

10. Since the center of mass of the two-skater system does not move, both skaters will end up at the center of mass of the system. Let the center of mass be a distance  $x$  from the 40-kg skater, then

$$(65 \text{ kg})(10 \text{ m} - x) = (40 \text{ kg})x \Rightarrow x = 6.2 \text{ m}.$$

Thus the 40-kg skater will move by 6.2 m.