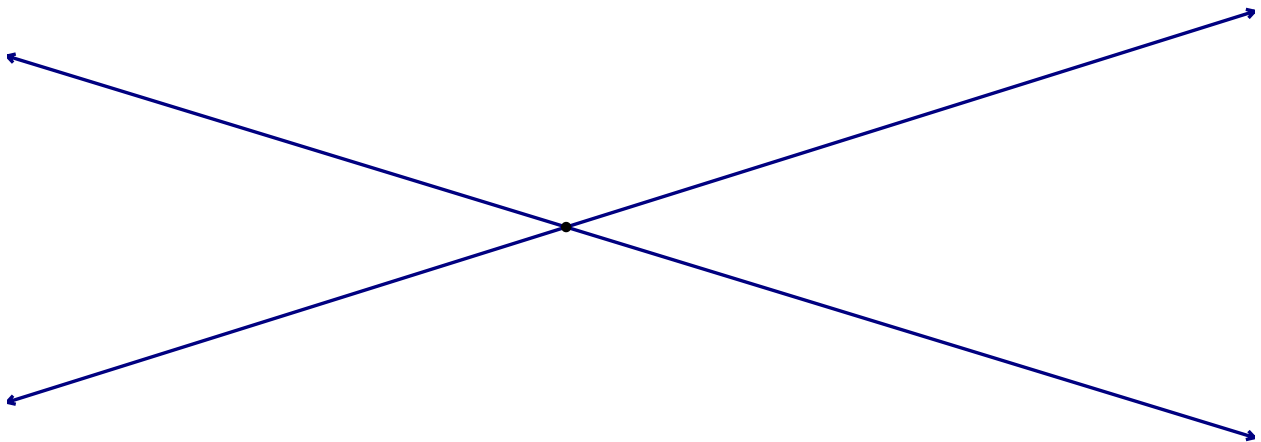


Line k and l intersect in the coordinate plane at point $(3, -2)$. Is the largest angle formed at the intersection between these two lines greater than 90 degree?

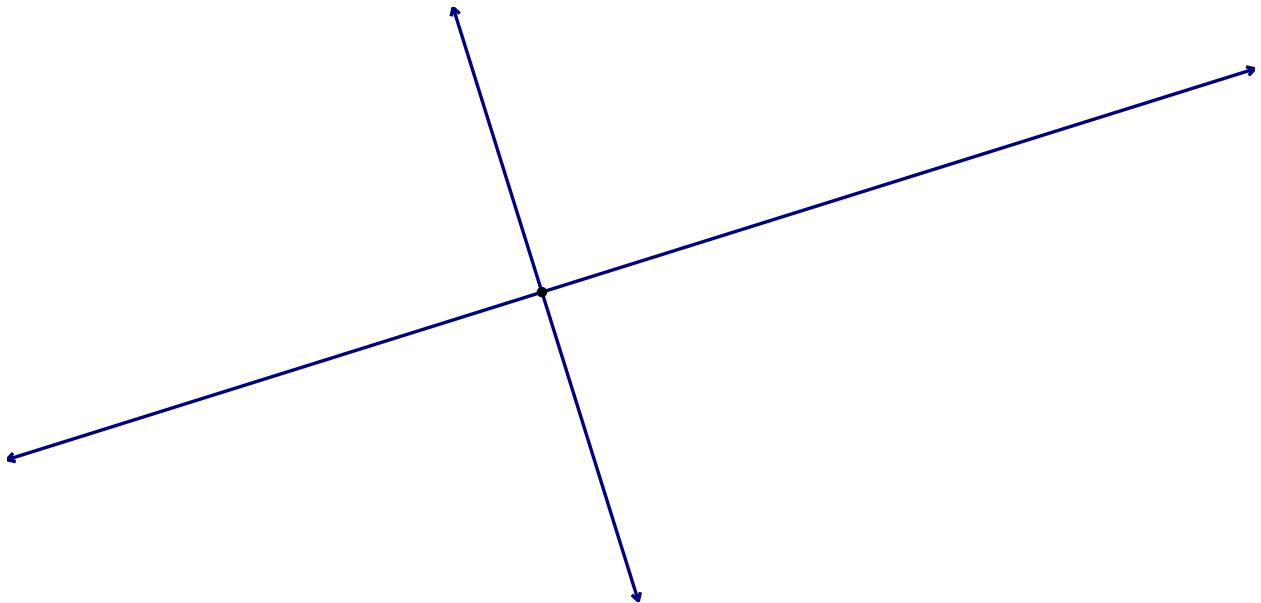
(1) Lines k and l have positive y - axis intercepts

(2) The distance between the y -axis intercepts of lines k and l is 5

What's unusual about this question is ---- so long as two lines are not perpendicular, then at their intersection, there will always be a pair of acute angles and a pair of obtuse angles. Thus, there will always be angles larger than 90 degrees.

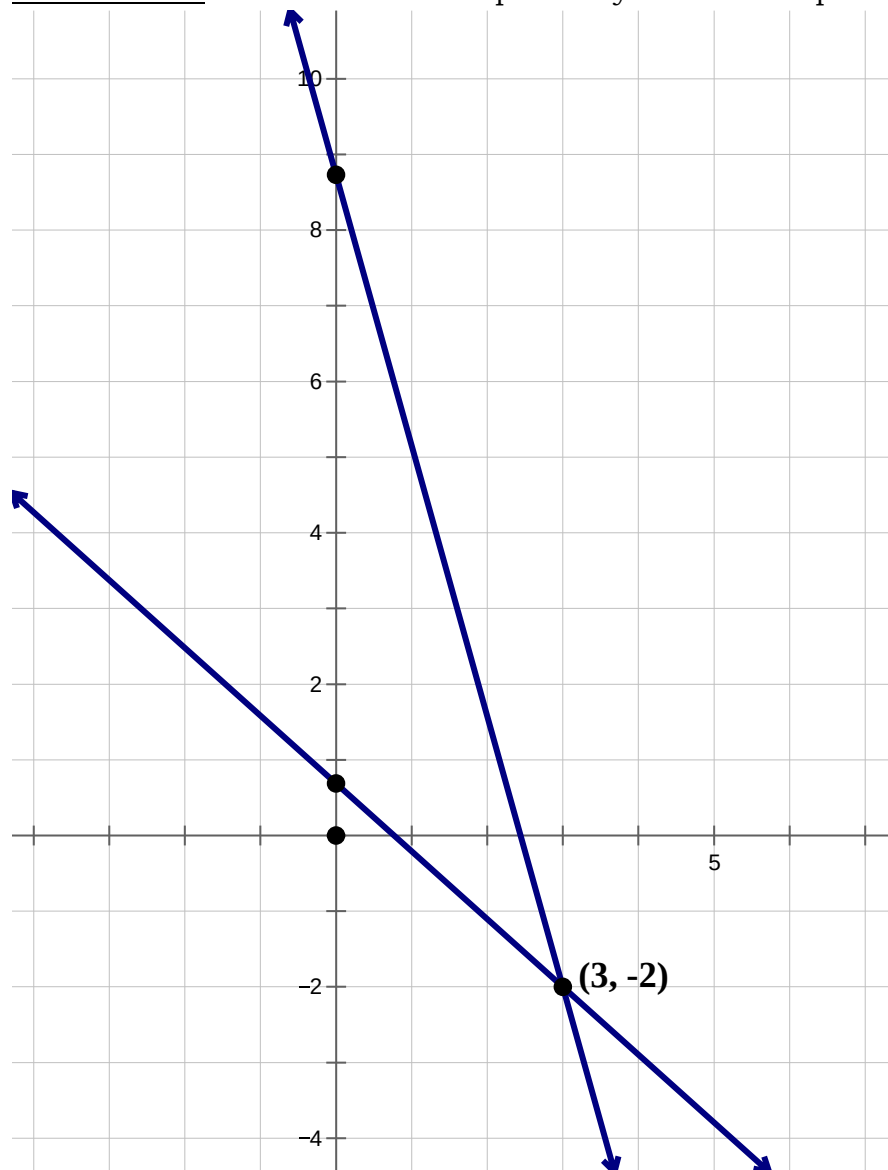


The only time this is not true is when the lines are perpendicular --- then, all four angles at the intersection are exactly 90 degrees, and none are more than 90 degrees.



So, really, the prompt question is: are the two lines perpendicular?

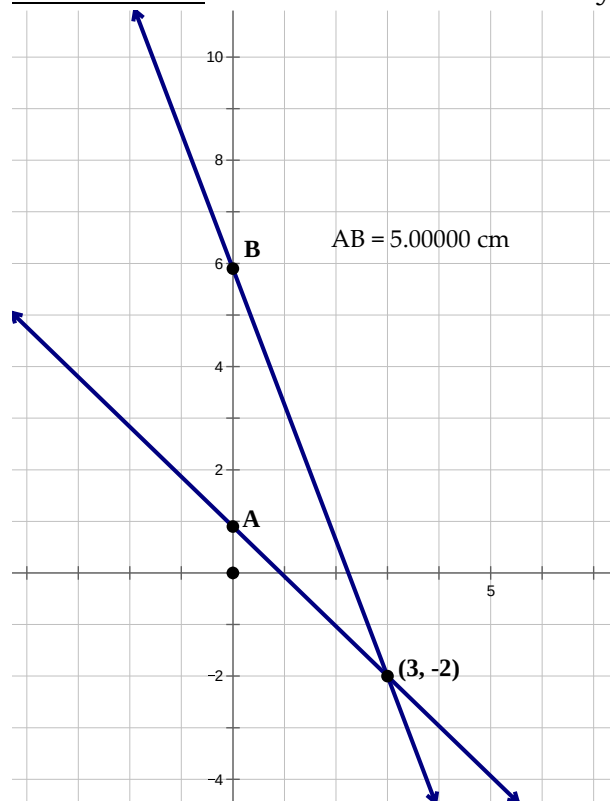
Statement #1: Lines k and l have positive y - axis intercepts



Since the intersection point is below the x -axis, it is impossible for two lines with positive y -intercepts to be perpendicular. Both slopes would have to be negative, which means it's impossible for the slopes to be negative reciprocals of one another, which is the condition of perpendicularity in the Cartesian plane. The lines definitely are not perpendicular, which allows us to give a definitive "yes" answer to the prompt question.

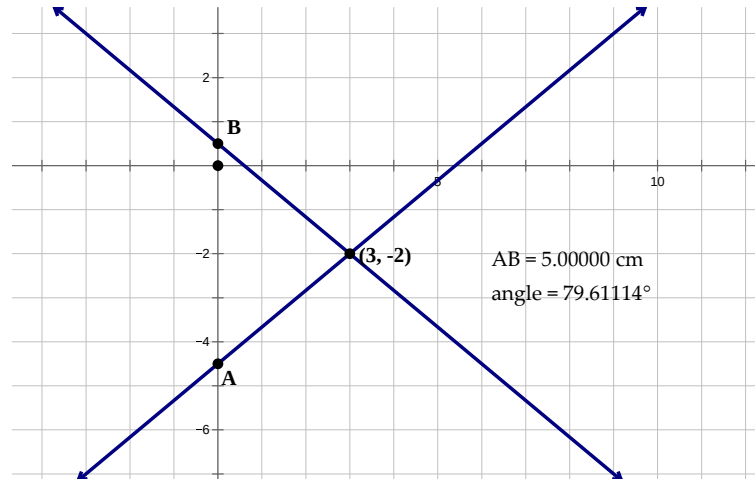
This statement, alone and by itself, is **sufficient**.

Statement #2: The distance between the y-axis intercepts of lines k and l is 5



For most positions, it's easy to see that the lines will not be perpendicular.

Even the widest possible angle is less than 90 degrees. This is because the distance from the y-axis (3) is more than half of the distance between the points. In order for the angle to be a right angle, there must be a circle with diameter AB and radius from the center out to $(3, -2)$. Well, if diameter = 5, then radius = 2.5, which means that no matter where we put the center, the radius will never reach out as far as 3 from the y-axis.



Therefore, the angle cannot possibly be 90 degrees, which means the lines cannot possibly be perpendicular, which means the answer to the prompt question is a definitive and conclusive "yes."

This means, statement #2, on its own and by itself, is **sufficient**.

Answer = **D**

