You run a cozy coffee shop and you’re interested in how your drinks perform throughout the year. You track sales for **hot drinks** and **cold drinks** during **Winter, Spring, Summer, and Fall**.

Here’s the data for a full year:

|  | **Winter** | **Spring** | **Summer** | **Fall** | **Total** |
| --- | --- | --- | --- | --- | --- |
| **Hot Drinks** | 100 | 60 | 40 | 100 | 300 |
| **Cold Drinks** | 20 | 40 | 120 | 40 | 220 |
| **Total** | 120 | 100 | 160 | 140 | 520 |

**Simple probability:**

What’s the probability of picking a hot drink?  
300 / 520 ≈ 0.577

**Joint probability:**

What’s the probability of picking a cold drink in summer?  
120 / 520 ≈ 0.231

**Conditional probability:**

Given it’s summer, what’s the probability the drink is cold?  
120 / 160 = 0.75

**Decision-oriented:**

If you want to boost cold drink sales in **Spring**, what marketing strategies might help?  
Or, if hot drinks sell well in **Winter and Fall**, how could you capitalize on that?

**Fashion Boutique Sales**

You run a small **fashion boutique** that sells two main **fashion styles**:

* **Casual**
* **Formal**

You track sales across three **locations**:

* **Downtown**
* **Suburb**
* **Online**

Here’s your **sales data table** for one month:

|  | **Downtown** | **Suburb** | **Online** | **Total** |
| --- | --- | --- | --- | --- |
| **Casual** | 70 | 60 | 90 | 220 |
| **Formal** | 50 | 40 | 30 | 120 |
| **Total** | 120 | 100 | 120 | 340 |

**Simple Probability**

* What is the probability of a random sale being casual?
* What is the probability of a random sale being in the downtown location?

**Joint Probability**

* What is the probability of a sale being both casual and in the downtown location?
* What is the probability of a sale being formal and online?

**Conditional Probability**

* Given the sale was online, what’s the probability it was casual?
* If the sale was formal, what’s the probability it was from the downtown location?

**Business Insights**

* If you’re planning a special online promotion, which style is most popular to highlight?
* Should you increase your formal collection downtown based on these patterns?

**Scenario: Food Truck Meal Sales**

Your **food truck** offers three types of meals:

* **Breakfast**
* **Lunch**
* **Dinner**

You track sales in three areas:

* **Industrial Park** (workers grabbing a quick bite)
* **Downtown** (bustling city center)
* **MSU Stadium** (sports fans and events)

Here’s the **sales data table** for one month:

|  | **Industrial Park** | **Downtown** | **MSU Stadium** | **Total** |
| --- | --- | --- | --- | --- |
| **Breakfast** | 40 | 30 | 10 | 80 |
| **Lunch** | 70 | 50 | 30 | 150 |
| **Dinner** | 20 | 40 | 60 | 120 |
| **Total** | 130 | 120 | 100 | 350 |

**Simple Probability**

* Probability of a random meal being breakfast
* Probability of a meal sold at Downtown

**Joint Probability**

* Probability of breakfast at Industrial Park
* Probability of dinner at MSU Stadium

**Conditional Probability**

* Given it’s dinner, what’s the probability it’s at MSU Stadium?
* Given it’s Downtown, what’s the probability it’s lunch?

**Business Decisions**

* Where should you focus more breakfast promotion?
* Should you expand dinner options at Industrial Park based on low dinner sales?
* How could you adjust your marketing or menu for game days at MSU Stadium?