Seasonal Indices

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Student Activity

7 8 9 10 11 12

TI-Nspire™ | Investigation | Student | 50 min

Sundae Gelateria – Where every day should be a Sundae

Sundae is a gelato shop with clear seasonal swings: huge summer crowds and quieter winters. Management recorded total cups sold per season for **three consecutive years** and wants a forecast for next year (2025).
The historical data is as follows:

Season	2022	2023	2024	
Summer	5,200	5,600	6,000	
Autumn	3,000	3,200	3,400	
Winter	1,800	1,900	2,000	
Spring	3,600	3,800	4,000	
Annual Averages:				

The current manager, Ms Trishincé, decides to forecast the 2025 sales using linear regression. She uses summer 2022 as the first data point (t = 1) and spring 2024 as the last (t = 12).

Question: 1.

Use your calculator to determine the corresponding linear regression equation and corresponding correlation coefficient (r^2).

Question: 2.

Trishincé uses her equation to predict the sales for 2025. Determine the predicted sales for each season and comment on the predictions.

One of Sundae's workers, Pietro, watched a video tutorial about seasonalised and deseasonalised data and learnt that this approach can be used to smooth and improve forecasting.

Scan the QR code to watch the video:

Question: 3.

Compute the seasonal indices for summer, autumn, winter and spring.

Question: 4.

Deseasonalise the data using these indices.

Question: 5.

Graph the original data and deseasonalised data and comment on the two graphs.

Question: 6.

Use linear regression to determine a linear function that best models the resultant data, then use the equation to forecast actual sales for 2025.

Question: 7.

Which approach: Trishincé's or Pietro's provides the most likely sales predictions for 2025?

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