Teacher Answer Key

Case Study

1. Working a wheat batter links glutenin and gliadin into long elastic gluten strands, and every additional stir develops more of that network. The strengthened gluten trapped gas in channels and made the crumb chewy, which produced the tunnels, peaked tops, and bread-like texture.

2. Gluten is the goal in bread, because a strong elastic network traps the carbon dioxide yeast produces and gives the loaf its chew and its ability to hold a shape. A muffin is supposed to be tender, so gluten is the enemy there and mixing stops as soon as the flour is moistened.

Multiple Choice

1. B

2. B

3. A

Matching

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

Fill-in-the-Blank

1) gluten, 2) soda, 3) spring

Short Answer (Sample Responses)

Q1: Sugar is a tenderizer, a moistener, and a contributor to browning in addition to being a sweetener. Removing half of it interferes less with gluten so the cake is tougher, holds less water so it dries out faster, and browns less, leaving it paler than intended.

Q2: Solid butter cut into flour melts in the oven and leaves layered pockets, which produces the flakiness of pie crust and biscuits. Creamed butter has air pockets cut into it by sugar crystals and produces lift, while melted butter provides neither and gives a dense, chewy result.

Q3: The two flours differ in protein content, roughly twelve to fourteen percent for bread flour against seven to nine percent for cake flour, and protein is what forms gluten. Bread flour builds a strong chewy network while cake flour stays tender, so swapping them changes the texture completely.