The program manager for Channel 10 would like to determine the best way to allocate the time

for the 11:00–11:30am news program. Ten minutes is already blocked for advertising. For the

remaining 20 minutes of broadcast time, she would like to determine the optimal amount of

time to devote to local news, national news, weather, and sports.

The station's broadcast policy states that at least 15% of the time available should be devoted

to local news coverage; the time devoted to local and national news must be at least 50% of the

available broadcast time; the time devoted to the weather segment must not exceed the time

devoted to the sports segment; the time devoted to the sports segment should be no longer

than the total time spent on the local and national news; and at least 20% of the available time

should be devoted to the weather segment. The production costs per minute are $300 for local

news, $200 for national news, $100 for weather, and $100 for sports.

Formulate a linear program to determine the least costly program that meets all policy

requirements.