

Date: _____

The Masters School
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Physics

1. What net external force is required to push a 45 kg suitcase with an acceleration of 3.5 m/s^2 to the right? Draw a free-body diagram of the suitcase.

2. What acceleration will you give to a 60 kg box if you push it with a force of 147 N?

3. An 1520 kg car is moving to the right at a constant velocity of 5.94 m/s.

a. What is the net force on the car?

b. What would be the net force on the car if it were moving to the left?

4. A freight train has a mass of 4.5×10^7 kg. If the locomotive can exert a constant pull of 10.5×10^5 N, how long would it take to increase the speed of the train from rest to 85 km/h?

5. A 32 kg mass starts from rest and slides down an inclined plane 8.0×10^{-1} m long in 0.8 s. What net force is acting on the mass along the incline?
6. A 1350 kg car is pulling a 475 kg trailer. Together, the car and trailer have an acceleration of 2.15 m/s^2 directly forward.
- Determine the net force on the car.
 - Determine the net force on the trailer.