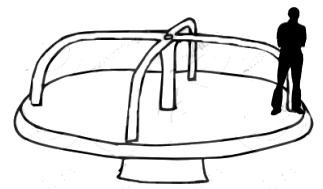


A 25 kg boy stands at the outer edge, 3.5 m from the center of a frictionless playground merry-go-round which has a moment of inertia of $200 \text{ kg}\cdot\text{m}^2$ rotating at an angular speed of 3.14 rad/sec .



a) What is the total moment of inertia of the boy and merry-go-round?

b) How many revolutions will the boy make per minute?

c) If the boy steps towards the center of the merry-go-round so that he is now 1 meter from the center, what will be the new angular velocity of the merry-go-round?

d) The boy now moves back to the outer edge returning to the initial angular velocity, to stop himself, the boy drags his foot on the ground. If he is able to apply a force downward to the ground equal to one-third his weight and stop himself in 20 seconds, what is the coefficient of friction between his shoe and the ground?