

Alice and Bruno Find an Apartment -- Taxicab Geometry

(Taken from : *Taxicab Geometry*, by Eugene F. Krause)

1. Alice and Bruno are looking for an apartment in Ideal City. Alice works as an acrobat at amusement park $A = (-3, -1)$. Bruno works as a bread taster in bakery $B = (3, 3)$. (See Fig. 4.) Being ecologically aware, they walk wherever they go. They have decided their apartment should be located so that the distance Alice has to walk to work plus the distance Bruno has to walk to work is as small as possible. Where should they look for an apartment?
2. After a day of fruitless apartment hunting they decide to widen their area of search. The only requirement they keep is that they both be the same distance from their jobs. Now where should they look?
3. A builder wants to put up an apartment building within six blocks of the shopping center $S = (-3, 0)$ and within four blocks of the tennis courts $T = (2, 2)$. Where can he build?
4. The telephone company wants to set up pay-phone booths so that everyone living within twelve blocks of the center of town is within four blocks of a pay phone. How few booths can they get by with, and where should they be located?
5. There are three high schools in Ideal City: Fillmore at $(-4, 3)$, Grant at $(2, 1)$, and Harding at $(-1, -6)$. Draw in school- district boundary lines so that each student in Ideal City at- tends the high school nearest his home.
6. If Burger Baron wants to open a hamburger stand equally distant from each of the three high schools, where should it be located?
7. A fourth high school, Polk High, has just been built at $(2, 5)$. Redraw the school-district boundary lines.