

Name:

Result:

1.*(4 points)*

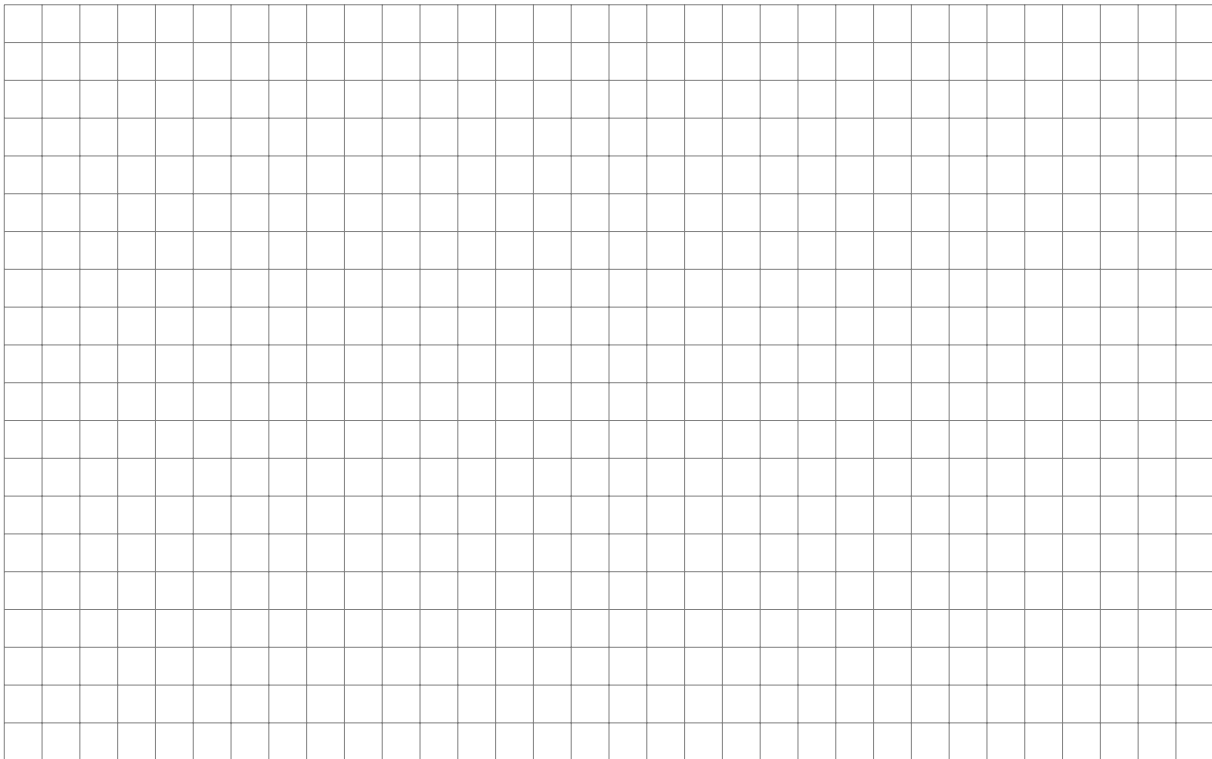
Line l_1 has the equation $2x + 3y + 6 = 0$.

(a) Sketch the l_1 , clearly indicate the coordinates of the intersections with the axes. [1]

Line l_2 is perpendicular to l_1 and passes through $(1, 1)$.

(b) Find the equation of l_2 . [1]

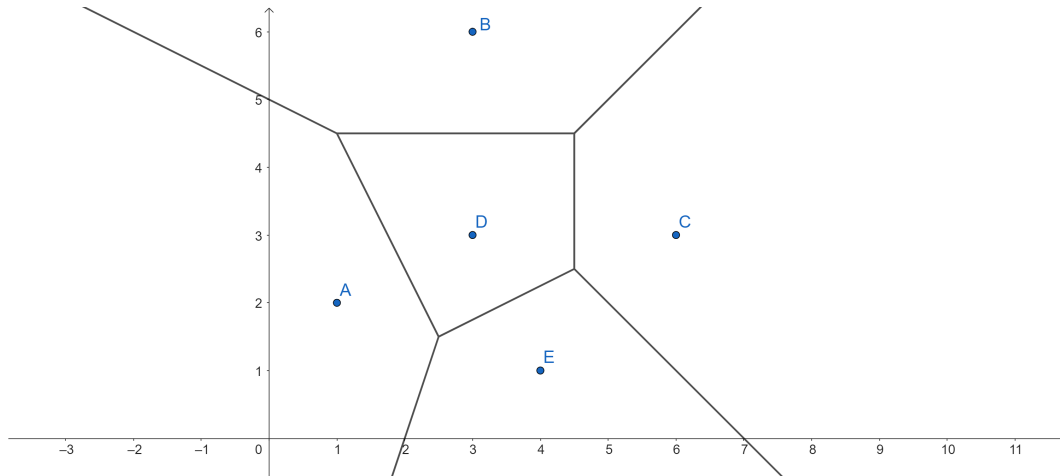
(c) Find the exact coordinates of the point of intersection of the two lines. [2]



2.*(6 points)*

In this question the x direction is due east, the y direction is due north and distances are measured in kilometres.

The coordinates of the shelters are $A(1, 2)$, $B(3, 6)$, $C(6, 3)$, $D(3, 3)$ and $E(4, 1)$. The Voronoi diagram for these shelters as sites is shown below:



(a) Find the equation of the edge between cells containing A and D . [2]

(b) Tomasz is equidistant from sites B , C and D . Find Tomasz's coordinates. [1]

(c) Maria is at $(1, 5)$. [3]

(i) State the site, which is closest to Maria.

(ii) Find the distance from Maria to the closest site.

(iii) Find the bearing from Maria to the closest site.