Teacher Answer Key

Case Study

1. They used simulations to identify spots of excessive acceleration and added wave breakers to reduce speed in high-risk sections, balancing excitement with safety.

2. Real-world factors like friction, water flow, and raft weight limit the speed increase; simply steepening the slope doesn't translate to a one-to-one boost due to these resistive forces.

Multiple Choice

1. A

2. D

3. B

Matching

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

Fill-in-the-Blank

1) acceleration, 2) Buoyancy, 3) kinetic

Short Answer (Sample Responses)

Q1: Engineers run virtual models of water flow and rider motion to predict speeds, forces, and stress points. They adjust slopes, curves, and water jets in these simulations before building or renovating rides.

Q2: Friction slows the raft, preventing dangerously high speeds. Designers manage friction by using smooth materials, adding water jets, or installing friction pads to control acceleration.

Q3: Higher and steeper slides convert more potential energy into kinetic energy, resulting in faster speeds. Designers must ensure slopes aren't so steep that riders become unsafe.