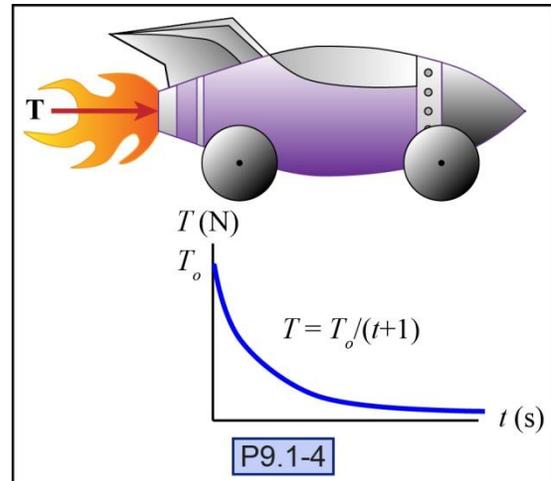


**P9.1-4)** A 5-kg toy rocket car, starting from rest, drives along a horizontal surface once the engine is engaged. The thrust  $T$  produced by the engine is time dependent and its magnitude is described by the attached graph, where  $T_o = 10$  N. Neglecting rolling and air resistance, determine the speed of the car after 10 seconds.

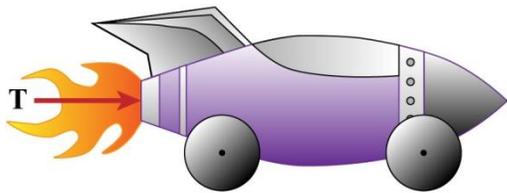
Given:

Find:



Solution:

Draw a free-body diagram for the rocket.



Calculate the total horizontal-direction impulse acting on the rocket during the 10 seconds.

Using the principle of linear impulse and momentum, calculate the rocket's velocity after 10 seconds.

$I_x =$  \_\_\_\_\_

$v =$  \_\_\_\_\_