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Geometry – Loci – Angle and perpendicular bisectors

Recap

1. Complete the following sentences:

   a. A perpendicular bisector cuts a line in half at 90°

   b. An angle bisector cuts an angle in half

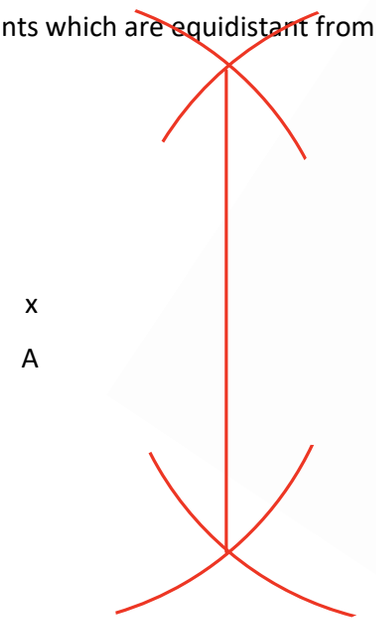
   c. A perpendicular bisector is the set of points which are equidistant from two points

   d. An angle bisector is the set of points which are equidistant from two lines

   e. With loci, the word "construct" means you can only use a compass and a straightedge

Core

1. Draw the set of points which are equidistant from points A and B.



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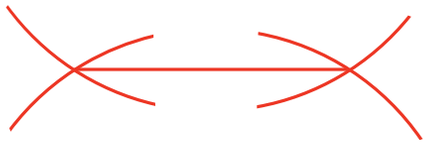
2. Draw the set of points which are equidistant from points A and B.

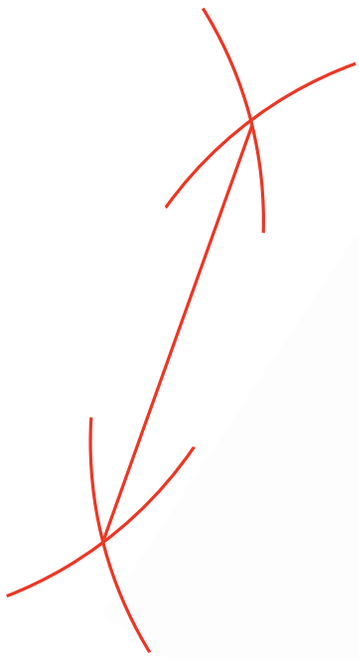
A x



B x

3. Draw the set of points which are equidistant from points A and B.

x
A



x
B

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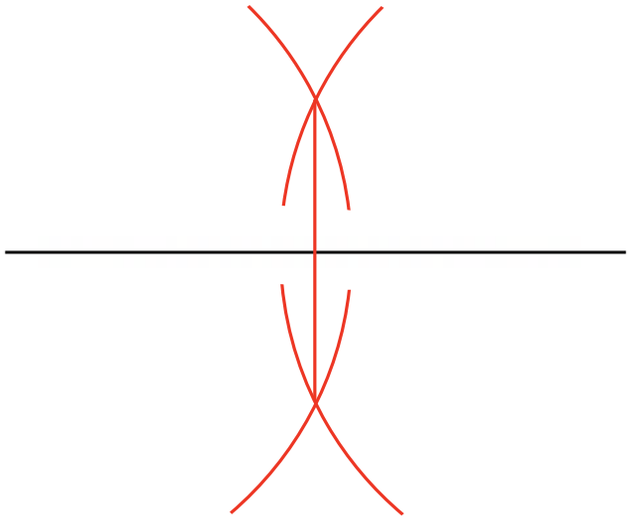
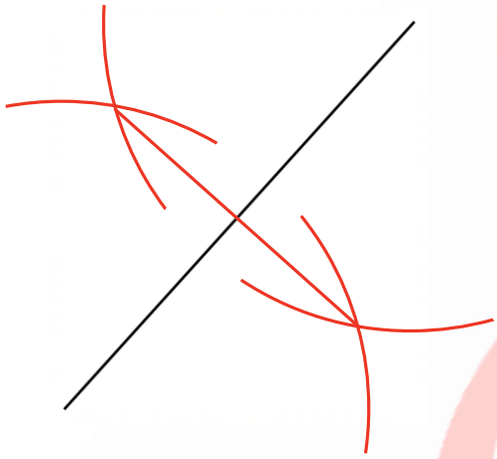
4. Construct a perpendicular bisector for each of the following lines:

a.



b.



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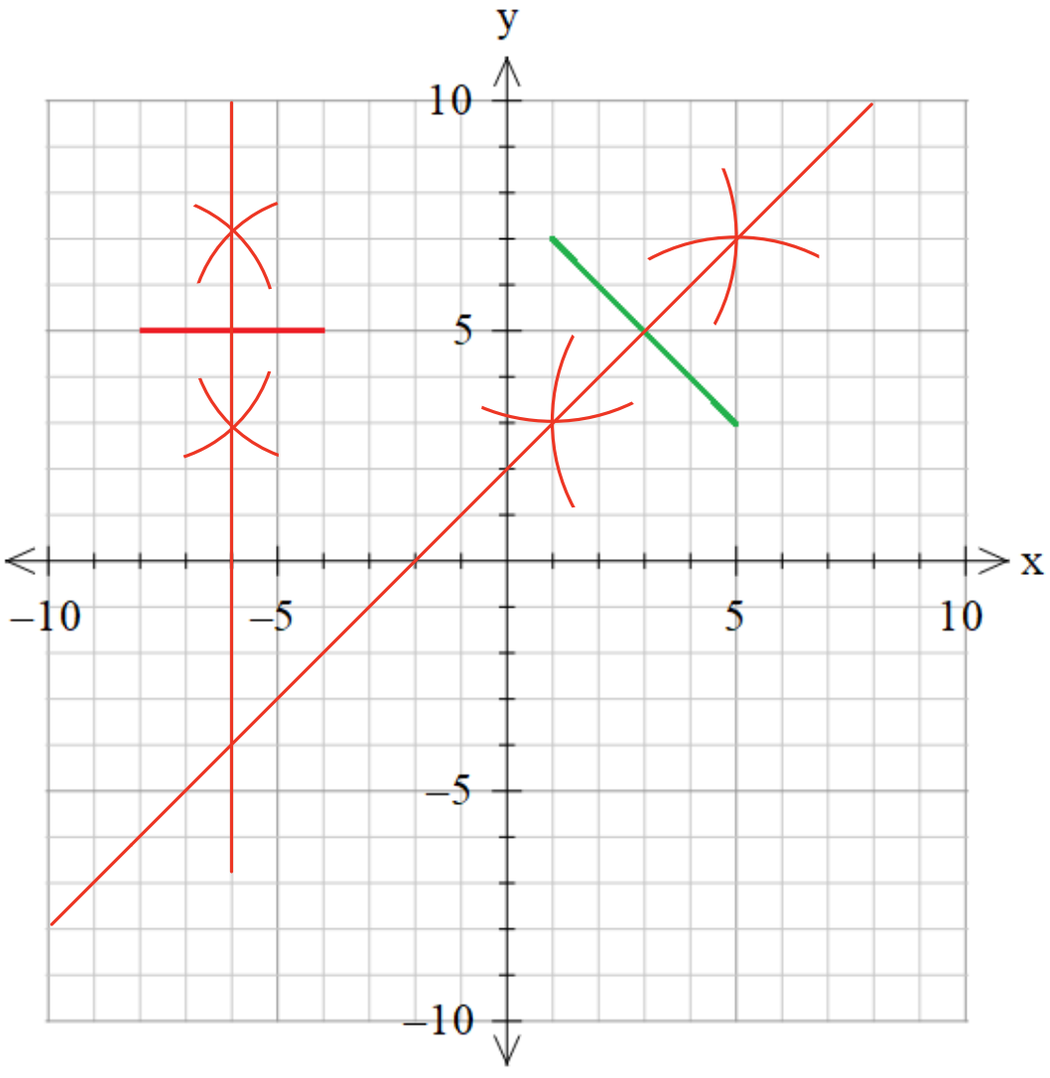
5.

a. Construct the perpendicular bisectors of the red line shown below.

b. Construct the perpendicular bisectors of the green line shown below.



c. Write down the coordinates of the point of intersection of the two perpendicular bisectors.

(-6, -4)

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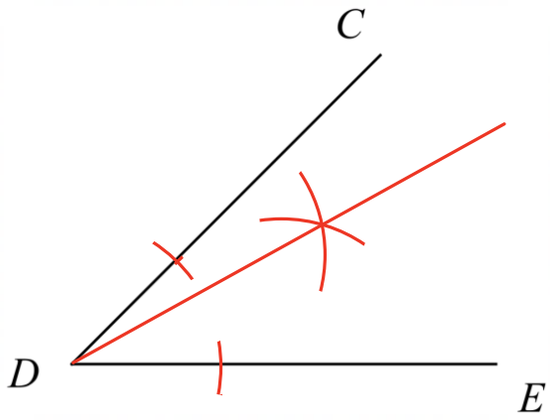
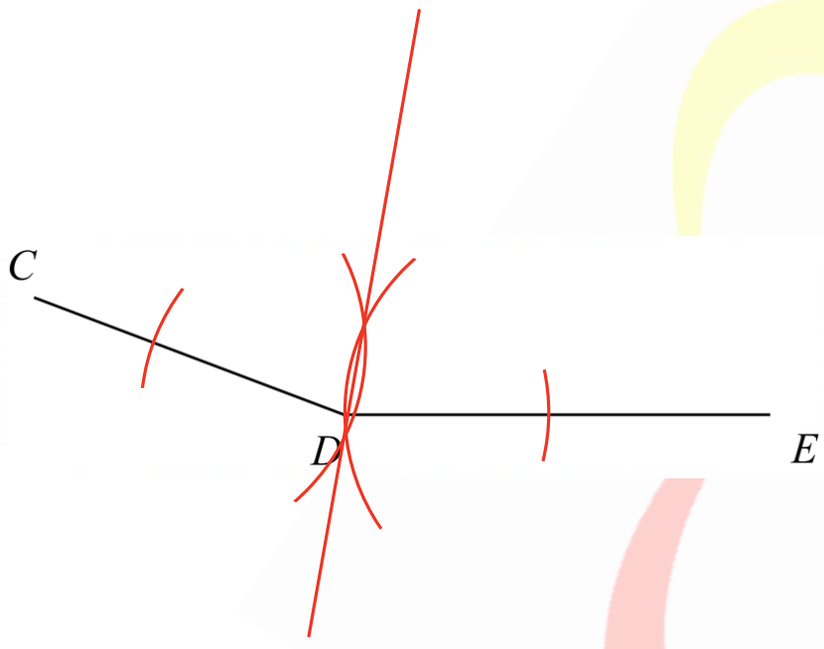
6. Draw the set of points which are equidistant from lines CD and DE.



7. Draw the set of points which are equidistant from lines CD and DE.



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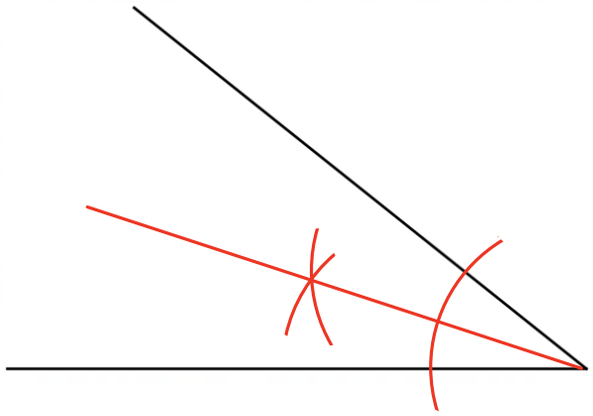
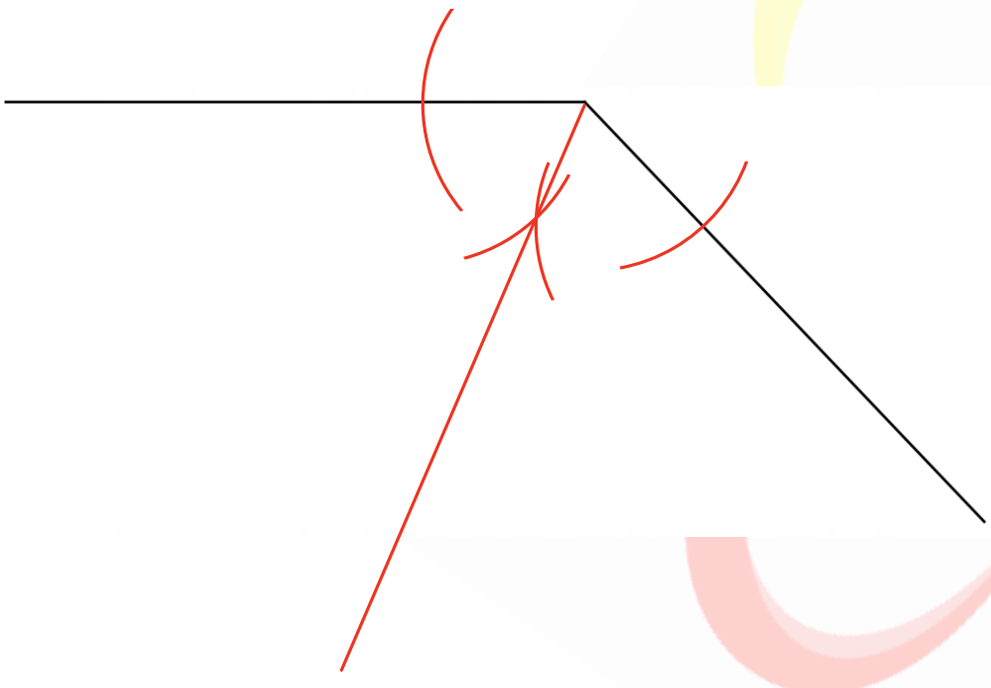
8. Construct the angle bisector of each of the following:

a.



b.



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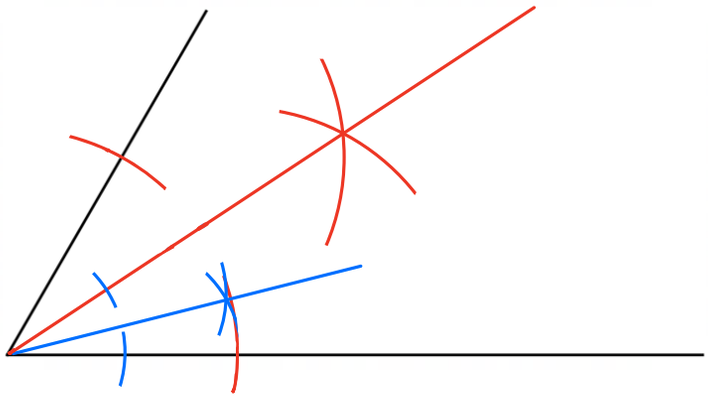
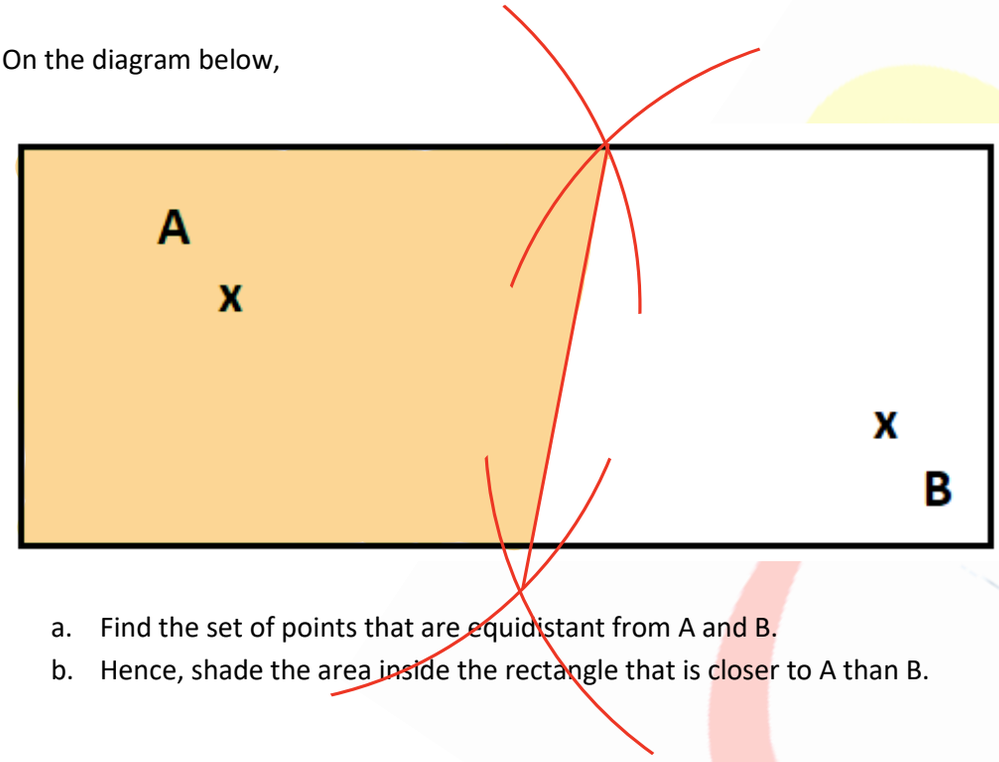
9. The angle below measures 60°.

   a. Use the diagram below to construct an angle of 30°.
   b. Using your answer to part a, construct an angle of 15°.



10. On the diagram below,



   a. Find the set of points that are equidistant from A and B.
   b. Hence, shade the area inside the rectangle that is closer to A than B.

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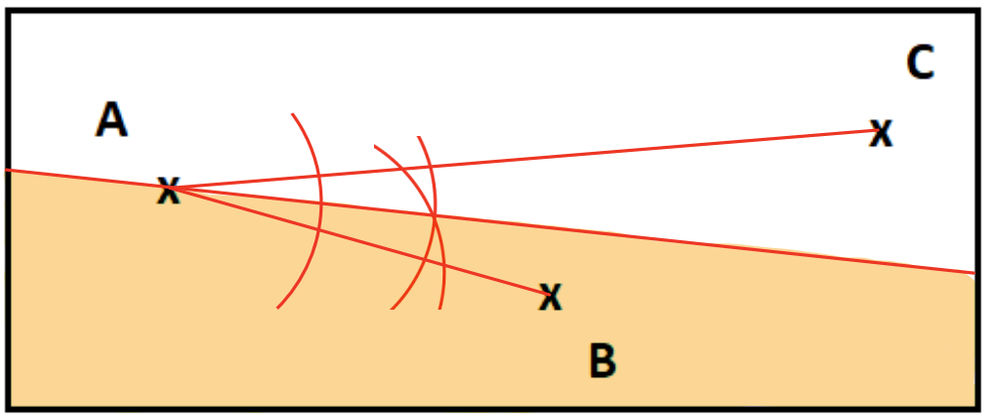
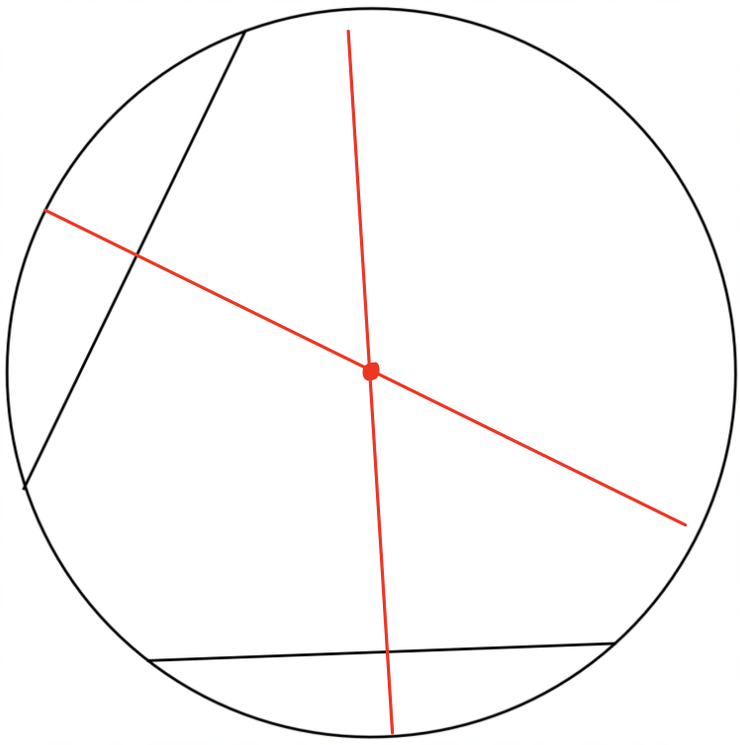
11. On the diagram below,



a. Find the set of points that are equidistant from lines AB and AC.
b. Hence, shade the area inside the rectangle that is closer to AB than AC.

12. The diagram below shows two chords of a circle. Construct the perpendicular bisectors of the two chords.



What do you notice about the point of intersection in relation to the circle?

This is the center of the circle.

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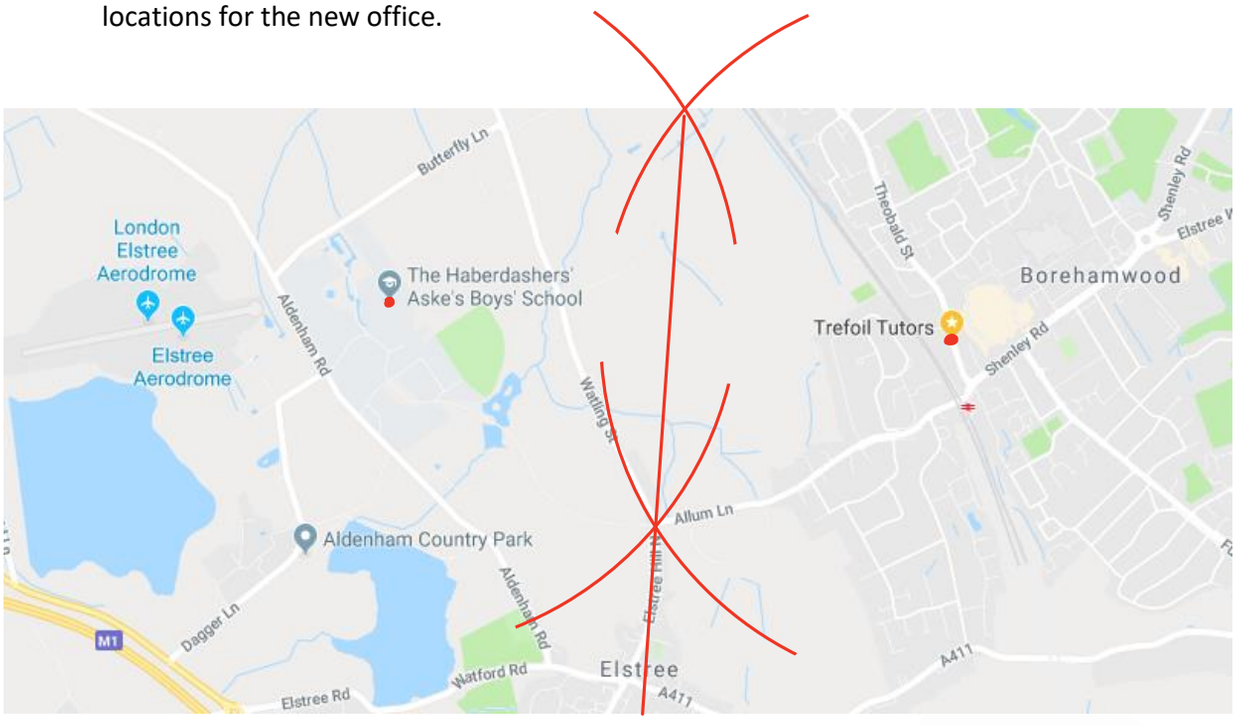
13. Vivek is looking where to locate a new office space. He wants the space to be equidistant from the current office and Haberdashers' Aske's Boys' School. Construct the set of possible locations for the new office.



Assuming that Butterfly Lane and Watling Street are exactly straight roads, find the set of possible locations for the new office if Vivek wanted the office to be equidistant between the two roads.