



Physics Problems: Solve the Following

Your teacher will provide you with appropriate formulas.

1. A 100-car freight train weighing 15,000 tons is traveling at 50 mph when the engineer sees the signal suddenly turns red and applies the brakes. How far (in feet) does it take the train to stop if the braking force is 500 tons? How many seconds does it take to stop? (Assume it takes 15 sec. for the brakes to fully apply and begin stopping the train.)
2. A passenger train is traveling at 79 mph. It has 10 cars weighing 45 tons each and 1 locomotive of 200 tons. After the brakes are applied, it stops in 1300 ft. What braking force was needed?
3. A 70 car trailer train is traveling 60 mph when the engineer sees a pick-up truck stuck on the tracks. Fifty of the cars are loaded and weigh 80 tons each and 20 are empty and weigh 30 tons each. The train is powered by 3 locomotives weighing 200 tons each. If the engineer puts on the emergency brakes, determine the stopping distance (in feet) of the train. Braking force of each car is 10,200 lbs. Be sure to add the distance the train travels while the engineer is applying the brakes and the time the air travels through all 70 cars - 18 seconds. Assume braking does not occur until air reaches the last car.
4. A train traveling 125 mph can make a stop in 5500 ft. What is the deceleration rate of the train?
5. A 30-ton boxcar is traveling at 2 ft/sec and hits a stationary 55 ton boxcar. The 55-ton boxcar obtains a velocity of 1.2 ft/sec. What is the velocity of the 30 ton car?