**Chapter 8 – Solutions**

**(8.7,8.15,8.20,8.21,8.23)**

**8.7**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Factor | Philadelphia (weight  score) | | | New York (weight  score) | | |
| Customer |  | | |  | | |
| convenience | 17.5 | | | 20 | | |
| Bank accessibility | 8.0 | | | 18 | | |
| Computer support | 17.0 | | | 15 | | |
| Rental costs | 13.5 | | | 8.25 | | |
| Labor costs | 8.0 | | | 5.0 | | |
| Taxes | 9.0 | | | 5.0 | | |
| Totals | | 73.0 |  |  | 71.25 |  |

ILA should locate in Philadelphia.

**8.15**(a) Chicago = 16 + 6 + 7 + 4 = 33

Milwaukee = 10 + 13.5 + 6 + 3 = 32.5

Madison = 12 + 12 + 4 + 2.5 = 30.5

Detroit = 14 + 6 + 7 + 4.5 = 31.5

All four are quite close, with Chicago and Milwaukee almost tied. Chicago has the largest rating, with a 33.

(b) With a cutoff of 5, Chicago is unacceptable because it scores only 4 on the second factor. Only Milwaukee has scores of 5 or higher on all factors. Detroit and Madison are also eliminated, as each has one rating of a 4.

**8.20**



The proposed new hub should be near (5.15, 7.31).

**8.21**



The distance-minimizing location is at (5.95, 4.35). This minimizes distance traveled, but is “straight line,” which does not reflect reali­ties of highway routes. It does not consider rivers, bridges, and other geographical impediments. Consider placing the office as near the center of gravity as possible and still be on or near a major highway. Students who overlay this onto a map of Louisiana should recognize that Baton Rouge would be an ideal location.

**8.23**

 *= x* coordinate of center of gravity



The center of gravity is (66.69, 30.22).