Task #1

A car accelerates from 14 m/s to 21 m/s in 6.0 s. What is the car's acceleration?

Solution: 1.17 m/s^2

Extension: How far does the car travel in this time? (105.1 m)

Task #2

A world-class sprinter can reach a top speed (of about 11.5 m/s) in the first 18.0 meters of the race. What is her average acceleration? Assume she started from rest.

Solution: 3.36 m/s^2

Extension: How long does it take her to reach that speed? (3.42 s)

Task #3

A marble rolling down a track starts at rest and accelerates at a rate of $1.2\,\text{m/s}^2$. How much time does it take the marble to roll **85 cm**?

Solution: $\sqrt{1.42} = 1.19$ s

Task #4

In coming to a stop, a car leaves skid marks 65 m long on the highway. Assuming a deceleration of $-4.0\,\text{m/s}^2$, estimate the speed of the car just before braking.

Solution: $\sqrt{520} = 22.8$ m/s

Task #5

A car slows down from 28 m/s to rest in a distance of 88 m. What was its acceleration?

Solution: -4.45 m/s^2
