# P10 Sample Solution Report – Case Study: Analytics Applications

## Overview

This report summarises the methodology and key findings for the practical. All computations are based on the provided synthetic dataset.

### Dataset Snapshot

Date Category SubCategory Quantity Price Revenue  
2025-05-03 Fashion Accessories 4 1768.94 7075.74  
2025-04-22 Sports Team 3 1580.97 4742.90  
2025-02-28 Sports Accessories 2 1589.53 3179.05  
2025-05-09 Home Kitchen 4 533.15 2132.59  
2025-04-15 Sports Team 4 519.21 2076.85

### Summary Statistics

* Quantity\_mean: 2.35
* Quantity\_median: 2.00
* Quantity\_mode: 1.00
* Quantity\_var: 1.30
* Quantity\_std: 1.14
* Price\_mean: 1015.97
* Price\_median: 1048.58
* Price\_mode: 105.20
* Price\_var: 287064.52
* Price\_std: 535.78
* Revenue\_mean: 2331.30
* Revenue\_median: 1887.90
* Revenue\_mode: 105.20
* Revenue\_var: 2924716.49
* Revenue\_std: 1710.18

### Correlation Matrix

Quantity Price Revenue  
Quantity 1.000000 -0.098087 0.568580  
Price -0.098087 1.000000 0.678414  
Revenue 0.568580 0.678414 1.000000

### Interpretation

Revenue by category highlights where the business earns the most. Subcategory analysis may reveal niche areas with high profitability.

### Validation Tips

Check revenue calculations by manually multiplying price and quantity for a random subset of rows. Ensure that categories are consistently labelled.