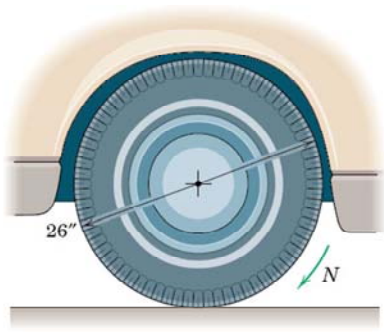## Instantaneous Center: Another Exercise

The rear wheel of a car moving to the right has a diameter of 26" and an **angular speed** N of 200 rev/min on an icy road. The **instantaneous center** of zero velocity is 4" above the point of contact with the road.

Determine the **velocity** v of the car and the **slipping velocity** v_s of the tire on the ice.

26"

N

5/110

$\omega = v/\overline{OC}, \quad v = \frac{9}{12} \cdot 20.9 = 15.71 \text{ ft/sec}$

or $v = 10.71 \text{ mi/hr}$

$v_s = \frac{4}{9} v = \frac{4}{9}(15.71), \quad v_s = 6.98 \text{ ft/sec}$

O

v

$9"$

C

$4"$

A

v_s

$\omega = \frac{2\pi N}{60}$

$= 20.9 \frac{rad}{sec}$