

Application Lesson Opener

For use with pages 279–285

Every solid object has a *center of gravity*, a point where a single applied force could support it. This point is also called the *center of mass*, the point where the mass of the object is equally balanced.

1. Your center of mass is somewhere in the center of your body. Think about doing a headstand. To stay balanced, your center of mass must be directly over your head. This is why you may need to arch your back. If your center of mass is not directly over your head, what happens?



2. If an automobile wheel is *balanced*, the axle passes through the center of mass of the wheel. A wheel that is not balanced can cause undesirable vibrations. The center of mass of a wheel depends on how weight is distributed throughout the wheel and tire, so it can change as the tire wears. With computerized wheel balancing, the wheel is spun and the computer indicates where more weight is needed on the wheel to balance it. Lead weights are clipped onto the rim of the wheel. How does this affect the point that is the center of mass? Why do you think the wheel is adjusted instead of the axle?

