**P5.10-1)*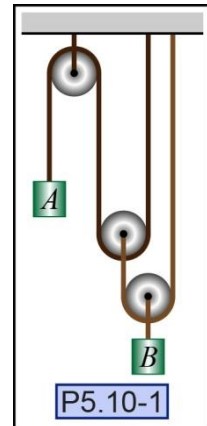* Find the acceleration of block A after the blocks are released. The mass of block A is 20 kg and the mass of block B is 10 kg. Neglect the mass of the pulleys and cables. Also, assume that the pulleys are frictionless.
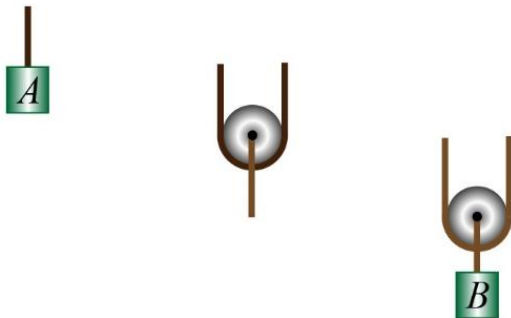
Given:

Find:

Solution:

Draw a free-body diagram of block A, B and the middle pulley.

Determine the relationship between the acceleration of A and B.

Draw the position coordinates on the figure attached to the problem statement.

$a_B =$ _____ a_A

Calculate the acceleration of block A.

Write down the equations of motion for all three particles of the system.

Equ of Motion A:

Equ of Motion B:

Equation of Motion pulley:

Use the above equations to solve for the acceleration.

$a_A = $ _____