Example 1  A piece of sheet metal, 60 cm by 30 cm, is to be used to make a rectangular box with an open top. Determine the dimensions that will give the box with the largest volume.
Example 2

Ian and Ada are both training for a marathon. Ian’s house is located 20 km north of Ada’s house. At 9:00 a.m. one Saturday, Ian leaves his house and jogs south at 8 km/h. At the same time, Ada leaves her house and jogs east at 6 km/h. When are Ian and Ada closest together, given that they both run for 2.5 h?