

Physics 10154 - Exam #1A

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. A driver travels for 2 hours and 35 minutes along a straight road at 55 miles/hour. He then stops for a 25 minute rest break. How fast must he go during the final 90 minutes of his drive in order to average 58 miles/hour for the trip? Answer with 2 SF.

2. A cross country runner is trying to complete a 3-mile course in 18 minutes. After 15 minutes at a constant speed, he realizes that there are still 1000 meters to go, but luckily it is slightly downhill, and so the runner will be able to uniformly accelerate at a rate of 0.018 m/s^2 for the remainder of the race.

Will the runner finish in a time less than 18 minutes total? Justify your yes/no answer numerically. Maintain at least 3 SF while doing calculations here.