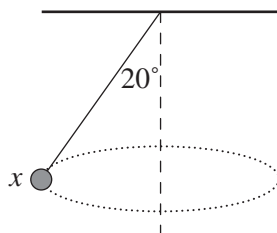


Question 5

The diagram below shows a small ball of mass 50 g on the end of a string. It is set in motion at a constant speed in a horizontal circle, where the string is held at an angle of $\theta = 20^\circ$ to the vertical.

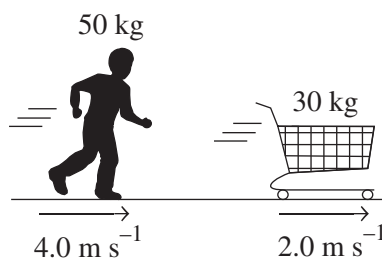


The magnitude of the net acceleration of the ball is

- A. 3.4 m s^{-2}
- B. 3.6 m s^{-2}
- C. 9.2 m s^{-2}
- D. 9.8 m s^{-2}

Use the following information to answer Questions 6 and 7.

The diagram below shows a boy of mass 50 kg chasing a runaway shopping trolley of mass 30 kg. The boy runs at 4.0 m s^{-1} and the trolley is rolling in the same direction at 2.0 m s^{-1} .



As the boy catches up to the trolley he jumps on the rear of it, and both the boy and the trolley move forward together.

Question 6

The final speed of the boy and trolley is closest to

- A. 2.0 m s^{-1}
- B. 2.5 m s^{-1}
- C. 3.3 m s^{-1}
- D. 4.0 m s^{-1}

Question 7

The collision of the boy and the trolley is described as

- A. inelastic, because kinetic energy is not conserved.
- B. elastic, because momentum is conserved.
- C. inelastic, because momentum is not conserved.
- D. elastic, because kinetic energy is conserved.