

Write

Explain in your own words why the slope of a vertical line is undefined.

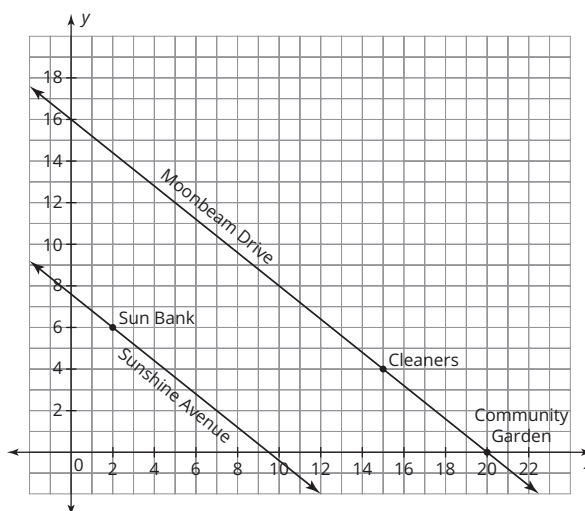
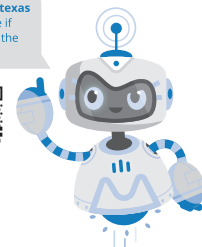
Remember

The slopes of perpendicular lines are negative reciprocals. Any vertical line is perpendicular to any horizontal line.

Practice

Christopher is a developer and plans to build a new development. Use the grid to help Christopher create a map for his development. Each gridline represents one block.

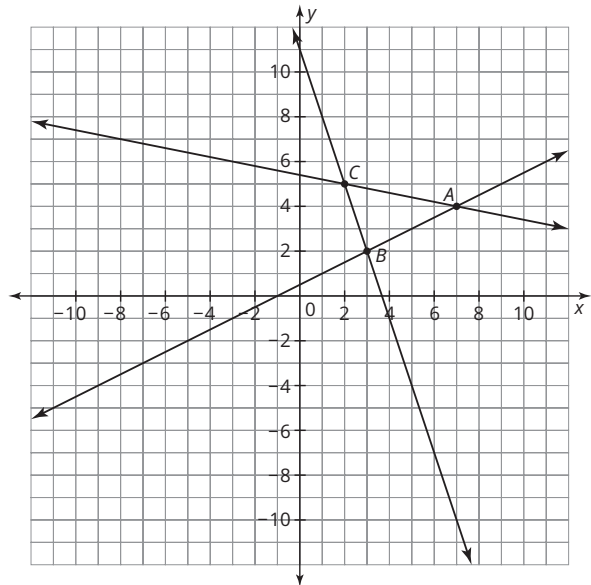
Visit livehint.com/texas or use this QR code if you need a hint on the Practice questions.



1. There are two main roads that pass through the development, Moonbeam Drive and Sunshine Avenue. Are these two roads parallel to each other? Explain your reasoning.
2. Christopher wants to build a road named Stargazer Boulevard that will be parallel to Moonbeam Drive. On this road, he will build a diner located 7 blocks north of the community garden. Determine the equation of the line that represents Stargazer Boulevard. Show your work. Then draw and label Stargazer Boulevard on the coordinate plane.
3. Christopher wants to build a road named Rocket Drive that connects Sun Bank to Moonbeam Drive. He wants this road to be as short as possible. Determine the equation of the line that represents Rocket Drive. Show your work. Then draw and label Rocket Drive on the coordinate plane.
4. Two office buildings are to be located at the points $(8, 4)$ and $(12, 10)$. Would the shortest road between the two office buildings be a line that is perpendicular to Moonbeam Drive? Explain your reasoning.
5. A straight road named Planet Drive is planned that will connect the diner and the community garden. What is the equation of the line that represents Planet Drive? Show your work. Draw and label Planet Drive on the coordinate plane.
6. Christopher decides that another road to be named Saturn Avenue is needed that will go past the cleaners and be perpendicular to Planet Drive. Determine the equation of the line that represents Saturn Avenue. Show your work. Draw and label Saturn Avenue on the coordinate plane.

Stretch

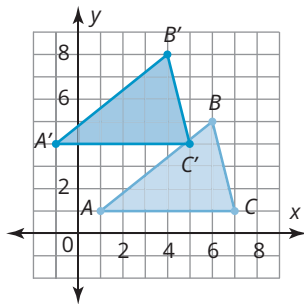
Triangle ABC is located on three lines such that the vertices occur at the points of intersection of pairs of the lines, as shown on the graph. If $\triangle ABC$ is rotated 90° counterclockwise around the origin to form $\triangle A'B'C'$, determine the equations of the lines that would contain $\triangle A'B'C'$. Explain your reasoning. Then draw the three lines that contain $\triangle A'B'C'$ and label $\triangle A'B'C'$.



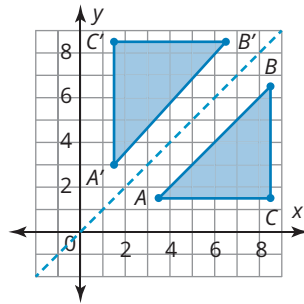
Review

1. Identify each rigid motion as a translation, reflection, or rotation.

a.



b.



2. Determine the supplement of each angle measure.

- a. 63° b. 10° c. 180°

3. Determine the complement of each angle measure.

- a. 10° b. 75° c. 45°