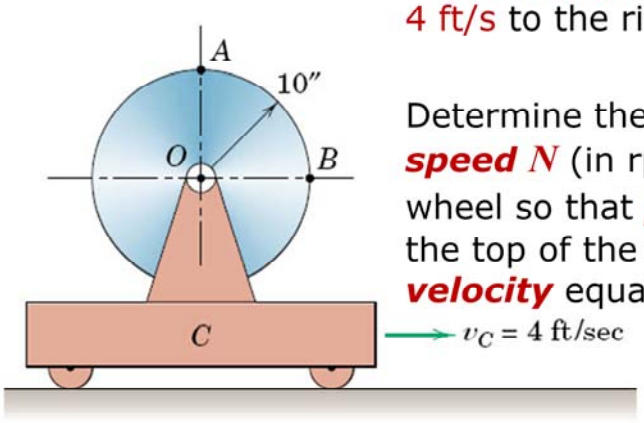
Question of the Day



The ***velocity*** of the cart is 4 ft/s to the right.

Determine the ***angular speed*** N (in rpm's) of the wheel so that ***point*** A on the top of the rim has a ***velocity*** equal to ***zero***.

5/60 $\underline{v}_A = \underline{v}_O + \underline{v}_{A/O}$ where $v_{A/O} = \bar{AO}\,\omega = \frac{10}{12}\omega$ ft/sec, $v_O = 4$ ft/sec

(a) $v_A = 4$, $v_O = 4$, $v_{A/O} = 8$ ft/sec

$\omega = \frac{8}{10/12} = 9.6$ rad/sec, $N = 9.6\frac{60}{2\pi} = 91.7$ rev/min CCW

(b) $v_O = 4$, $v_{A/O} = 4$ ft/sec

$v_A = 0$, $\omega = \frac{4}{10/12} = 4.8$ rad/sec, $N = 45.8$ rev/min CCW

(c) $v_O = 4$, $v_{A/O} = 4$

$v_A = 8$ ft/sec

$\omega = \frac{4}{10/12} = 4.8$ rad/sec, $N = 45.8$ rev/min CW