Teacher Answer Key

Case Study

1. The anomaly detection model built Kezia's baseline from her prior spending history — all in Mississippi and Boston. The Chicago transaction deviated on multiple dimensions simultaneously: new geographic location never seen before, restaurant category in an unfamiliar city, evening timing. Multiple concurrent anomalies are exactly what triggers a fraud flag. The model had no way to know she was traveling because it only processes transaction patterns, not context.

2. Impressed: the system caught a legitimately anomalous transaction and protected her from what would have looked like fraud from the outside. Angry: she was inconvenienced and embarrassed for doing nothing wrong, and the system had no mechanism for her to communicate context. Students should explain which argument they find more compelling and why — both are reasonable. The best answers will acknowledge that protecting against $33B in global fraud has real costs for individual legitimate users.

Multiple Choice

1. B

2. C

3. D

Matching

1-B, 2-C, 3-E, 4-A, 5-D

Fill-in-the-Blank

1) 33, 2) positive, 3) protected

Short Answer (Sample Responses)

Q1: Anomaly detection learns what 'normal' spending looks like for you specifically — your geographic range, typical transaction amounts, merchants you frequent, and purchase timing. It compares each new transaction against that profile and flags significant deviations. The more history the model has, the better it can distinguish your legitimate-but-unusual spending (a birthday gift) from genuinely fraudulent activity (a burst of gift card purchases).

Q2: The model's 'normal' is trained primarily on data from the majority of users. Spending patterns more common among lower-income consumers, certain geographic communities, or recent immigrants may be statistically unusual in that dataset,

causing more of their legitimate transactions to be flagged. This means the burden of false positives falls unequally on people whose behavior is underrepresented in the training data.

Q3: For transparency: customers deserve to know why they were denied a loan or had a transaction declined, especially given the impact on their financial lives. The ECOA already requires some explanation for adverse credit actions. Against transparency: companies argue that fully explaining the model exposes proprietary information and enables fraud by revealing what patterns trigger flags. The tension is real, but most consumer advocates argue that meaningful explanation is a basic right, even if the full technical model is kept confidential.