## Teacher Answer Key

### Case Study

1. Vitamins A, D, E, and K dissolve in fat rather than water, so the body absorbs far less of them when there is no fat present in the meal. The spinach still contained the vitamins, but without oil in the dressing much of that vitamin A and K passed through without being absorbed.

2. Fat and water do not mix, so whisked oil droplets find each other and separate within minutes unless something holds them apart. An emulsifier such as the lecithin in egg yolk, or to a lesser degree mustard or honey, has a water-friendly end and a fat-friendly end that keeps the droplets suspended.

### Multiple Choice

1. A

2. C

3. B

### Matching

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

### Fill-in-the-Blank

1) amino, 2) caramelization, 3) lecithin

### Short Answer (Sample Responses)

Q1: Fiber is built from long chains of sugar units, which is the chemical definition of a complex carbohydrate. Humans simply lack the enzymes to break those particular bonds, so it passes through mostly intact, and that failure to digest is exactly what makes it useful for slowing digestion and adding bulk.

Q2: Heat denatures protein, meaning the molecules unfold and then bond to each other. Pushed too far, those bonds tighten and squeeze water out of the meat, so the moisture ends up in the pan instead of in the chicken, which is what dryness and toughness actually are.

Q3: Water in an open pot cannot get hotter than its boiling point, but fat can be heated well past it, and refined oils hold up to about 400 to 450 degrees before they smoke. Browning needs that higher heat, since sugars caramelize only when heated past about 320 degrees Fahrenheit, so boiling can soften food but cannot brown it.