

Answers to selected questions

Chapter 8

Q6. No. The child sitting near the edge has a larger linear speed than the child sitting near the center. The child sitting near the edge travels a larger distance in the same time.

Q12. Yes. The heavier object must be placed nearer to the fulcrum so that it has a shorter lever arm than the lighter object on the other side. This allows the two objects to produce the same size torque about the fulcrum to balance the system.

Q18. No. If there were a net torque acting on the object, the object would have a rotational acceleration and the rotational velocity would not be constant.

Q24. No. Angular momentum is only conserved when there is no net external torque acting on the object or system of interest.

Q30. Yes. The angular momentum vector is perpendicular to the plane of the rotating wheel. Since this plane turns as the bicycle goes around a corner, the angular momentum vector must also change direction.