

Physics 10154 - Exam #6B

Answer the following two questions. Be sure to clearly indicate your answer with a circle or box. Show all work. If I cannot see how you arrived at an answer, I will deduct points!

1. Two cars of equal mass have a collision. Car A is travelling East at 23 m/s. Car B is travelling 65° North of East at an unknown speed. The two cars collide and stick together. The combined mass moves off from the collision point at an angle of 28° North of East. What was the initial speed of car B?

2. A 15-gram bullet is fired into a 225-gram block initially at rest. After the bullet passes through the block, it has a speed of 140 m/s. After the collision, the block slides 3.2 meters across a rough surface (coefficient of kinetic friction = 0.23) before coming to rest. What was the initial speed of the bullet?