Assignment-1

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Q1 Given: 40 out of 200 Transactions were for Electronics

calculate p(Electronics)

$$p(\text{Electronics}) = \frac{40}{200} = 0.2$$

Q2 Expected value purchase Amount

Given :	Amount	Probability
	$50	0.3
	$100	0.5
	$200	0.2

$\therefore E[X] =$ Amount $\times$ Probability

$E[\$50] = \$50 \times 0.3 = \$15$
$E[\$100] = \$100 \times 0.5 = \$50$
$E[\$200] = \$200 \times 0.2 = \$40$

Q3 // category Probability of Each Bin

Bins: 0-50, 50-100, 100-200, 200+

Total Transaction = 200

∴ Probability of Each = $\frac{\text{Count}}{200}$

Bin	Count	Probability
0-50	17	0.085
50-100	16	0.08
100-200	43	0.215
200+	124	0.62

Q4 Calculate Joint Probability

P(Product ∩ Payment Method)

Given 20 bought clothing using Credit Card

then

P(Product ∩ Payment) = $\frac{20}{200} = 0.1$

Calculate $P(\text{Payment Method} / \text{category})$

$$= \frac{P(\text{Product} \cap \text{Payment})}{P(\text{category})}$$

Given Bought Electronics

$$P(\text{Electronics}) = 0.215$$
$$P(\text{category} \cap \text{Product}) = 0.035$$

$$\therefore P(\text{Payment} / \text{category}) = \frac{0.215}{0.035}$$

$$= 0.1627$$