Stopping Distance

1. Calculate the braking distance for a car driving at 10, 20, 30, 60, and 90 km/h on dry pavement (k=0.06 m/s).

2. Compare the braking distances for a car travelling at 30 km/h and a car travelling at 60 km/h on dry pavement (k=0.06 m/s). What do you conclude?

3. A driver has a reaction time of 1.5 seconds. Calculate the total stopping distance for this driver traveling at 60 km/h on a rain-soaked road (k=0.1 m/s).

4. If two cars are moving at 60 km/h on dry pavement (k=0.06 m/s), how far behind must the second car travel if it can safely stop?

5. A pedestrian wearing dark clothing at night is only visible at a distance of about 35 m to a driver using low beams. Calculate the maximum speed a car could have on dry pavement (k=0.06 m/s) such that a driver with a reaction time of 1.5 seconds could brake and avoid a collision.

6. Some Driver Education experts recommend that "when the vehicle ahead of you passes a certain point, such as a sign, count 'one-thousand-one, one-thousand-two, one-thousand-three.' This takes about 3 seconds. If you pass this same point before you finish counting, you are following too closely." They also suggest a "4 second or more cushion" in inclement weather. Using the laws of physics and your understanding of braking distance, write a rationale for this rule.