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Ch 5.3 - Page 168 - Practice Problems C – Work – Kinetic Energy Theorem

1. A student wearing frictionless in-line skates on a horizontal surface is pushed by a fried with a constant force of 45 N. How far must the student by pushed, starting from rest, so that her final kinetic energy is 352 J?
2. A 2.0 x 103 kg car accelerates from rest under the actions of two forces. One is a forward force of 1140 N provided by traction between the wheel and the road. The other is a 950 N resistive force due to various frictional forces. Use the work-kinetic energy theorem to determine how far the car must travel for its speed to reach 2.0 m/s.
3. A 2.1 x 103 kg car starts from rest at the top of a driveway that is sloped at an angle of 20.0° with the horizontal. An average friction force of 4.0 x 103 N impedes the car’s motion so that the car’s speed at the bottom of the driveway is 3.8 m/s. What is the length of the driveway?
4. A 75 kg bobsled is pushed along a horizontal surface by two athletes. After the bobsled is pushed a distance of 4.5 m starting from rest, its speed is 6.0 m/s. Find the magnitude of the net force on the bobsled.