8. The car is traveling in a curve, so the required force is the centripetal force. We know the force and the radius in this case, so we solve for the speed.

$$F_c = m v^2 / r$$

We multiply both sides of the equation by r / m in order to obtain v^2 alone on one side of the equation as in problem 2 above.

$$v^2 = (F_c)(r / m)$$

$$v^2 = (7000 \text{ N})(40 \text{ m} / 1000 \text{ kg}) = 280 \text{ m}^2 / \text{s}^2$$

We take the square root of both sides of the equation to obtain the speed.

$$v = 16.7 \text{ m/s} = 54.8 \text{ ft/s} = 37.3 \text{ miles/hr}$$