

Name \_\_\_\_\_

## Friction: The Double-Edged Sword of Everyday Life

### Open-Ended Response Answer Key

1. (Possible response) In the design of car tires, engineers use specific tread patterns that maximize friction with the road for better traction while minimizing wear and tear to extend the tire's lifespan.
2. (Possible response) Friction on the soles of athletic shoes prevents slipping during sports like basketball, reducing the risk of injuries. Additionally, climbing harnesses and ropes utilize friction to control descents and ensure climbers' safety.
3. (Possible response) I would first analyze the specific machinery and its friction-related problems. Then, I might recommend using high-quality lubricants, implementing regular maintenance schedules, and exploring materials with lower friction coefficients for the equipment's moving parts.
4. (Possible response) Engineers have designed anti-lock braking systems (ABS) to harness friction for vehicle safety by preventing skidding during braking. Excessive friction can lead to overheating in high-speed trains, requiring advanced cooling systems to address this challenge in transportation.

