Title: Nov 1 - 7:50 PM (1 of 10)

Page 307

#55 A racing car has a mass of 1525 kg. What is its kinetic energy if it has a speed of 108 km/hr?

6.86 x10^5 J

Page 307 # 56

Shawn and his bike have a combined mass of 45 kg. Shawn rides his bike 180 km in 10. minutes at a constant velocity. What is his kinetic energy

203 J

Page 307 # 59

In the 1950's, an experimental train that had a mass of 2.50 x10^4 kg was powered across a level track by a jet engine that produced a thrust of 5.00 x10^5 N for a distance of 509 m.

a) How much work was done on the train?

b) How much did its kinetic energy change?

c) Assuming the train started at rest, what was it final kinetic energy?

d) What was the speed of the train, assuming there was no friction?

e) Is 'no friction' a reasonable assumption in this case?

Page 307 #60

A 14,700 N car is traveling at 25 m/s. The brakes are applied suddenly and the car slides t a stop. The average braking force between the tires and the road is 7100N. How far will the car slide once the brakes are applied?

If the car were traveling at 50 m/s, how far would it slide once the brakes were applied?

Page 307 # 73

A 98 N sack of grain is hoisted to a storage roor
50. m above the ground floor of a grain elevator.

a) How much work was done on the sack?

b) What is the increase in potential energy of the sack of grain?

c)The rope lifting the sack breaks as the sack reaches the storage room. What is the speed of the sack when it hits the floor?

Page 307 # 75

An archer puts a 0.3 kg arrow to the bowstring and applies an average force of 201 N to draw the string back 1.3 m.

a) Assuming that all the enrgy goes into the arrow, with what speed does the arrow leave the bow?

b) If the arrow is shot straight up, how high does it rise?

Page 308 # 78

A railroad car with a mass of 5 x10^5 kg collides with a stationary railroad car of equal mass. Afte the collision the two cars lock together and move off at 4.0 m/s.

a) Before the collision, how fast was the first car moving?

b) What was the total kinetic energy of the two cars before the collision?

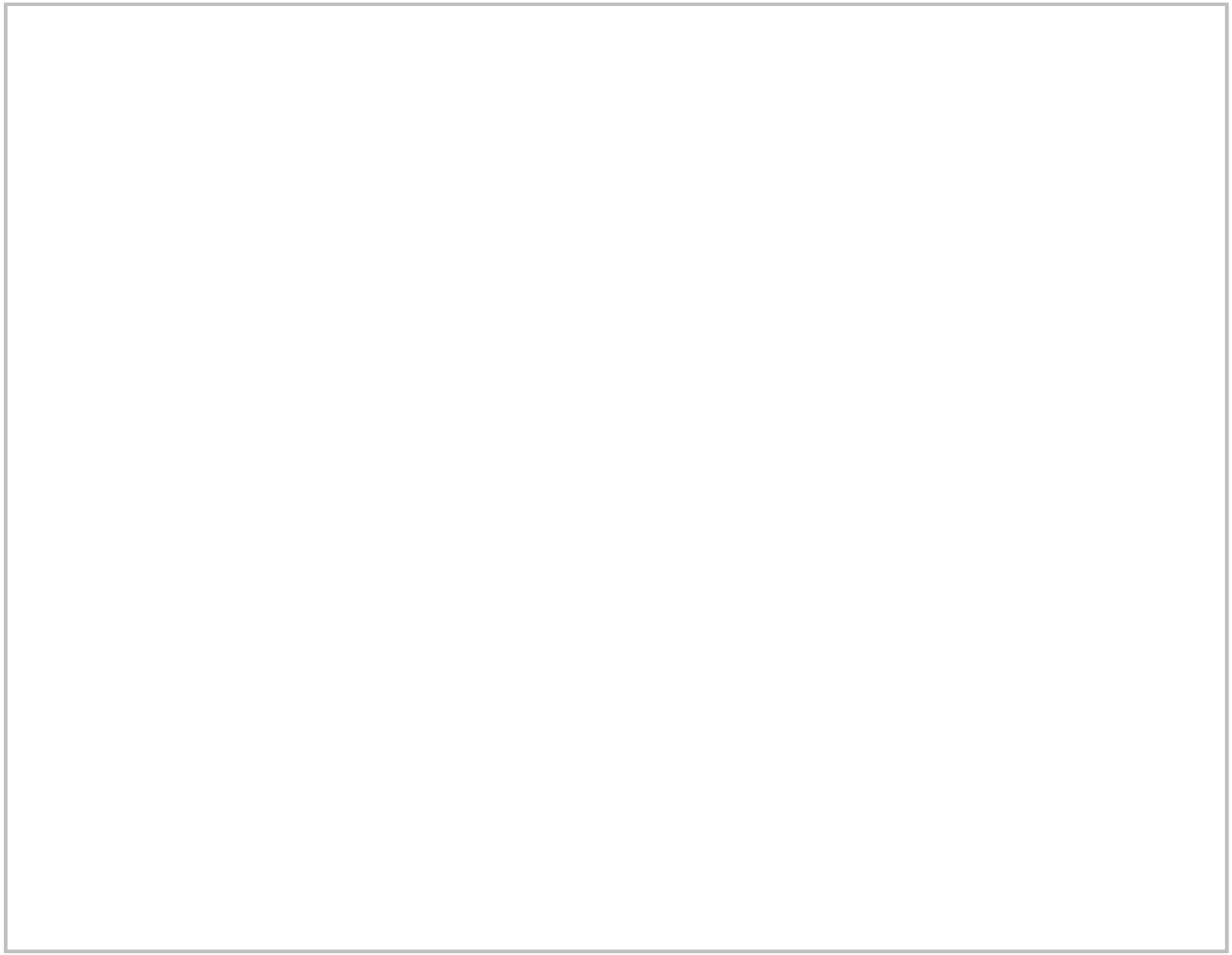
c) What was the total kinetic energy of the two cars after the collision?

d) Does this make sense?

Page 309 # 88

A 110 kg football linebacker has a head-on collision with a 150 kg defensive end. After they collide, they come to a complete stop. Before the collision, which player had the greater momentum?

Before the collision, which player had the greate kinetic energy?



Title: Dec 7 - 12:17 PM (10 of 10)