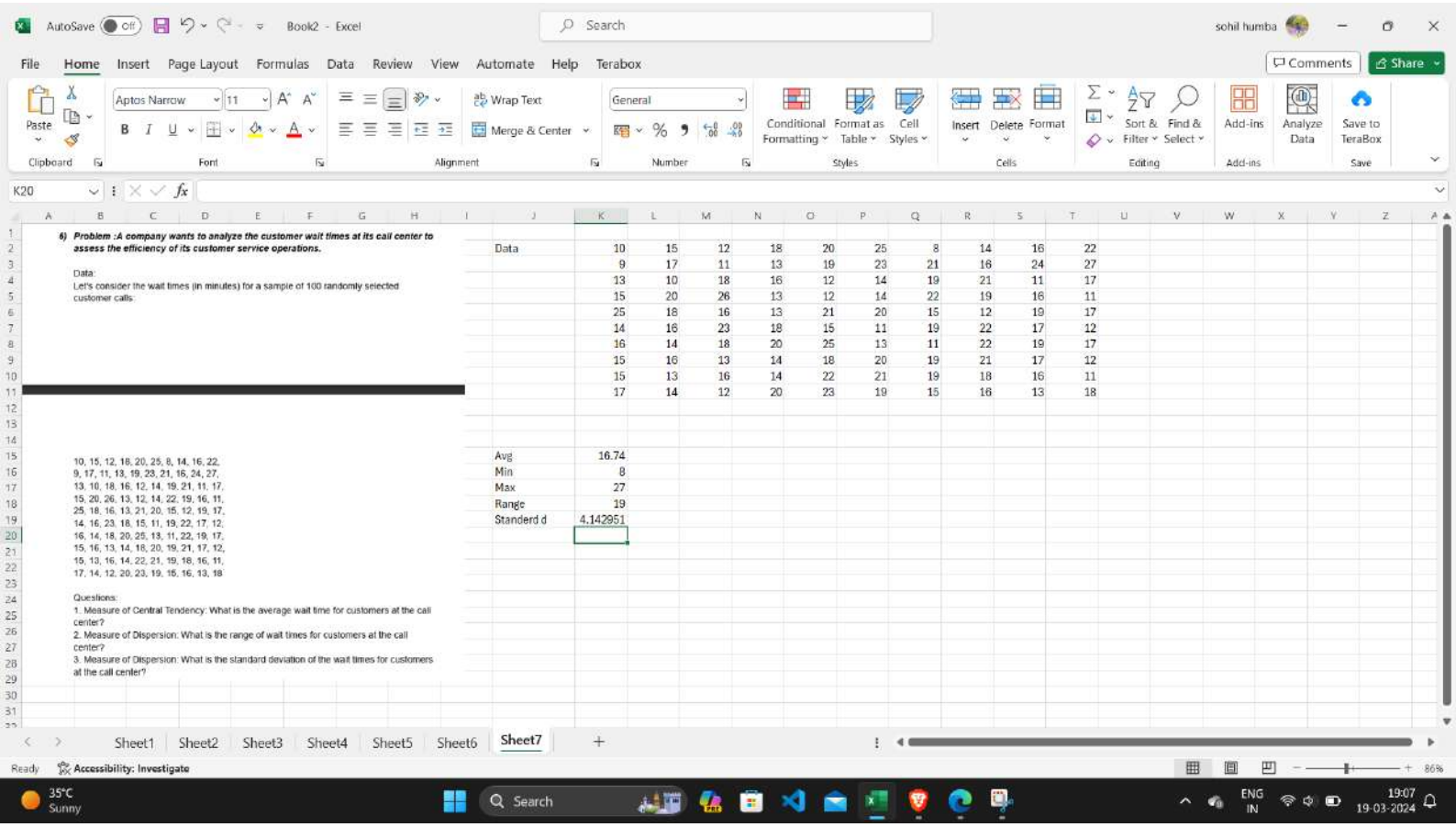
Data:
Let's consider the satisfaction ratings from 50 customers:

8, 7, 9, 6, 7, 8, 9, 8, 7, 6,
8, 9, 7, 8, 7, 6, 8, 9, 6, 7,
8, 9, 7, 6, 7, 8, 9, 8, 7, 6,
9, 8, 7, 6, 8, 9, 7, 8, 7, 6,
9, 8, 7, 6, 7, 8, 9, 8, 7, 6

Questions:
1. Measure of Central Tendency: What is the average satisfaction rating?
2. Measure of Dispersion: What is the standard deviation of the satisfaction ratings?

By answering these questions, the company can gain insights into the average satisfaction rating of customers and understand the spread or variability in their ratings. This information can help identify areas for improvement, evaluate customer perception, and make informed decisions to enhance the service quality.

Data	8	7	9	6	7	8	9	8	7	6
	8	9	7	8	7	6	8	9	6	7
	8	9	7	6	7	8	9	8	7	6
	9	8	7	6	8	9	7	8	7	6
	9	8	7	6	7	8	9	8	7	6
Avg	7.5									
Standard d	1.035098									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Conditional Formatting Format as Table Cell Styles Styles
Insert Delete Format Cells
Sort & Filter Find & Select Editing
Add-ins Add-ins
Analyze Data
Save to TeraBox Save
K20
6) Problem :A company wants to analyze the customer wait times at its call center to assess the efficiency of its customer service operations.
Data:
Let's consider the wait times (in minutes) for a sample of 100 randomly selected customer calls:
10, 15, 12, 18, 20, 25, 8, 14, 16, 22,
9, 17, 11, 13, 19, 23, 21, 16, 24, 27,
13, 10, 18, 16, 12, 14, 19, 21, 11, 17,
15, 20, 26, 13, 12, 14, 22, 19, 16, 11,
25, 18, 16, 13, 21, 20, 15, 12, 19, 17,
14, 16, 23, 18, 15, 11, 19, 22, 17, 12,
16, 14, 18, 20, 25, 13, 11, 22, 19, 17,
15, 16, 13, 14, 18, 20, 19, 21, 17, 12,
15, 13, 16, 14, 22, 21, 19, 18, 16, 11,
17, 14, 12, 20, 23, 19, 15, 16, 13, 18
Questions:
1. Measure of Central Tendency: What is the average wait time for customers at the call center?
2. Measure of Dispersion: What is the range of wait times for customers at the call center?
3. Measure of Dispersion: What is the standard deviation of the wait times for customers at the call center?
Data 10 15 12 18 20 25 8 14 16 22
9 17 11 13 19 23 21 16 24 27
13 10 18 16 12 14 19 21 11 17
15 20 26 13 12 14 22 19 16 11
25 18 16 13 21 20 15 12 19 17
14 16 23 18 15 11 19 22 17 12
16 14 18 20 25 13 11 22 19 17
15 16 13 14 18 20 19 21 17 12
15 13 16 14 22 21 19 18 16 11
17 14 12 20 23 19 15 16 13 18
Avg 16.74
Min 8
Max 27
Range 19
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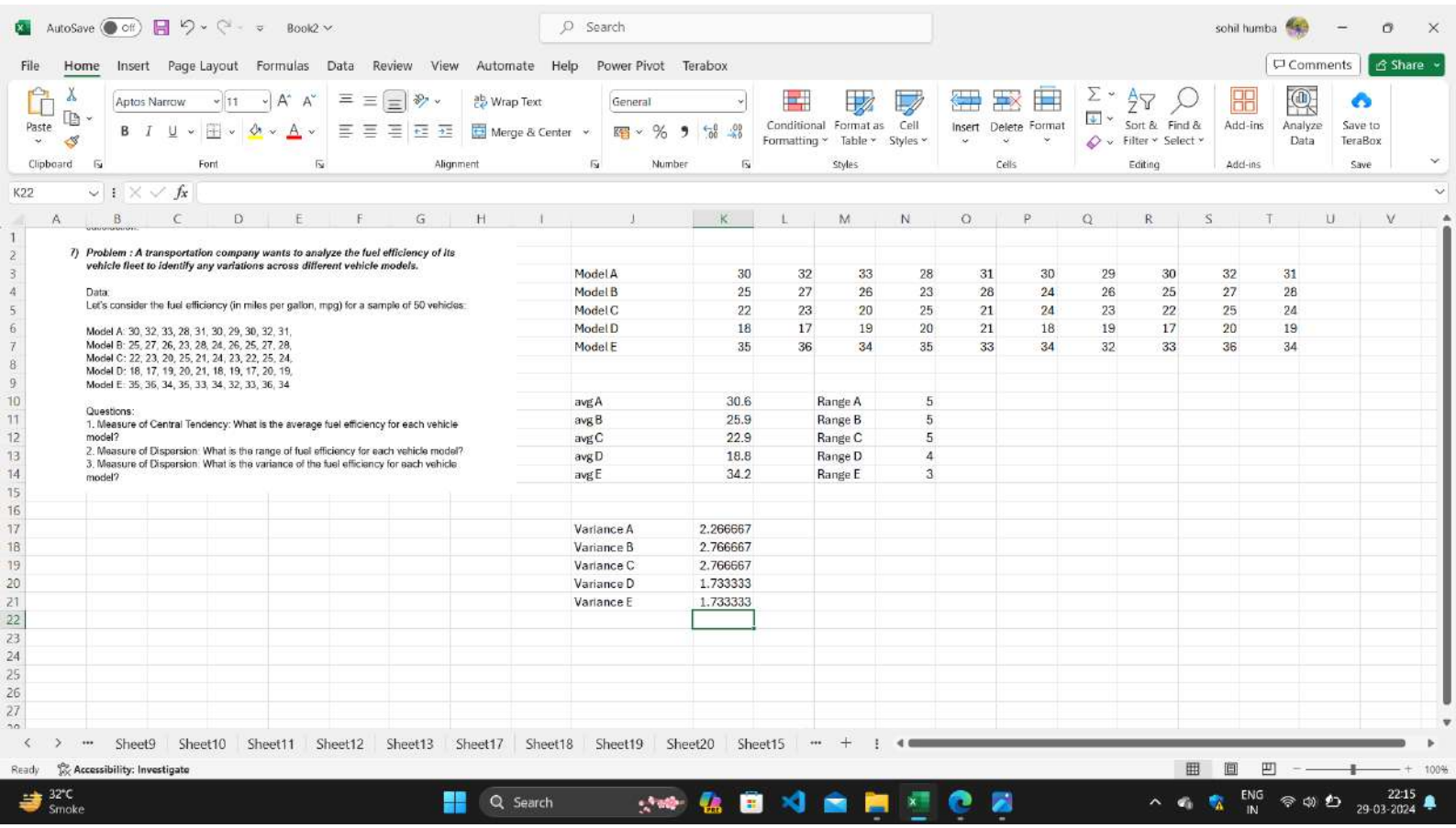


7) ***Problem : A transportation company wants to analyze the fuel efficiency of its vehicle fleet to identify any variations across different vehicle models.***

Data:
Let's consider the fuel efficiency (in miles per gallon, mpg) for a sample of 50 vehicles:

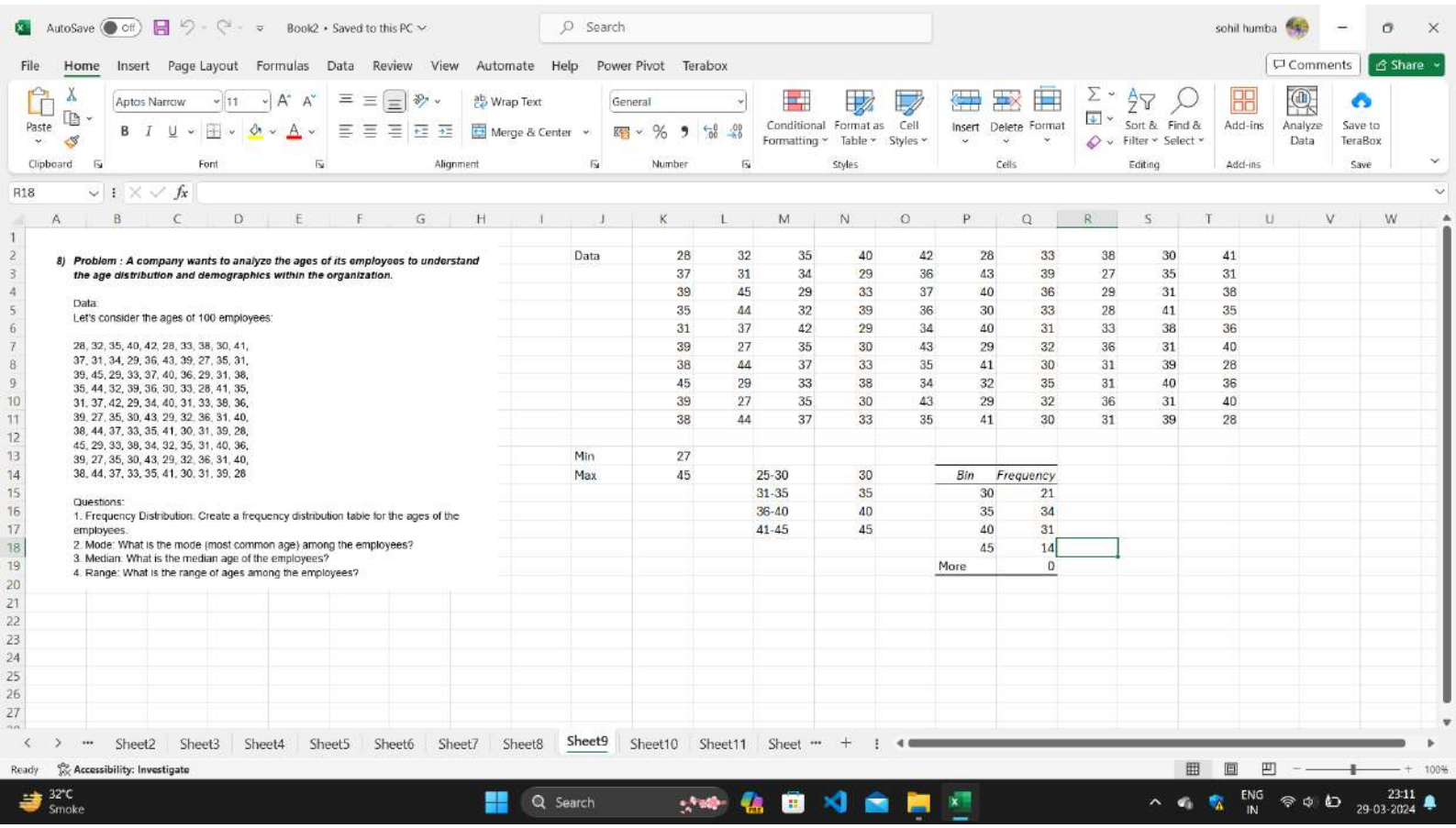
Model A: 30, 32, 33, 28, 31, 30, 29, 30, 32, 31,
Model B: 25, 27, 26, 23, 28, 24, 26, 25, 27, 28,
Model C: 22, 23, 20, 25, 21, 24, 23, 22, 25, 24,
Model D: 18, 17, 19, 20, 21, 18, 19, 17, 20, 19,
Model E: 35, 36, 34, 35, 33, 34, 32, 33, 36, 34

Questions:
1. Measure of Central Tendency: What is the average fuel efficiency for each vehicle model?
2. Measure of Dispersion: What is the range of fuel efficiency for each vehicle model?
3. Measure of Dispersion: What is the variance of the fuel efficiency for each vehicle model?

Model A	30	32	33	28	31	30	29	30	32	31
Model B	25	27	26	23	28	24	26	25	27	28
Model C	22	23	20	25	21	24	23	22	25	24
Model D	18	17	19	20	21	18	19	17	20	19
Model E	35	36	34	35	33	34	32	33	36	34

avg A	30.6	Range A	5
avg B	25.9	Range B	5
avg C	22.9	Range C	5
avg D	18.8	Range D	4
avg E	34.2	Range E	3

Variance A	2.266667
Variance B	2.766667
Variance C	2.766667
Variance D	1.733333
Variance E	1.733333



8) ***Problem : A company wants to analyze the ages of its employees to understand the age distribution and demographics within the organization.***

Data:
Let's consider the ages of 100 employees:

28, 32, 35, 40, 42, 28, 33, 38, 30, 41,
37, 31, 34, 29, 36, 43, 39, 27, 35, 31,
39, 45, 29, 33, 37, 40, 36, 29, 31, 38,
35, 44, 32, 39, 36, 30, 33, 28, 41, 35,
31, 37, 42, 29, 34, 40, 31, 33, 38, 36,
39, 27, 35, 30, 43, 29, 32, 36, 31, 40,
38, 44, 37, 33, 35, 41, 30, 31, 39, 28,
45, 29, 33, 38, 34, 32, 35, 31, 40, 36,
39, 27, 35, 30, 43, 29, 32, 36, 31, 40,
38, 44, 37, 33, 35, 41, 30, 31, 39, 28

Questions:
1. Frequency Distribution: Create a frequency distribution table for the ages of the employees.
2. Mode: What is the mode (most common age) among the employees?
3. Median: What is the median age of the employees?
4. Range: What is the range of ages among the employees?

Data	28	32	35	40	42	28	33	38	30	41
	37	31	34	29	36	43	39	27	35	31
	39	45	29	33	37	40	36	29	31	38
	35	44	32	39	36	30	33	28	41	35
	31	37	42	29	34	40	31	33	38	36
	39	27	35	30	43	29	32	36	31	40
	38	44	37	33	35	41	30	31	39	28
	45	29	33	38	34	32	35	31	40	36
	39	27	35	30	43	29	32	36	31	40
	38	44	37	33	35	41	30	31	39	28
Min	27									
Max	45									

Bin	Frequency
25-30	30
31-35	35
36-40	40
41-45	45
More	0

9) Problem :A retail store wants to analyze the purchase amounts made by customers to understand their spending habits.

Data:
Let's consider the purchase amounts (in dollars) for a sample of 50 customers:

56, 40, 28, 73, 52, 61, 35, 40, 47, 65,
52, 44, 38, 60, 56, 40, 36, 49, 68, 57,
52, 63, 41, 48, 55, 42, 39, 58, 62, 49,
59, 45, 47, 51, 65, 41, 48, 55, 42, 39,
58, 62, 49, 59, 45, 47, 51, 65, 43, 58

Questions:
1. Frequency Distribution: Create a frequency distribution table for the purchase amounts.
2. Mode: What is the mode (most common purchase amount) among the customers?
3. Median: What is the median purchase amount among the customers?
4. Interquartile Range: What is the interquartile range of the purchase amounts?

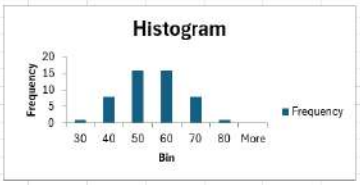
Data	56	40	28	73	52	61	35	40	47	65
	52	44	38	60	56	40	36	49	68	57
	52	63	41	48	55	42	39	58	62	49
	59	45	47	51	65	41	48	55	42	39
	58	62	49	59	45	47	51	65	43	58

Max	73	Mode	40	Range	45
Min	28	Median	50		

Class	bin
21-30	30
31-40	40
41-50	50
51-60	60
61-70	70
71-80	80

Bin	*Frequency*
30	1
40	8
50	16
60	16
70	8
80	1
More	0

Class	*Frequency*
21-30	1
31-40	8
41-50	16
51-60	16
61-70	8
71-80	1



10) Problem : A manufacturing company wants to analyze the defect rates of its production line to identify the frequency of different types of defects.

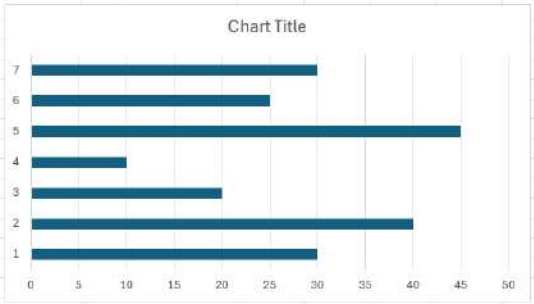
Data:
Let's consider the types of defects and their corresponding frequencies observed in a sample of 200 products:

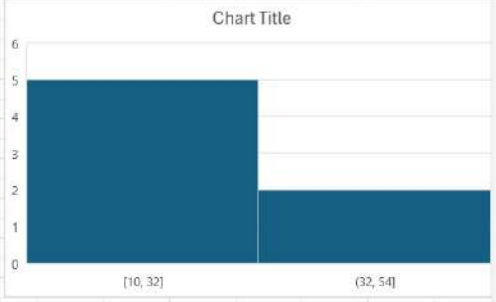
Defect Type: A, B, C, D, E, F, G
Frequency: 30, 40, 20, 10, 45, 25, 30

Questions:
1. Bar Chart: Create a bar chart to visualize the frequency of different defect types.
2. Most Common Defect: Which defect type has the highest frequency?
3. Histogram: Create a histogram to represent the defect frequencies.

Defect type	A	B	C	D	E	F	G
Frequency	30	40	20	10	45	25	30

Most common defect: E





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W2

11) Problem : A survey was conducted to gather feedback from customers about their satisfaction levels with a specific service on a scale of 1 to 5.

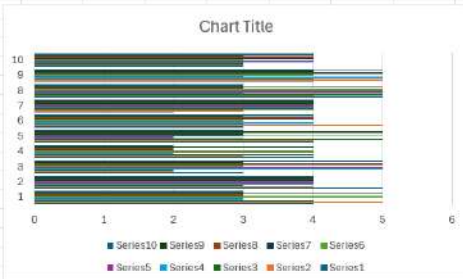
Data:
Let's consider the satisfaction ratings from 100 customers:

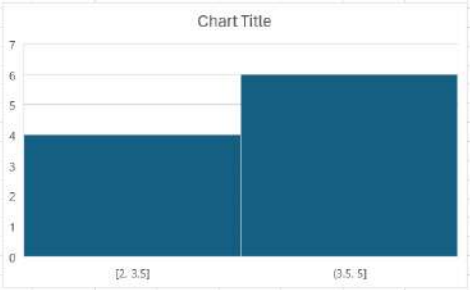
Ratings: 4, 5, 3, 4, 4, 3, 2, 5, 4, 3,
5, 4, 2, 3, 4, 5, 3, 4, 5, 3,
4, 3, 2, 4, 5, 3, 4, 5, 4, 3,
3, 4, 5, 2, 3, 4, 4, 3, 5, 4,
3, 4, 5, 4, 2, 3, 4, 5, 3, 4,
5, 4, 3, 4, 5, 3, 4, 5, 4, 3,
3, 4, 5, 2, 3, 4, 4, 3, 5, 4,
3, 4, 5, 4, 2, 3, 4, 5, 3, 4,
5, 4, 3, 4, 5, 3, 4, 5, 4, 3,
3, 4, 5, 2, 3, 4, 4, 3, 5, 4

Questions:
1. Histogram: Create a histogram to visualize the distribution of satisfaction ratings.
2. Mode: Which satisfaction rating has the highest frequency?
3. Bar Chart: Create a bar chart to display the frequency of each satisfaction rating.

Data	4	5	3	4	4	3	2	5	4	3
	5	4	2	3	4	5	3	4	5	3
	4	3	2	4	5	3	4	5	4	3
	3	4	5	2	3	4	4	3	5	4
	3	4	5	4	2	3	4	5	3	4
	5	4	3	4	5	3	4	5	4	3
	3	4	5	2	3	4	4	3	5	4
	3	4	5	2	3	4	4	3	5	4
	5	4	3	4	5	3	4	5	4	3
	3	4	5	2	3	4	4	3	5	4

Mode 4





Sheet1 Sheet2 +

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12) Problem : A company wants to analyze the monthly sales figures of its products to understand the sales distribution across different price ranges.

Data:
Let's consider the monthly sales figures (in thousands of dollars) for a sample of 50 products:

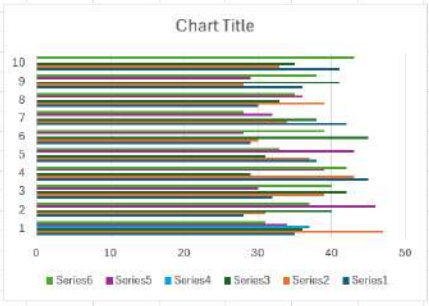
Sales: 35, 28, 32, 45, 38, 29, 42, 30, 36, 41,
47, 31, 39, 43, 37, 30, 34, 39, 28, 33,
36, 40, 42, 29, 31, 45, 38, 33, 41, 35,
37,

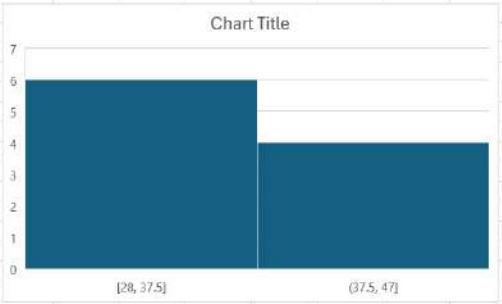
34, 46, 30, 39, 43, 28, 32, 36, 29,
31, 37, 40, 42, 33, 39, 28, 35, 38, 43

Questions:
1. Histogram: Create a histogram to visualize the sales distribution across different price ranges.
2. Measure of Central Tendency: What is the average monthly sales figure?
3. Bar Chart: Create a bar chart to display the frequency of sales in different price ranges.

Sales	35	28	32	45	38	29	42	30	36	41
	47	31	39	43	37	30	34	39	28	33
	36	40	42	29	31	45	38	33	41	35
	37									
	34	46	30	39	43	28	32	36	29	
	31	37	40	42	33	39	28	35	38	43

avg 36.14





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K13

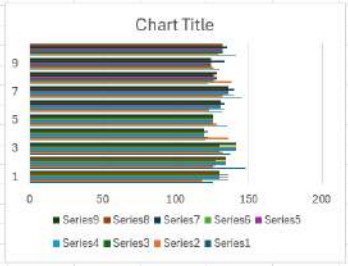
13) Problem : A study was conducted to analyze the response times of a website for different user locations.

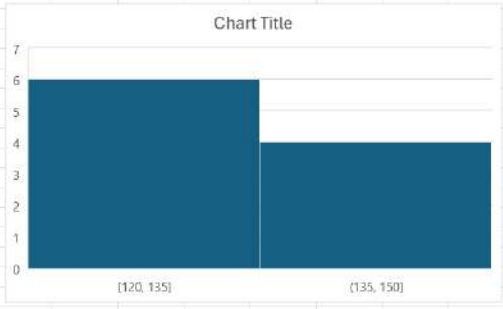
Data:
Let's consider the response times (in milliseconds) for a sample of 200 user requests:

Response Times: 125, 148, 137, 120, 135, 132, 145, 122, 130, 141,
118, 125, 132, 136, 128, 123, 132, 136, 126, 129,
136, 127, 130, 122, 125, 133, 140, 126, 133, 135,
130, 134, 141, 119, 125, 131, 136, 128, 124, 132,
136, 127, 130, 122, 125, 133, 140, 126, 133, 135,
130, 134, 141, 119, 126, 131, 136, 128, 124, 132,
136, 127, 130, 122, 125, 133, 140, 126, 133, 135,
130, 134, 141, 119, 125, 131, 136, 128, 124, 132,
136, 127, 130, 122, 125, 133, 140, 126, 133, 135,
130, 134, 141, 119, 125, 131, 136, 128, 124, 132

Questions:
1. Histogram: Create a histogram to visualize the distribution of response times.
2. Measure of Central Tendency: What is the median response time?
3. Bar Chart: Create a bar chart to display the frequency of response times within different ranges.

Data	125	148	137	120	135	132	145	122	130	141
	118	125	132	136	128	123	132	138	126	129
	136	127	130	122	125	133	140	126	124	132
	130	134	141	119	125	131	136	128	124	132
	136	134	141	119	125	131	136	128	124	132
	130	134	141	119	125	131	136	128	124	132
	136	127	130	122	125	133	140	126	133	135
	130	134	141	119	125	131	136	128	124	132
	130	134	141	119	125	131	136	128	124	132
median	130.5									





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14) Problem : A company wants to analyze the sales performance of its products across different regions.

Data:
Let's consider the sales figures (in thousands of dollars) for a sample of 50 products in three regions:

Region 1: 45, 35, 40, 38, 42, 37, 39, 43, 44, 41,
Region 2: 32, 28, 30, 34, 33, 35, 31, 29, 36, 37,
Region 3: 40, 39, 42, 41, 38, 43, 45, 44, 41, 37

Questions:

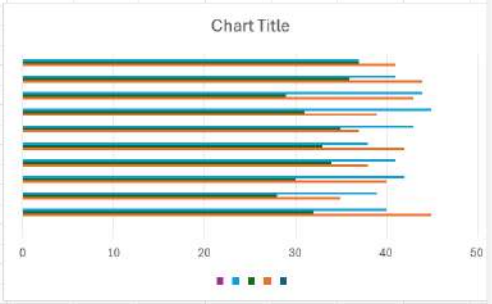
1. Bar Chart: Create a bar chart to compare the sales figures across the three regions.
2. Measure of Central Tendency: What is the average sales figure for each region?
3. Measure of Dispersion

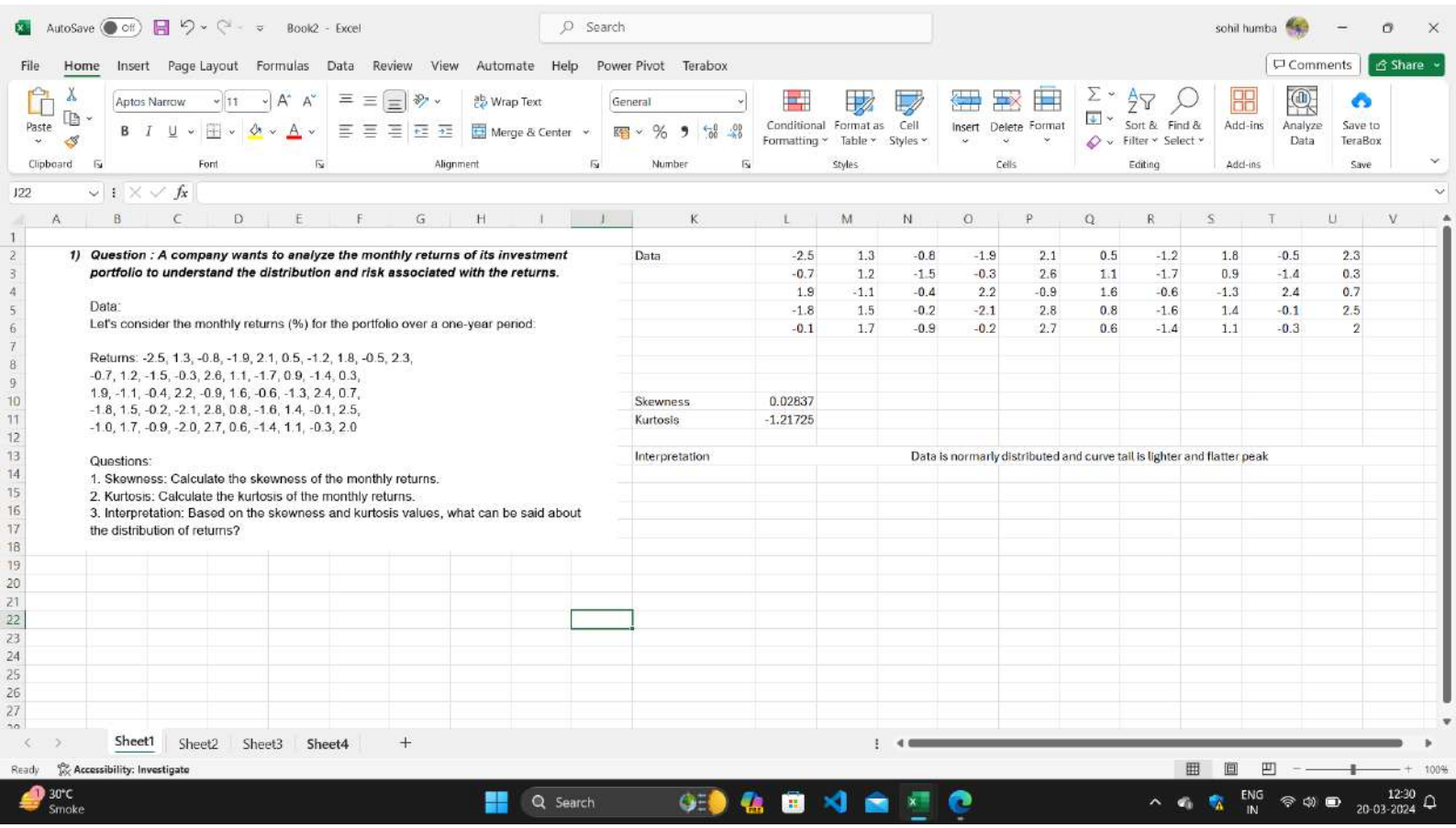
: What is the range of sales figures in each region?

Region 1	45	35	40	38	42	37	39	43	44	41	
Region 2	32	28	30	34	33	35	31	29	36	37	
Region 3	40	39	42	41	38	43	45	44	41	37	

avg 1	40.4
avg 2	32.5
avg 3	41

Range 1	10
Range 2	9
Range 3	8





1) *Question : A company wants to analyze the monthly returns of its investment portfolio to understand the distribution and risk associated with the returns.*

Data:
Let's consider the monthly returns (%) for the portfolio over a one-year period:

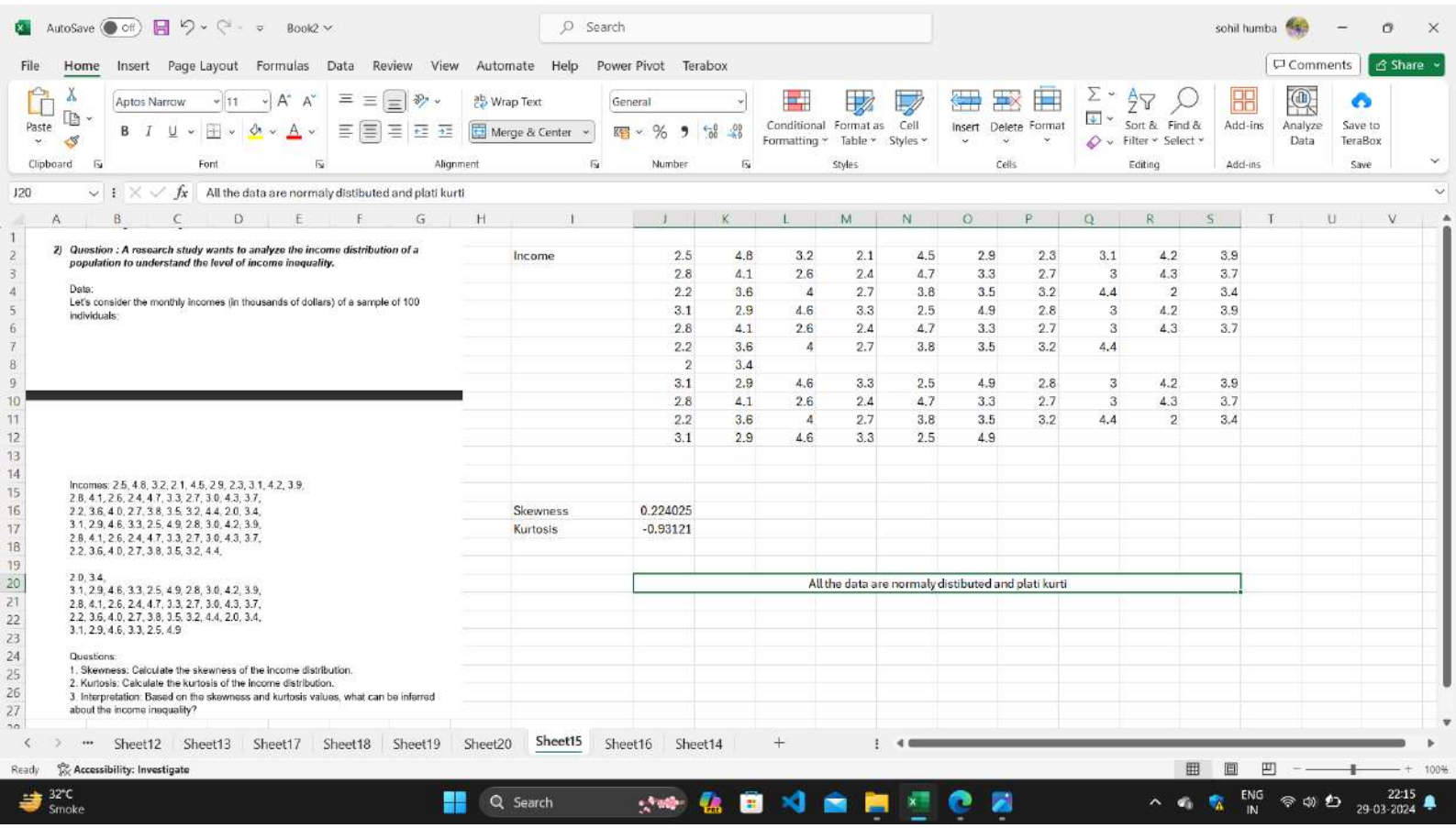
Returns: -2.5, 1.3, -0.8, -1.9, 2.1, 0.5, -1.2, 1.8, -0.5, 2.3,
-0.7, 1.2, -1.5, -0.3, 2.6, 1.1, -1.7, 0.9, -1.4, 0.3,
1.9, -1.1, -0.4, 2.2, -0.9, 1.6, -0.6, -1.3, 2.4, 0.7,
-1.8, 1.5, -0.2, -2.1, 2.8, 0.8, -1.6, 1.4, -0.1, 2.5,
-1.0, 1.7, -0.9, -2.0, 2.7, 0.6, -1.4, 1.1, -0.3, 2.0

Questions:
1. Skewness: Calculate the skewness of the monthly returns.
2. Kurtosis: Calculate the kurtosis of the monthly returns.
3. Interpretation: Based on the skewness and kurtosis values, what can be said about the distribution of returns?

Data	-2.5	1.3	-0.8	-1.9	2.1	0.5	-1.2	1.8	-0.5	2.3
	-0.7	1.2	-1.5	-0.3	2.6	1.1	-1.7	0.9	-1.4	0.3
	1.9	-1.1	-0.4	2.2	-0.9	1.6	-0.6	-1.3	2.4	0.7
	-1.8	1.5	-0.2	-2.1	2.8	0.8	-1.6	1.4	-0.1	2.5
	-0.1	1.7	-0.9	-0.2	2.7	0.6	-1.4	1.1	-0.3	2

Skewness	0.02837
Kurtosis	-1.21725

Interpretation	Data is normarly distributed and curve tail is lighter and flatter peak



2) *Question : A research study wants to analyze the income distribution of a population to understand the level of income inequality.*

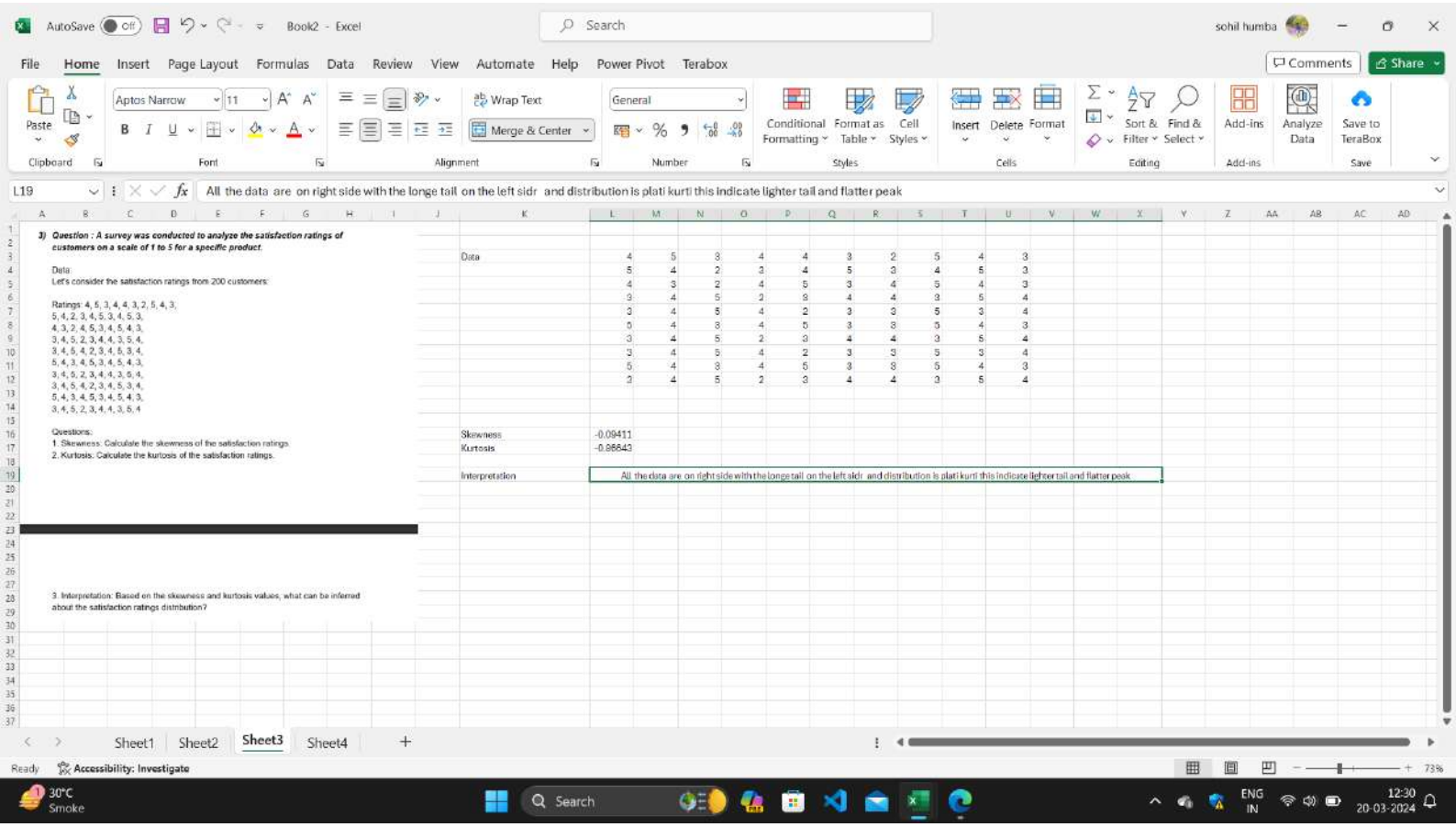
Data:
Let's consider the monthly incomes (in thousands of dollars) of a sample of 100 individuals:

Incomes: 2.5, 4.8, 3.2, 2.1, 4.5, 2.9, 2.3, 3.1, 4.2, 3.9,
2.8, 4.1, 2.6, 2.4, 4.7, 3.3, 2.7, 3.0, 4.3, 3.7,
2.2, 3.6, 4.0, 2.7, 3.8, 3.5, 3.2, 4.4, 2.0, 3.4,
3.1, 2.9, 4.6, 3.3, 2.5, 4.9, 2.8, 3.0, 4.2, 3.9,
2.8, 4.1, 2.6, 2.4, 4.7, 3.3, 2.7, 3.0, 4.3, 3.7,
2.2, 3.6, 4.0, 2.7, 3.8, 3.5, 3.2, 4.4,

2.0, 3.4,
3.1, 2.9, 4.6, 3.3, 2.5, 4.9, 2.8, 3.0, 4.2, 3.9,
2.8, 4.1, 2.6, 2.4, 4.7, 3.3, 2.7, 3.0, 4.3, 3.7,
2.2, 3.6, 4.0, 2.7, 3.8, 3.5, 3.2, 4.4, 2.0, 3.4,
3.1, 2.9, 4.6, 3.3, 2.5, 4.9

Questions:
1. Skewness: Calculate the skewness of the income distribution.
2. Kurtosis: Calculate the kurtosis of the income distribution.
3. Interpretation: Based on the skewness and kurtosis values, what can be inferred about the income inequality?

Income	2.5	4.8	3.2	2.1	4.5	2.9	2.3	3.1	4.2	3.9
	2.8	4.1	2.6	2.4	4.7	3.3	2.7	3	4.3	3.7
	2.2	3.6	4	2.7	3.8	3.5	3.2	4.4	2	3.4
	3.1	2.9	4.6	3.3	2.5	4.9	2.8	3	4.2	3.9
	2.8	4.1	2.6	2.4	4.7	3.3	2.7	3	4.3	3.7
	2.2	3.6	4	2.7	3.8	3.5	3.2	4.4		
	2	3.4								
	3.1	2.9	4.6	3.3	2.5	4.9	2.8	3	4.2	3.9
	2.8	4.1	2.6	2.4	4.7	3.3	2.7	3	4.3	3.7
	2.2	3.6	4	2.7	3.8	3.5	3.2	4.4	2	3.4
	3.1	2.9	4.6	3.3	2.5	4.9				
Skewness	0.224025									
Kurtosis	-0.93121									
	All the data are normaly distibuted and plati kurti									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L19
All the data are on right side with the longe tail on the left sidr and distribution is plati kurti this indicate lighter tail and flatter peak
3) Question : A survey was conducted to analyze the satisfaction ratings of customers on a scale of 1 to 5 for a specific product.
Data:
Let's consider the satisfaction ratings from 200 customers:
Ratings: 4, 5, 3, 4, 4, 3, 2, 5, 4, 3,
5, 4, 2, 3, 4, 5, 3, 4, 5, 3,
4, 3, 2, 4, 5, 3, 4, 5, 4, 3,
3, 4, 5, 2, 3, 4, 4, 3, 5, 4,
3, 4, 5, 4, 2, 3, 4, 5, 3, 4,
5, 4, 3, 4, 5, 3, 4, 5, 4, 3,
3, 4, 5, 2, 3, 4, 4, 3, 5, 4,
3, 4, 5, 4, 2, 3, 4, 5, 3, 4,
5, 4, 3, 4, 5, 3, 4, 5, 4, 3,
3, 4, 5, 2, 3, 4, 4, 3, 5, 4
Questions:
1. Skewness: Calculate the skewness of the satisfaction ratings.
2. Kurtosis: Calculate the kurtosis of the satisfaction ratings.
3. Interpretation: Based on the skewness and kurtosis values, what can be inferred about the satisfaction ratings distribution?
Data
Skewness -0.09411
Kurtosis -0.86643
Interpretation
All the data are on right side with the longe tail on the left sidr and distribution is plati kurti this indicate lighter tail and flatter peak
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4) *Question : A study wants to analyze the distribution of house prices in a specific city to understand the market trends.*

Data:

Let's consider the house prices (in thousands of dollars) for

a sample of 150 houses:

House Prices: 280, 350, 310, 270, 390, 320, 290, 340, 310, 380,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290,
270, 350, 300, 330, 370, 310, 280, 320, 350, 290

Questions:

1. Skewness: Calculate the skewness of the house price distribution.
2. Kurtosis: Calculate the kurtosis of the house price distribution.
3. Interpretation: Based on the skewness and kurtosis values, what can be inferred about the distribution of house prices?

Data	280	350	310	270	390	320	290	340	310	380
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290
	270	350	300	330	370	310	280	320	350	290

Skewness	0.209219
Kurtosis	-1.03742

Interpretation: All the data are normaly distributed and distribution is plati kurti this indicate lighter tail and flatter peak

5) Question : A company wants to analyze the waiting times of customers at a service center to improve operational efficiency.

Data:
Let's consider the waiting times (in minutes) for a sample of 100 customers.

Waiting Times: 12, 18, 15, 22, 20, 14, 16, 21, 19, 17,
22, 19, 13, 16, 21, 22, 17, 19, 22, 18,
14, 20, 19, 17, 22, 18, 15, 21, 20, 16,
12, 18, 15, 22, 20, 14, 16, 21, 19, 17,
22, 19, 13, 16, 21, 22, 17, 19, 22, 18,
14, 20, 19, 17, 22, 18, 15, 21, 20, 16,
12, 18, 15, 22, 20, 14, 16, 21, 19, 17,
22, 19, 13, 16, 21, 22, 17, 19, 22, 18,
14, 20, 19, 17, 22, 18, 15, 21, 20, 16,
12, 18, 15, 22, 20, 14, 16, 21, 19, 17

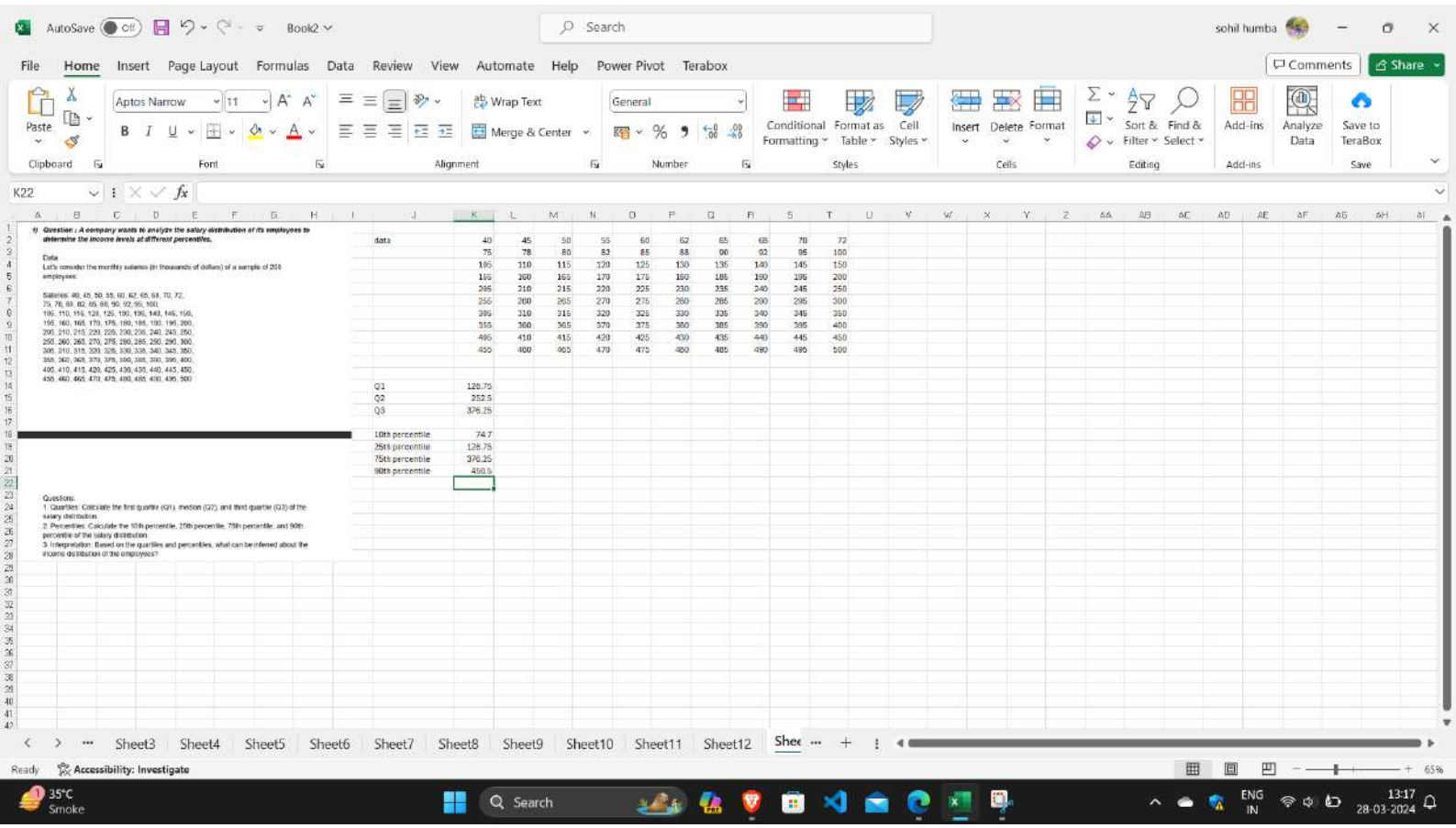
Questions:
1. Skewness: Calculate the skewness of the waiting time distribution.
2. Kurtosis

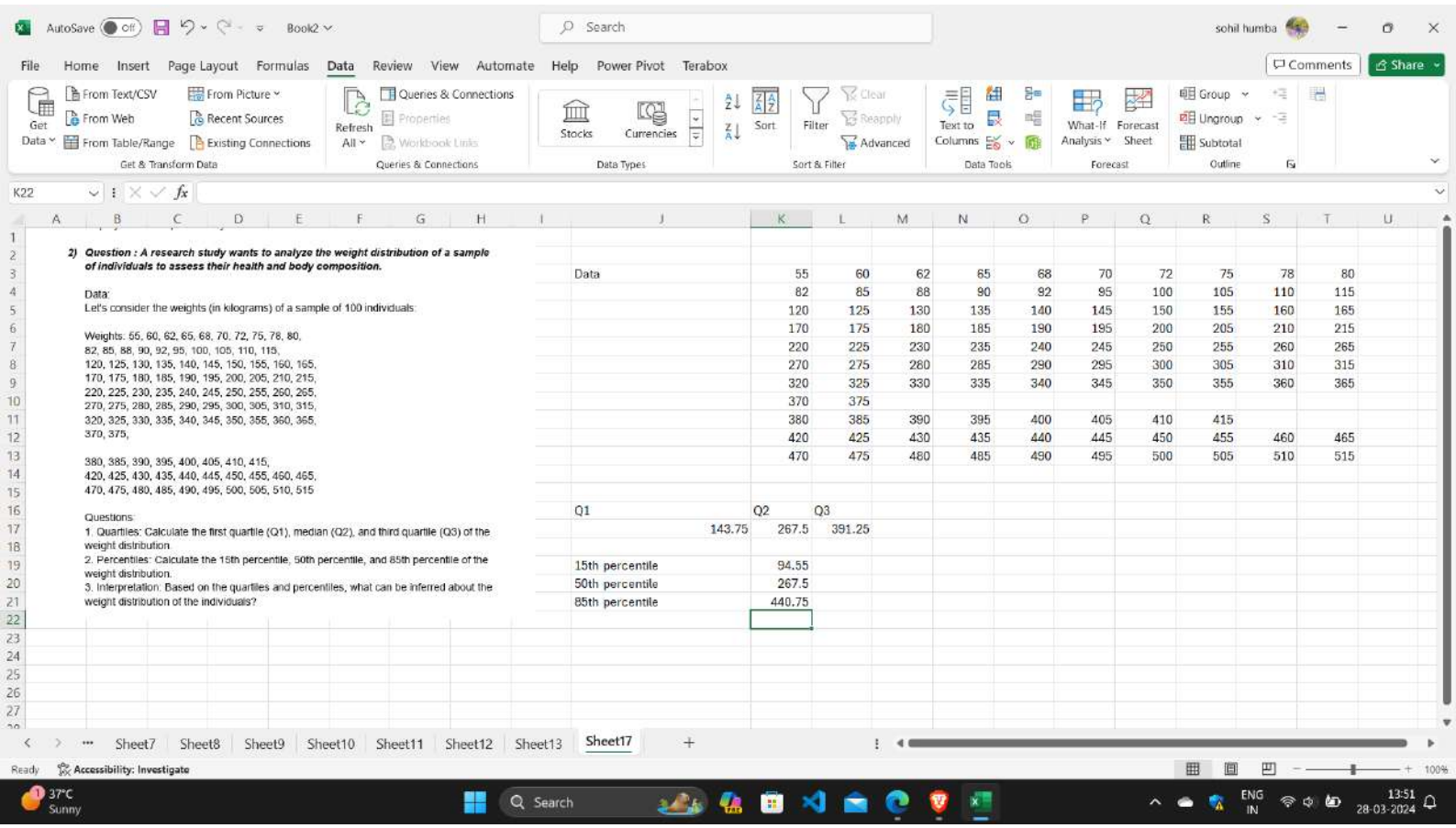
: Calculate the kurtosis of the waiting time distribution.
3. Interpretation: Based on the skewness and kurtosis values, what can be inferred about the waiting time distribution?

Data	12	18	15	22	20	14	16	21	19	17
	22	19	13	16	21	22	17	19	22	18
	14	20	19	17	22	18	15	21	20	16
	12	18	15	22	20	14	16	21	19	17
	22	19	13	16	21	22	17	19	22	18
	14	20	19	17	22	18	15	21	20	16
	12	18	15	22	20	14	16	21	19	17
	22	19	13	16	21	22	17	19	22	18
	14	20	19	17	22	18	15	21	20	16
	12	18	15	22	20	14	16	21	19	17

Skewness	-0.33501
Kurtosis	-0.88101

Interpretation: All the data are on right side with the longe tail on the left side and distribution is plati kurti this indicate lighter tail and flatter peak





2) Question : A research study wants to analyze the weight distribution of a sample of individuals to assess their health and body composition.

Data:
Let's consider the weights (in kilograms) of a sample of 100 individuals:

Weights: 55, 60, 62, 65, 68, 70, 72, 75, 78, 80,
82, 85, 88, 90, 92, 95, 100, 105, 110, 115,
120, 125, 130, 135, 140, 145, 150, 155, 160, 165,
170, 175, 180, 185, 190, 195, 200, 205, 210, 215,
220, 225, 230, 235, 240, 245, 250, 255, 260, 265,
270, 275, 280, 285, 290, 295, 300, 305, 310, 315,
320, 325, 330, 335, 340, 345, 350, 355, 360, 365,
370, 375,

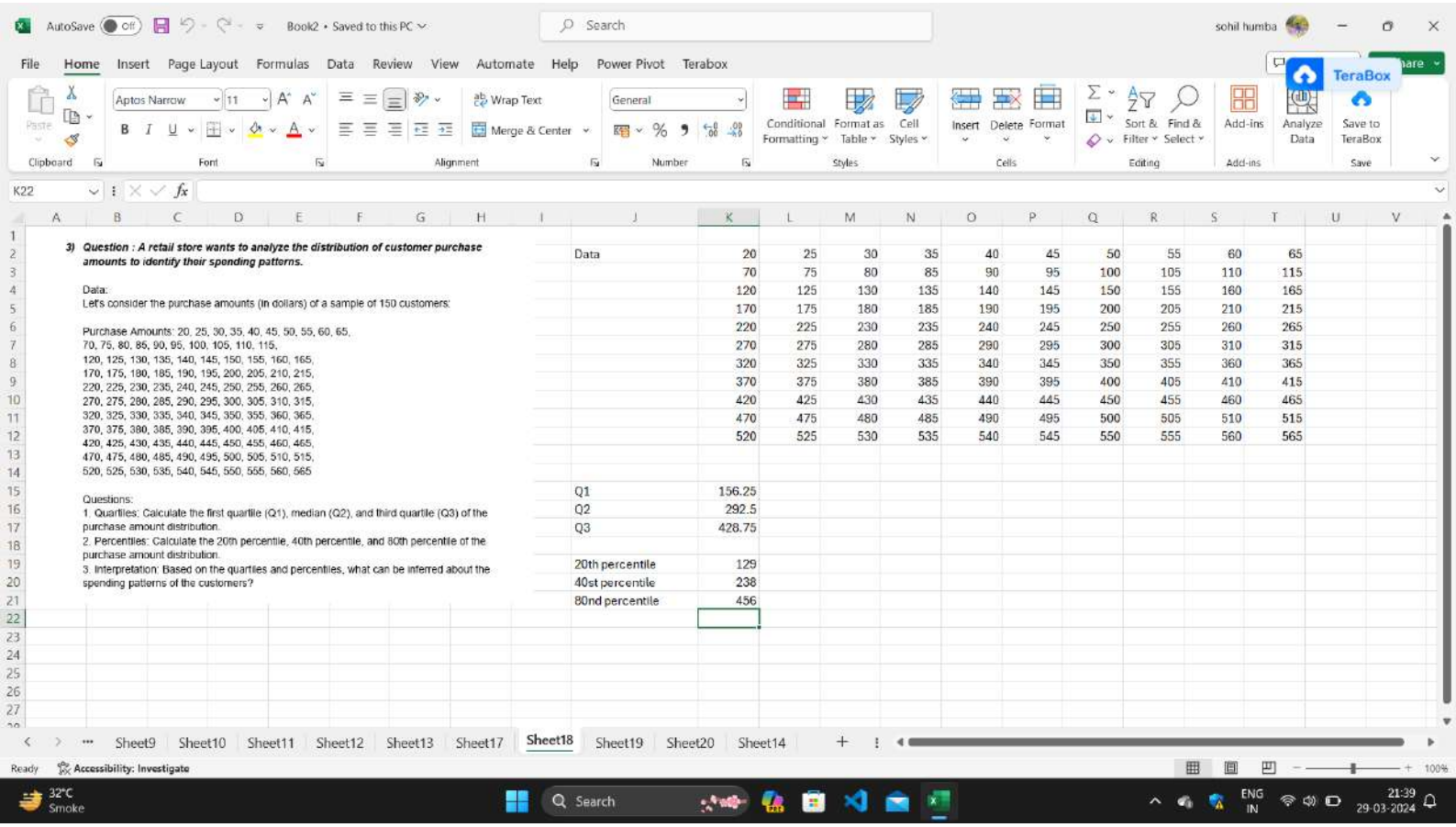
380, 385, 390, 395, 400, 405, 410, 415,
420, 425, 430, 435, 440, 445, 450, 455, 460, 465,
470, 475, 480, 485, 490, 495, 500, 505, 510, 515

Questions:
1. Quartiles: Calculate the first quartile (Q1), median (Q2), and third quartile (Q3) of the weight distribution.
2. Percentiles: Calculate the 15th percentile, 50th percentile, and 85th percentile of the weight distribution.
3. Interpretation: Based on the quartiles and percentiles, what can be inferred about the weight distribution of the individuals?

Data	55	60	62	65	68	70	72	75	78	80
	82	85	88	90	92	95	100	105	110	115
	120	125	130	135	140	145	150	155	160	165
	170	175	180	185	190	195	200	205	210	215
	220	225	230	235	240	245	250	255	260	265
	270	275	280	285	290	295	300	305	310	315
	320	325	330	335	340	345	350	355	360	365
	370	375								
	380	385	390	395	400	405	410	415		
	420	425	430	435	440	445	450	455	460	465
	470	475	480	485	490	495	500	505	510	515

Q1	Q2	Q3
143.75	267.5	391.25

15th percentile	94.55
50th percentile	267.5
85th percentile	440.75



3) *Question : A retail store wants to analyze the distribution of customer purchase amounts to identify their spending patterns.*

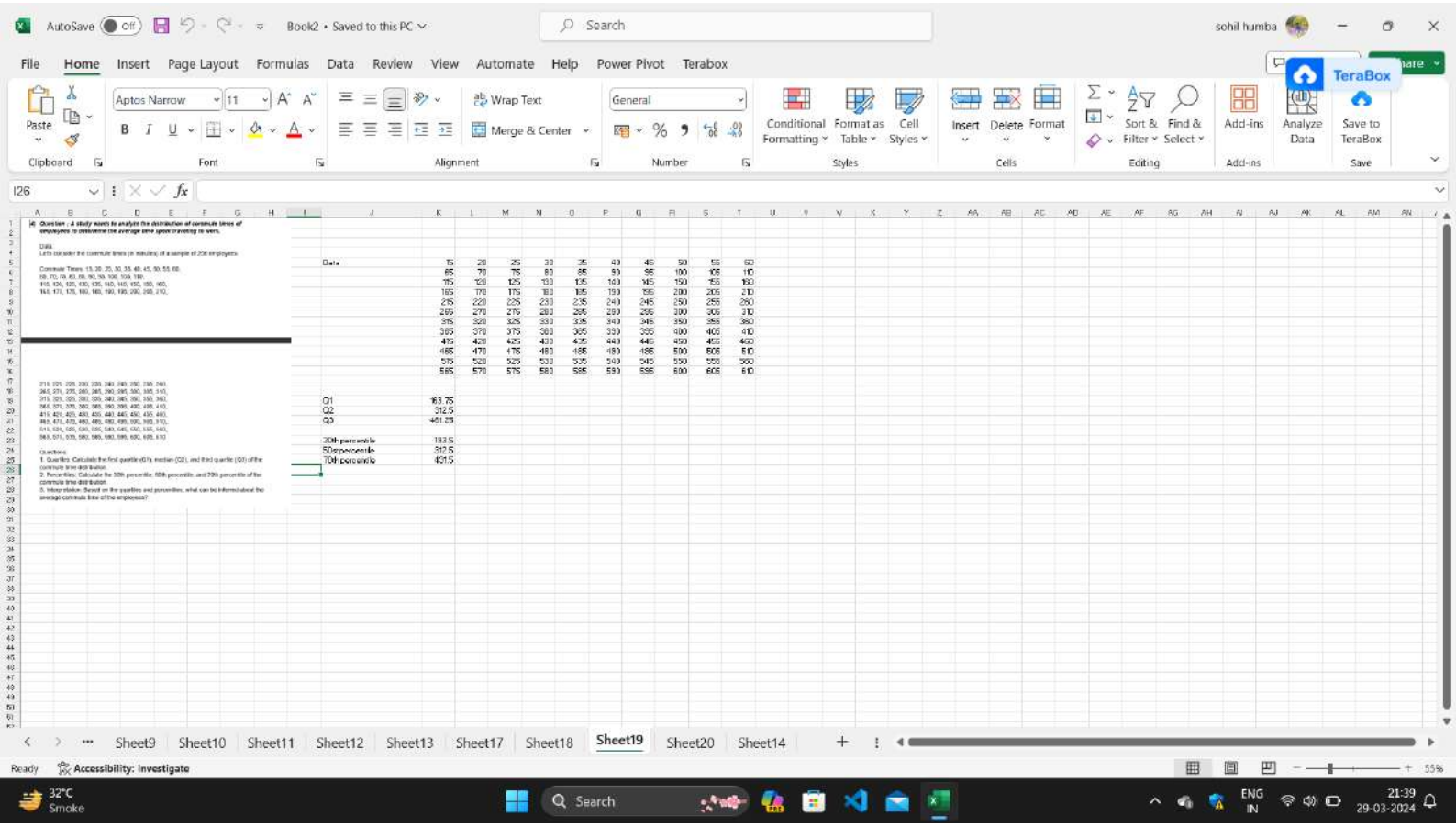
Data:
Let's consider the purchase amounts (in dollars) of a sample of 150 customers:

Purchase Amounts: 20, 25, 30, 35, 40, 45, 50, 55, 60, 65,
70, 75, 80, 85, 90, 95, 100, 105, 110, 115,
120, 125, 130, 135, 140, 145, 150, 155, 160, 165,
170, 175, 180, 185, 190, 195, 200, 205, 210, 215,
220, 225, 230, 235, 240, 245, 250, 255, 260, 265,
270, 275, 280, 285, 290, 295, 300, 305, 310, 315,
320, 325, 330, 335, 340, 345, 350, 355, 360, 365,
370, 375, 380, 385, 390, 395, 400, 405, 410, 415,
420, 425, 430, 435, 440, 445, 450, 455, 460, 465,
470, 475, 480, 485, 490, 495, 500, 505, 510, 515,
520, 525, 530, 535, 540, 545, 550, 555, 560, 565

Questions:
1. Quartiles: Calculate the first quartile (Q1), median (Q2), and third quartile (Q3) of the purchase amount distribution.
2. Percentiles: Calculate the 20th percentile, 40th percentile, and 80th percentile of the purchase amount distribution.
3. Interpretation: Based on the quartiles and percentiles, what can be inferred about the spending patterns of the customers?

Data	20	25	30	35	40	45	50	55	60	65
	70	75	80	85	90	95	100	105	110	115
	120	125	130	135	140	145	150	155	160	165
	170	175	180	185	190	195	200	205	210	215
	220	225	230	235	240	245	250	255	260	265
	270	275	280	285	290	295	300	305	310	315
	320	325	330	335	340	345	350	355	360	365
	370	375	380	385	390	395	400	405	410	415
	420	425	430	435	440	445	450	455	460	465
	470	475	480	485	490	495	500	505	510	515
	520	525	530	535	540	545	550	555	560	565

Q1	156.25
Q2	292.5
Q3	428.75
20th percentile	129
40st percentile	238
80nd percentile	456



5) Question : A manufacturing company wants to analyze the defect rates in its production process to evaluate product quality.

Data:
Let's consider the defect rates (in percentage) for a sample of 300 products:

Defect Rates: 0.5, 1.0, 0.2, 0.7, 0.3, 0.9, 1.2, 0.6, 0.4, 1.1,
0.8, 0.5, 0.3, 0.6, 1.0, 0.4, 0.5, 0.7, 0.9, 1.3,
0.8, 0.6, 0.4, 0.7, 0.9, 0.5, 0.2, 1.0, 0.8, 0.3,
0.6, 0.4, 0.7, 0.9, 1.2, 0.8, 0.3, 0.6, 0.5, 0.4,
0.7, 0.9, 1.1, 0.3, 1.4, 0.9, 0.6, 0.2, 1.5, 1.0
0.6, 0.4, 0.7, 1.0, 0.8, 0.3, 0.5, 0.8, 0.6, 0.3, 0.9
0.4, 0.7, 0.9, 1.0, 0.8, 0.3, 0.5, 0.6, 0.4, 0.7,
0.9, 1.1, 0.8, 0.3, 0.5, 0.6, 0.4, 0.7, 0.9, 1.0,
0.8, 0.3, 0.5, 0.6, 0.4, 0.7, 0.9, 1.1, 0.8, 0.3,
0.5, 0.6, 0.4, 0.7, 0.9, 1.0, 0.8, 0.3, 0.5, 0.6,
0.4, 0.7, 0.9, 1.1, 0.8, 0.3, 0.5, 0.6, 0.4, 0.7,
0.9, 1.0, 0.8, 0.3, 0.5, 0.6, 0.4, 0.7, 0.9, 1.1

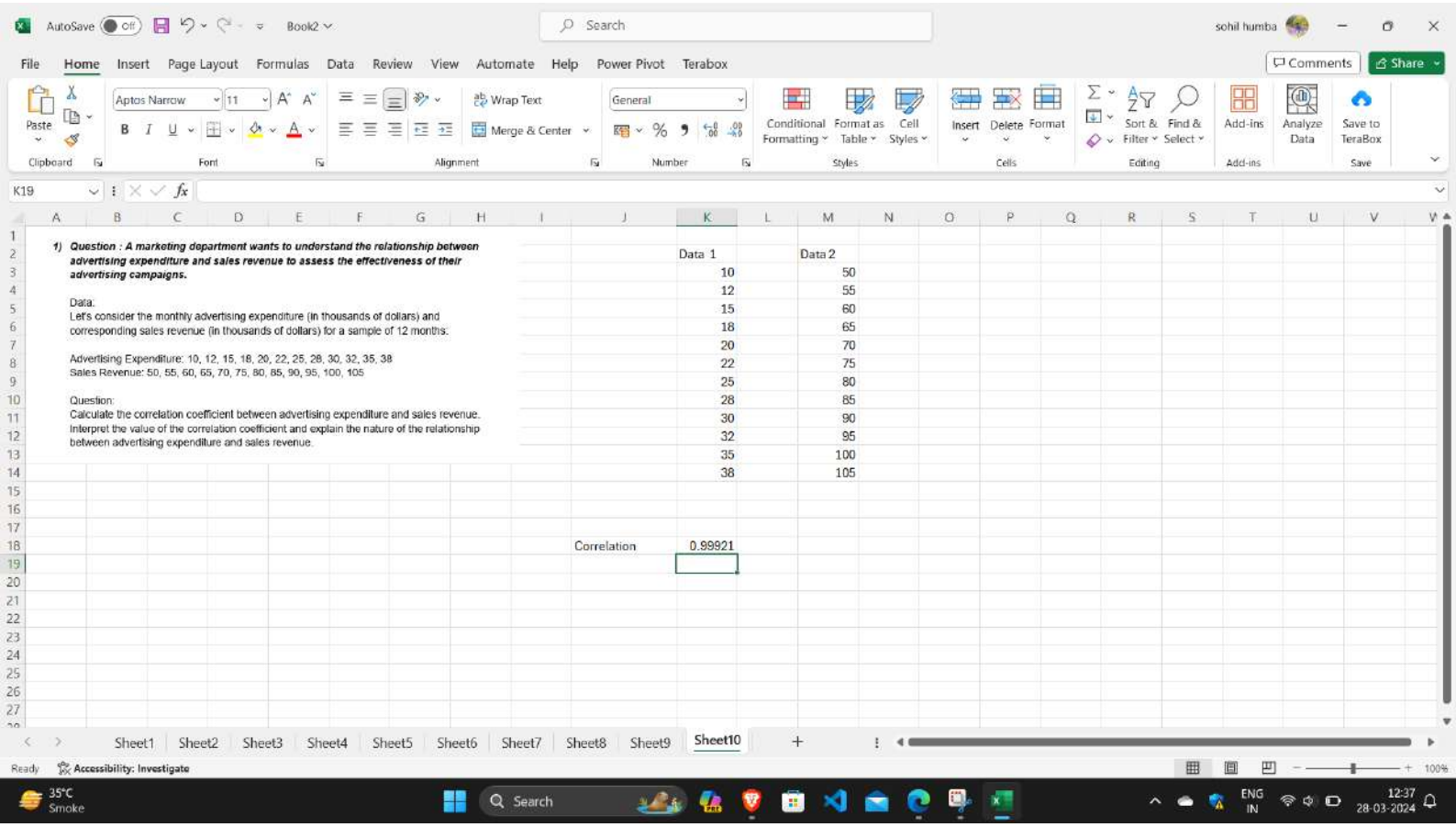
Questions:
1. Quartiles: Calculate the first quartile (Q1), median (Q2), and third quartile (Q3) of the defect rate distribution.

[redacted]

2. Percentiles: Calculate the 25th percentile, 50th percentile, and 75th percentile of the defect rate distribution.
3. Interpretation: Based on the quartiles and percentiles, what can be inferred about the quality of the products?

	J	K	L	M	N	O	P	Q	R	S	T
Data	0.5	1	0.2	0.7	0.3	0.9	1.2	0.6	0.4	1.1	
	0.8	0.5	0.3	0.6	1	0.4	0.5	0.7	0.9	1.3	
	0.8	0.6	0.4	0.7	0.9	0.5	0.2	1	0.8	0.3	
	0.6	0.4	0.7	0.9	1.2	0.8	0.3	0.6	0.5	0.4	
	0.7	0.9	1.1	0.3	1.4	0.9	0.6	0.2	1.5	1	
	0.6	0.4	0.7	1	0.8	0.3	0.5	0.8	0.6	0.3	0.9
	0.4	0.7	0.9	1	0.8	0.3	0.5	0.6	0.4	0.7	
	0.9	1.1	0.8	0.3	0.5	0.6	0.4	0.7	0.9	1	
	0.8	0.3	0.5	0.6	0.4	0.7	0.9	1.1	0.8	0.3	
	0.5	0.6	0.4	0.7	0.9	1	0.8	0.3	0.5	0.6	
	0.4	0.7	0.9	1.1	0.8	0.3	0.5	0.6	0.4	0.7	
	0.9	1	0.8	0.3	0.5	0.6	0.4	0.7	0.9	1.1	

Q1	0.4
Q2	0.7
Q3	0.9
25th percentile	0.4
50th percentile	0.7
75th percentile	0.9



1) ***Question : A marketing department wants to understand the relationship between advertising expenditure and sales revenue to assess the effectiveness of their advertising campaigns.***

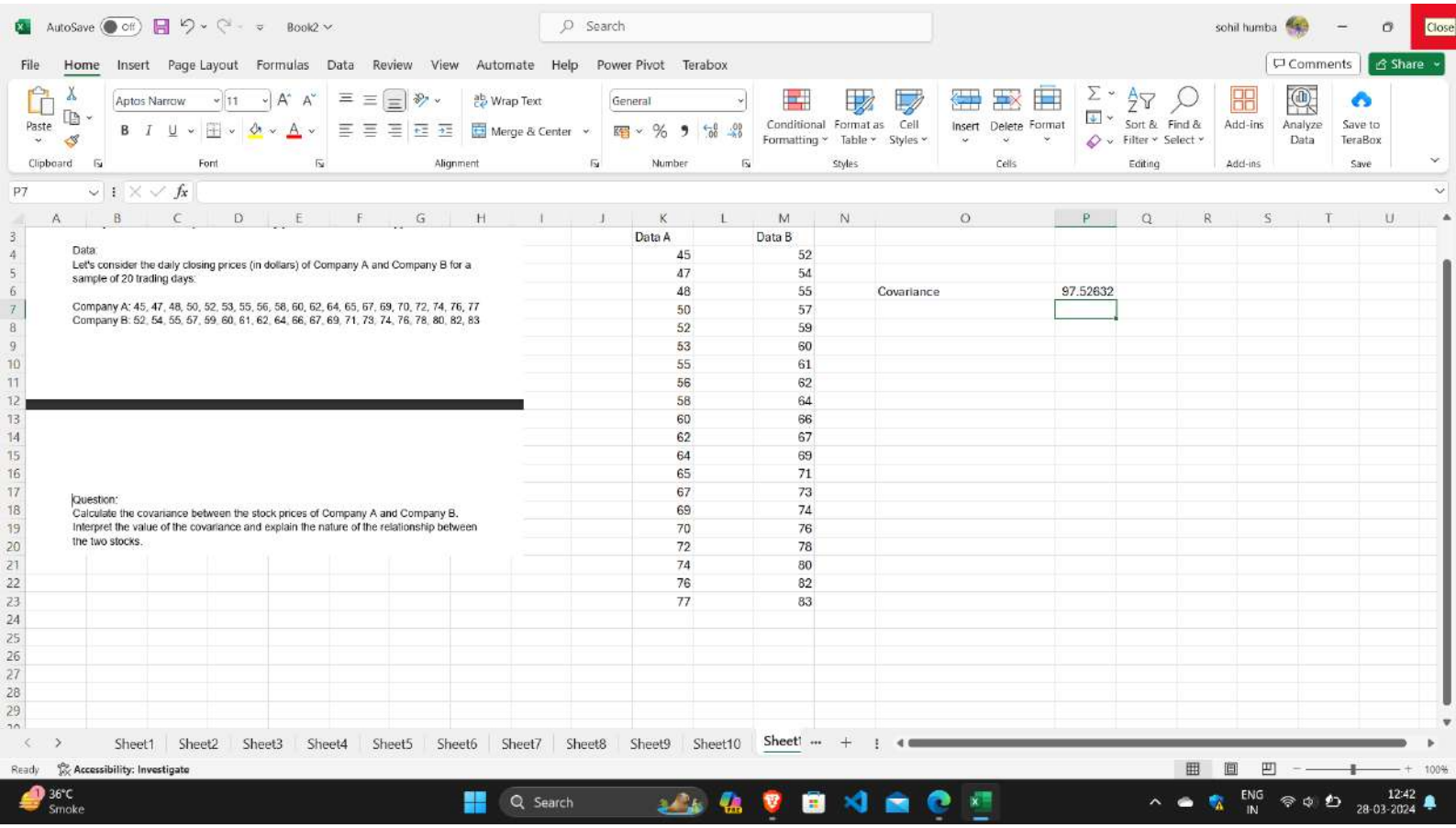
Data:
Let's consider the monthly advertising expenditure (in thousands of dollars) and corresponding sales revenue (in thousands of dollars) for a sample of 12 months:

Advertising Expenditure: 10, 12, 15, 18, 20, 22, 25, 28, 30, 32, 35, 38
Sales Revenue: 50, 55, 60, 65, 70, 75, 80, 85, 90, 95, 100, 105

Question:
Calculate the correlation coefficient between advertising expenditure and sales revenue.
Interpret the value of the correlation coefficient and explain the nature of the relationship between advertising expenditure and sales revenue.

	Data 1	Data 2
	10	50
	12	55
	15	60
	18	65
	20	70
	22	75
	25	80
	28	85
	30	90
	32	95
	35	100
	38	105

Correlation	0.99921



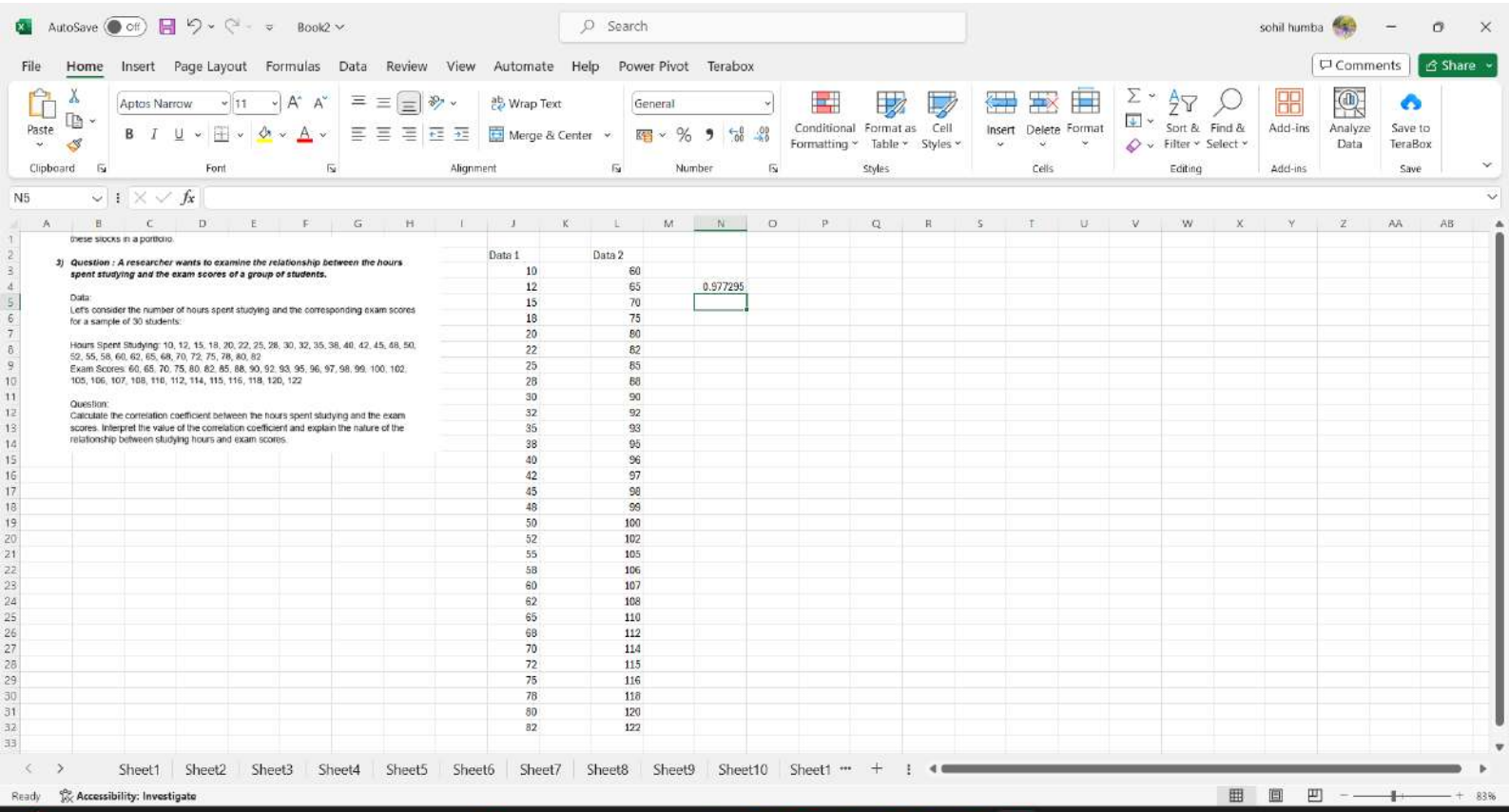
Data:
Let's consider the daily closing prices (in dollars) of Company A and Company B for a sample of 20 trading days:

Company A: 45, 47, 48, 50, 52, 53, 55, 56, 58, 60, 62, 64, 65, 67, 69, 70, 72, 74, 76, 77
Company B: 52, 54, 55, 57, 59, 60, 61, 62, 64, 66, 67, 69, 71, 73, 74, 76, 78, 80, 82, 83

Question:
Calculate the covariance between the stock prices of Company A and Company B. Interpret the value of the covariance and explain the nature of the relationship between the two stocks.

Data A	Data B
45	52
47	54
48	55
50	57
52	59
53	60
55	61
56	62
58	64
60	66
62	67
64	69
65	71
67	73
69	74
70	76
72	78
74	80
76	82
77	83

Covariance	97.52632


AutoSave
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Review
View
Automate
Help
Power Pivot
Terabox
Comments
Share
Paste
Aptos Narrow
11
Wrap Text
Merge & Center
General
Conditional Formatting
Format as Table
Cell Styles
Insert
Delete
Format
Sort & Filter
Find & Select
Add-ins
Analyze Data
Save to TeraBox
Clipboard
Font
Alignment
Number
Styles
Cells
Editing
Add-ins
Save
N5
these stocks in a portfolio.
3) Question : A researcher wants to examine the relationship between the hours spent studying and the exam scores of a group of students.
Data:
Let's consider the number of hours spent studying and the corresponding exam scores for a sample of 30 students:
Hours Spent Studying: 10, 12, 15, 18, 20, 22, 25, 28, 30, 32, 35, 38, 40, 42, 45, 48, 50, 52, 55, 58, 60, 62, 65, 68, 70, 72, 75, 78, 80, 82
Exam Scores: 60, 65, 70, 75, 80, 82, 85, 88, 90, 92, 93, 95, 96, 97, 98, 99, 100, 102, 105, 106, 107, 108, 110, 112, 114, 115, 116, 118, 120, 122
Question:
Calculate the correlation coefficient between the hours spent studying and the exam scores. Interpret the value of the correlation coefficient and explain the nature of the relationship between studying hours and exam scores.
Data 1
Data 2
0.977295
Sheet1
Sheet2
Sheet3
Sheet4
Sheet5
Sheet6
Sheet7
Sheet8
Sheet9
Sheet10
Sheet1
Ready
Accessibility: Investigate
83%
Sh94 / Narol Sar...
Construction
Search
ENG
IN
12:46
28-03-2024