

Working Model 02

2.46 Knowing that $\alpha = 55^\circ$ and that boom AC exerts on pin C a force directed along line AC , determine (a) the magnitude of that force, (b) the tension in cable BC .

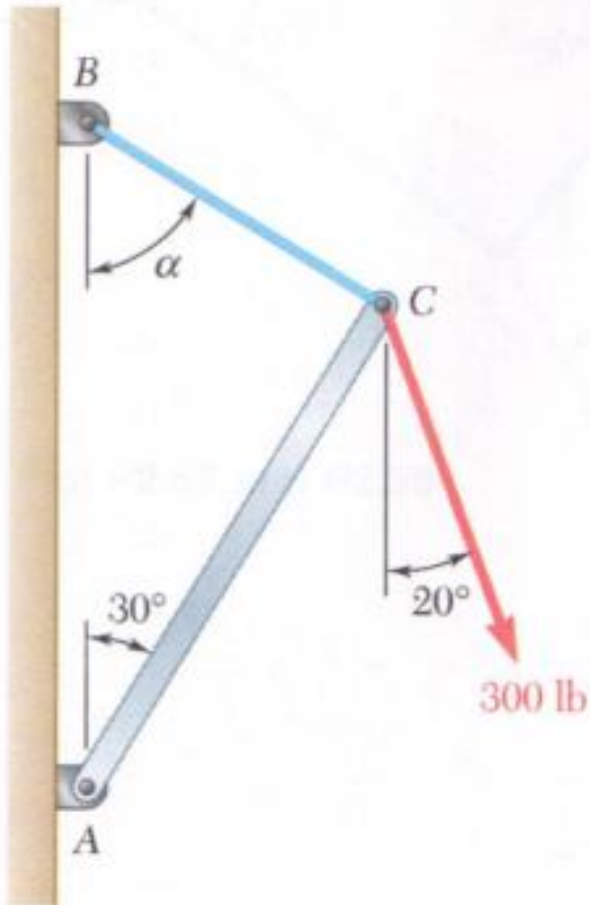
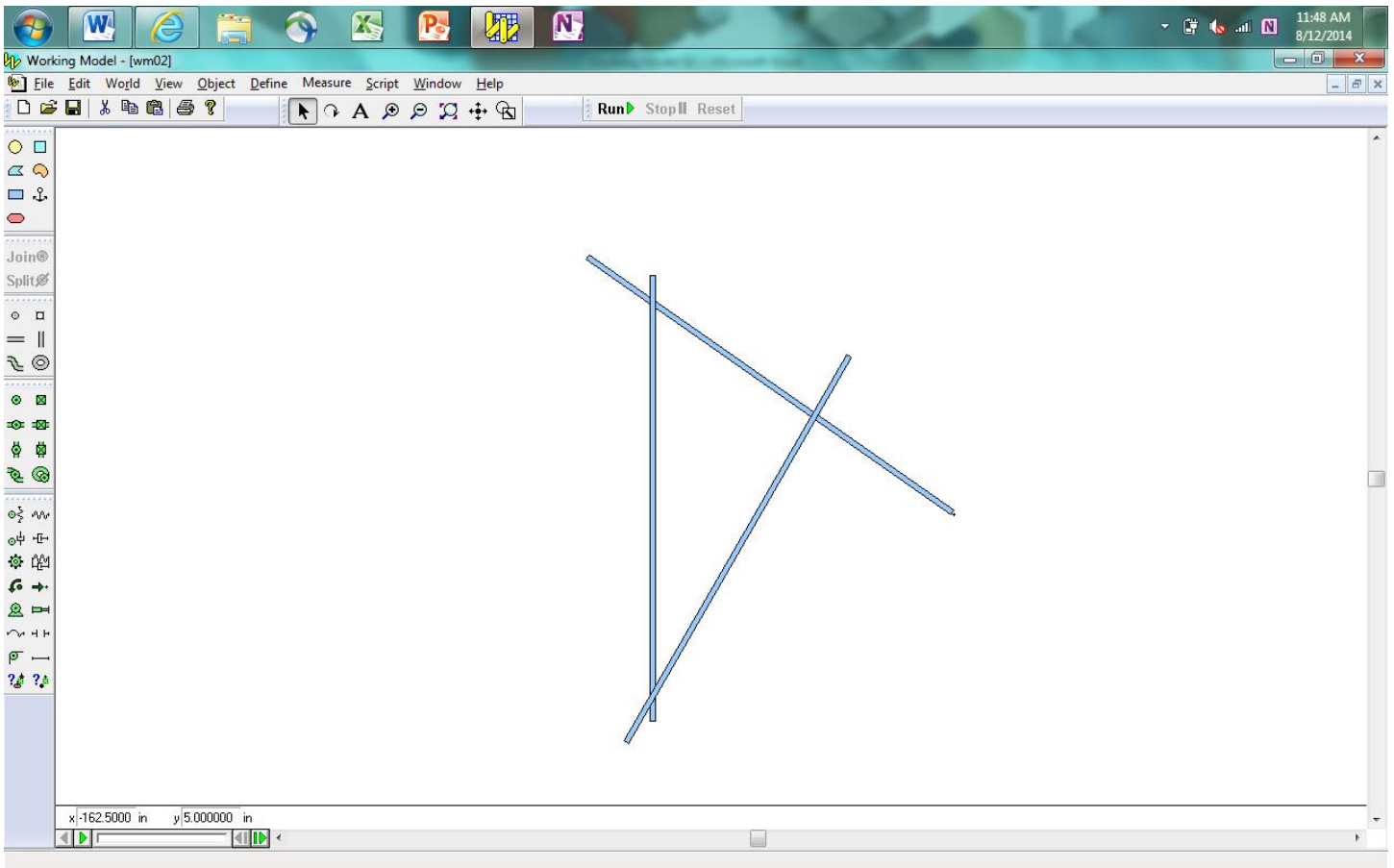
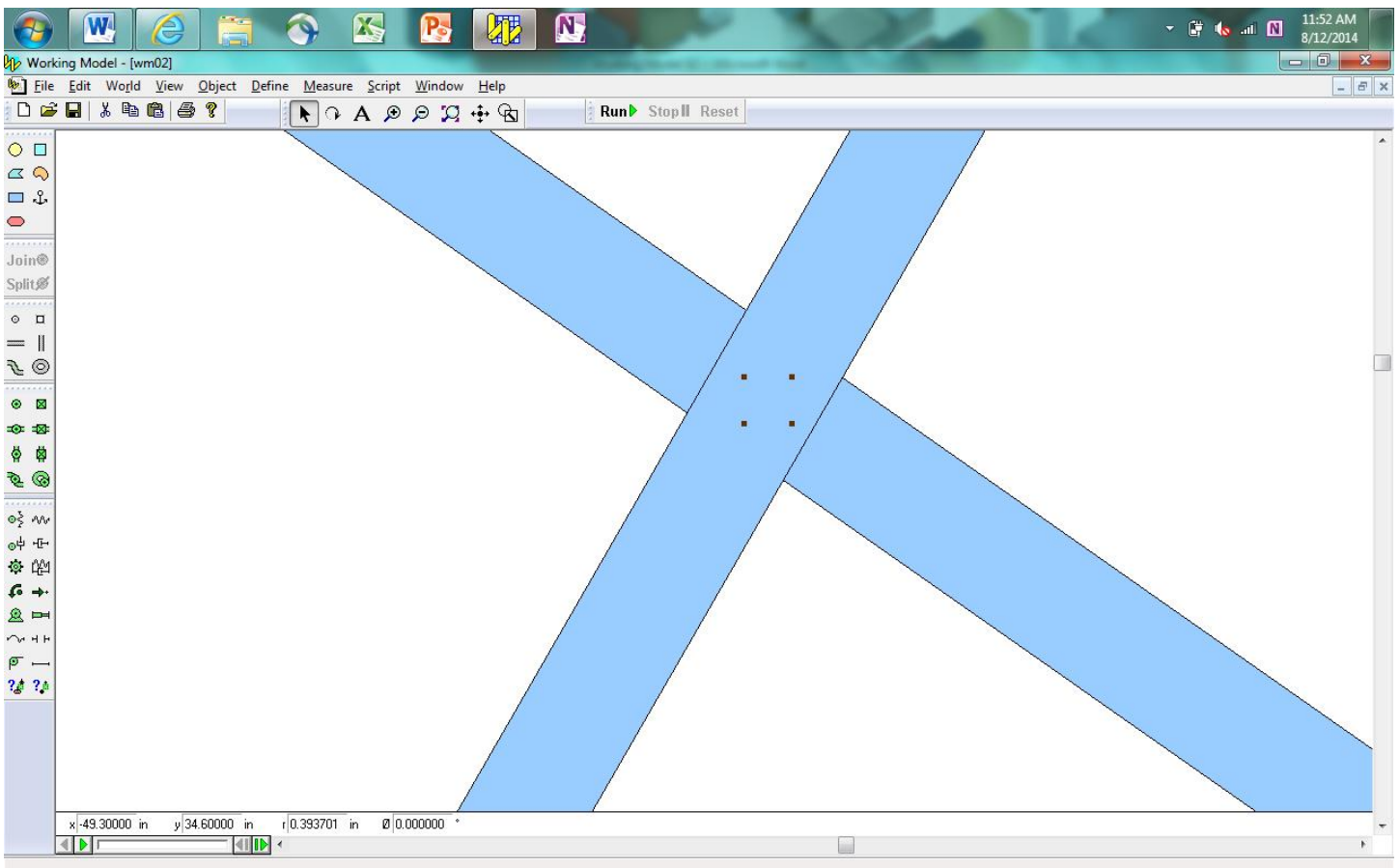


Fig. P2.46

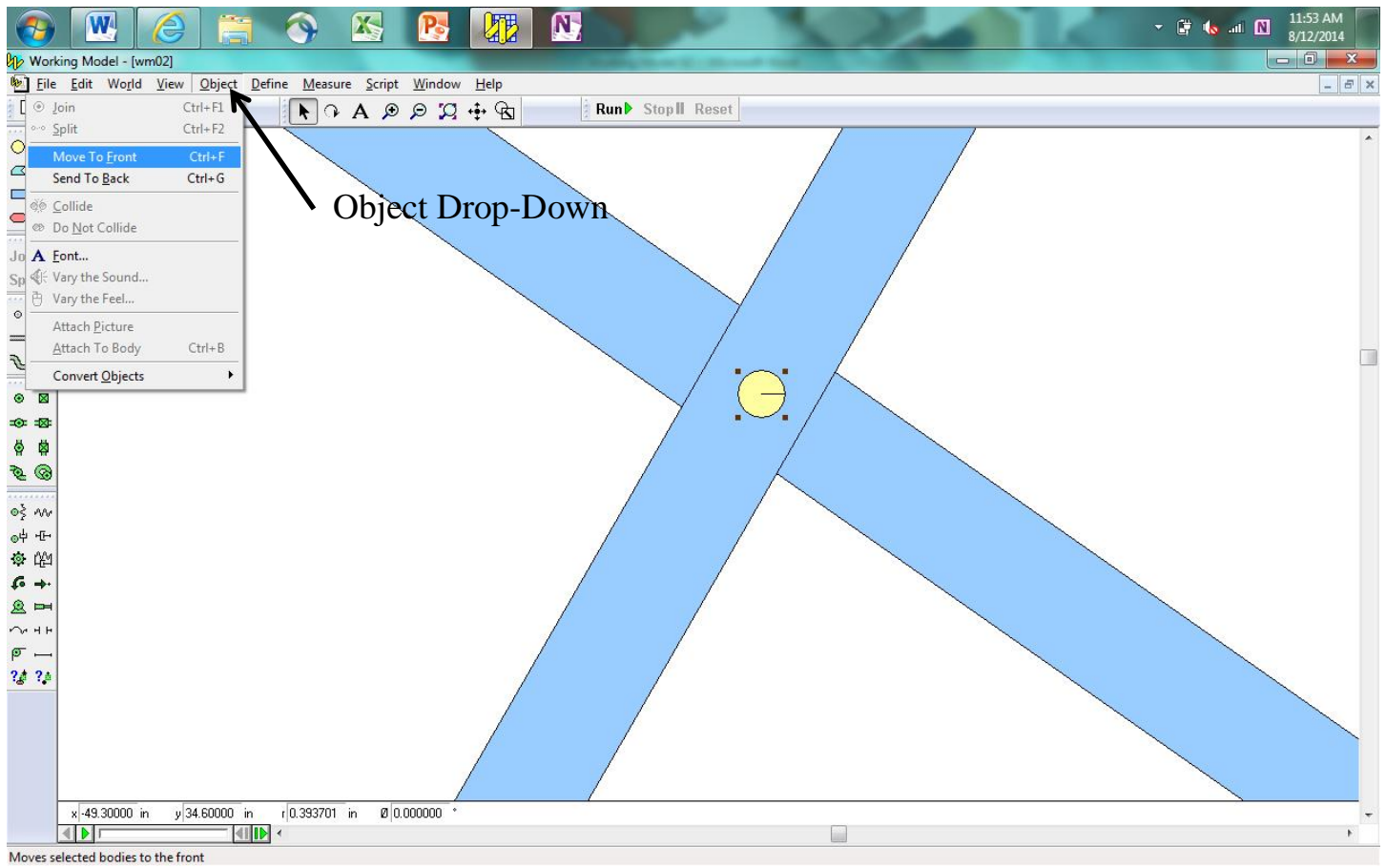
Place a small circle at point C (0,0). Create rectangles to locate points A and B.



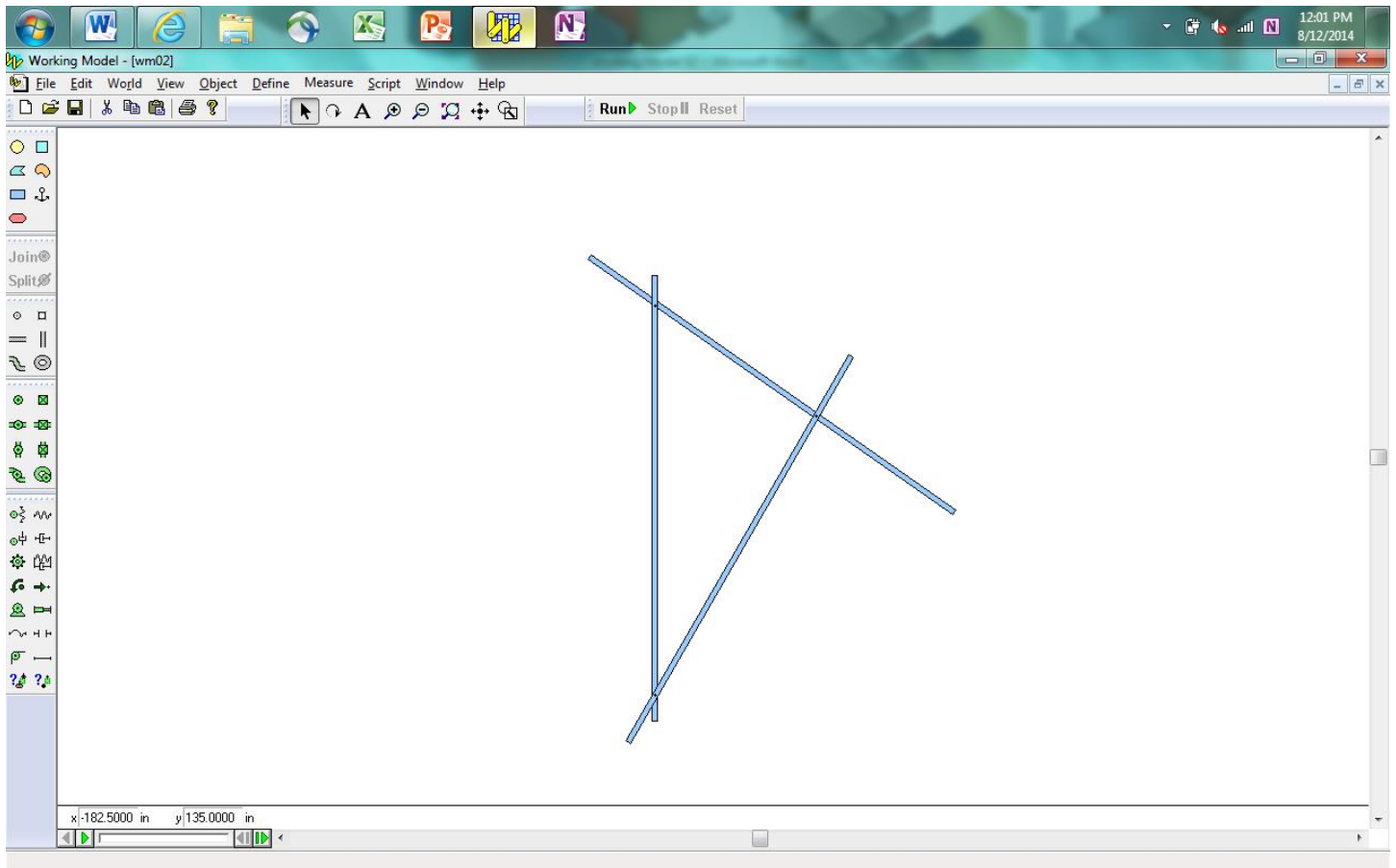
Copy and paste small circles onto the intersections of the rectangles.



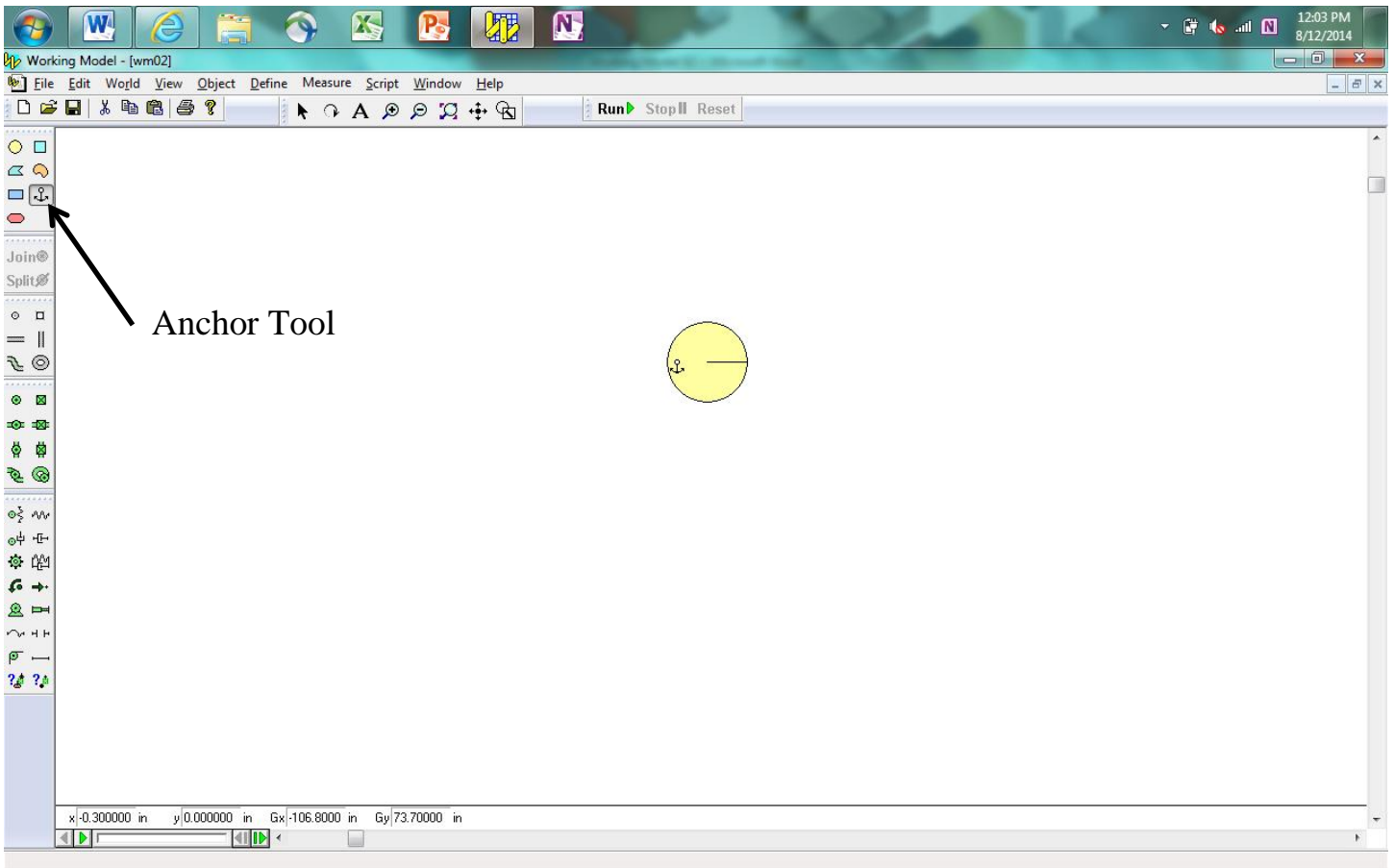
Use the Object drop-down menu to bring the circle in front of the rectangles.



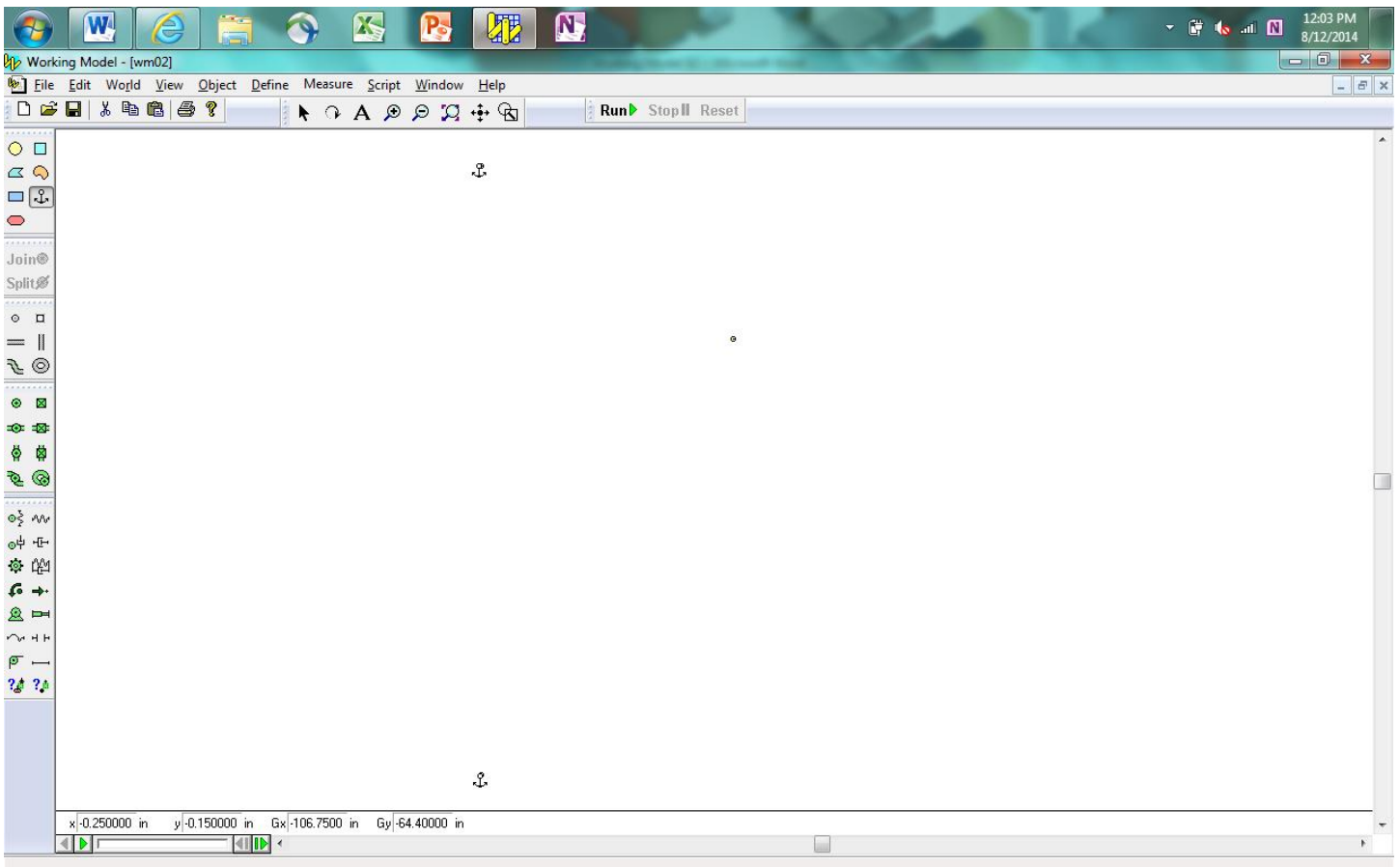
Use the Zoom to Extents tool to view the entire system.



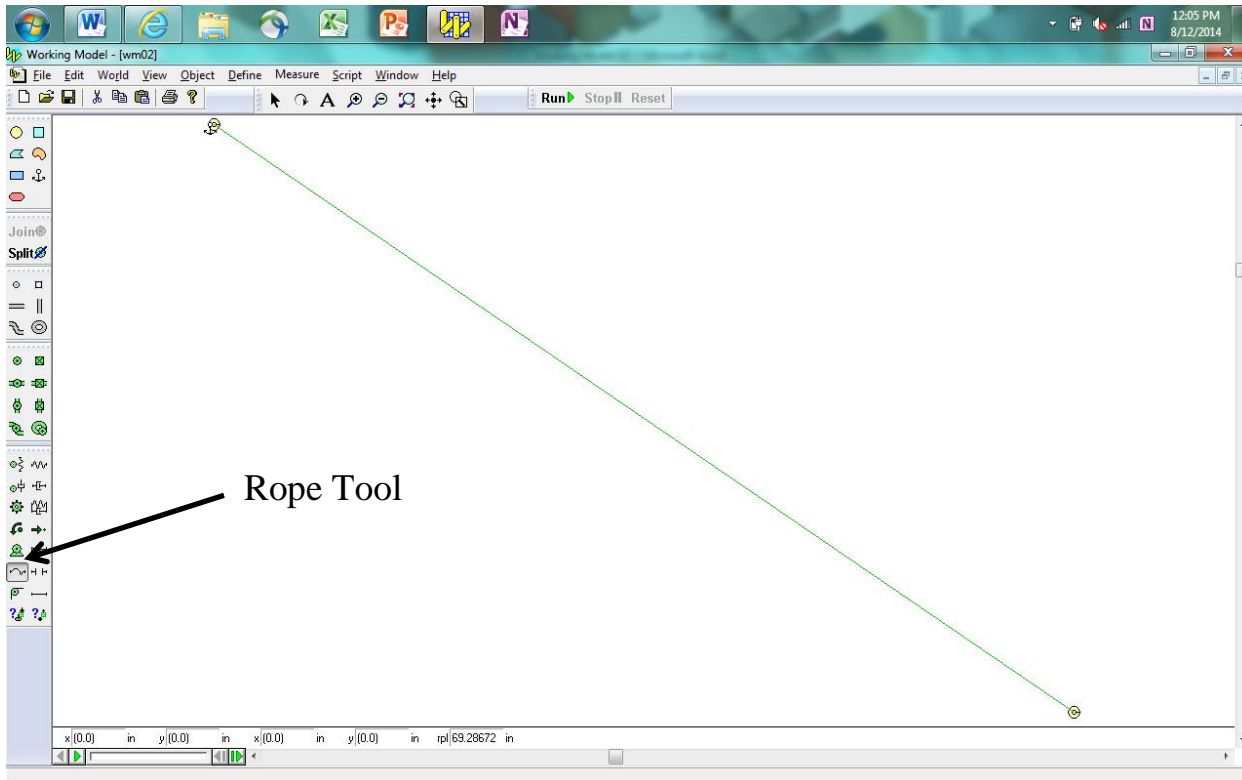
Delete the three rectangles, now that the circles are located correctly. Anchor the two circles on the left using the Anchor tool.



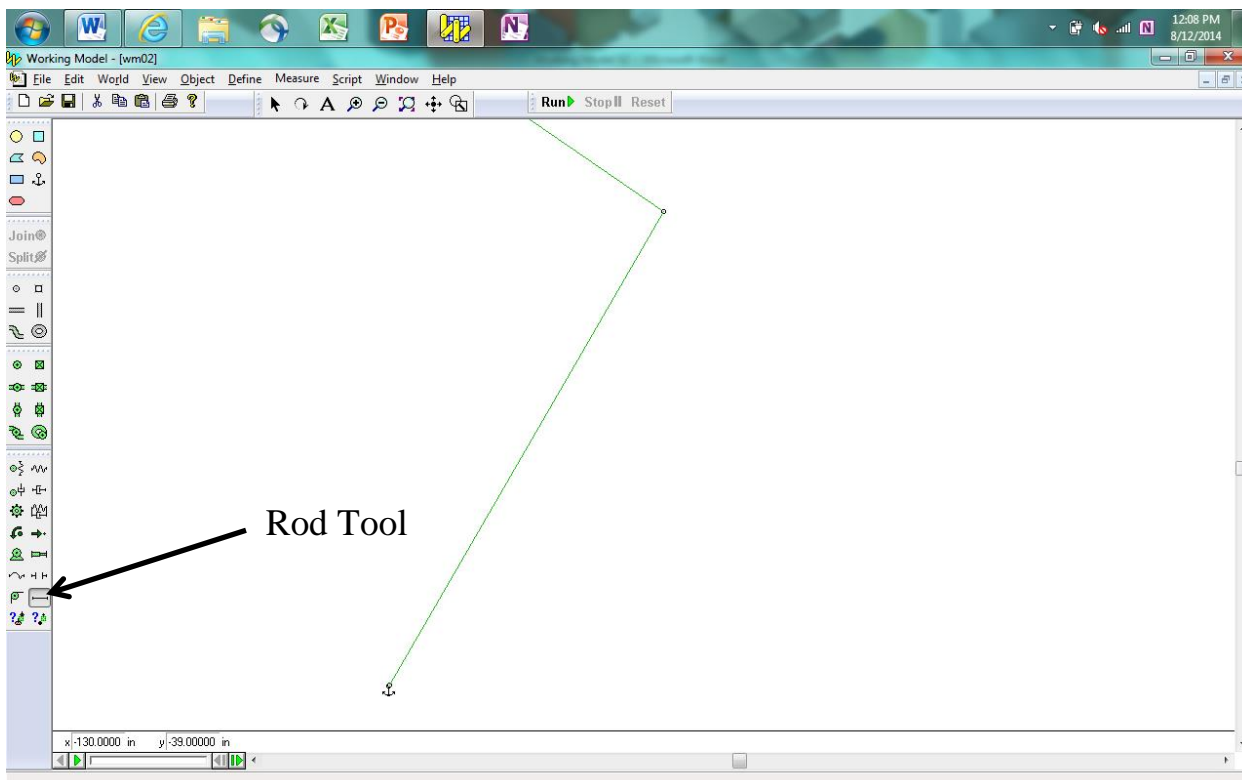
Anchor Tool



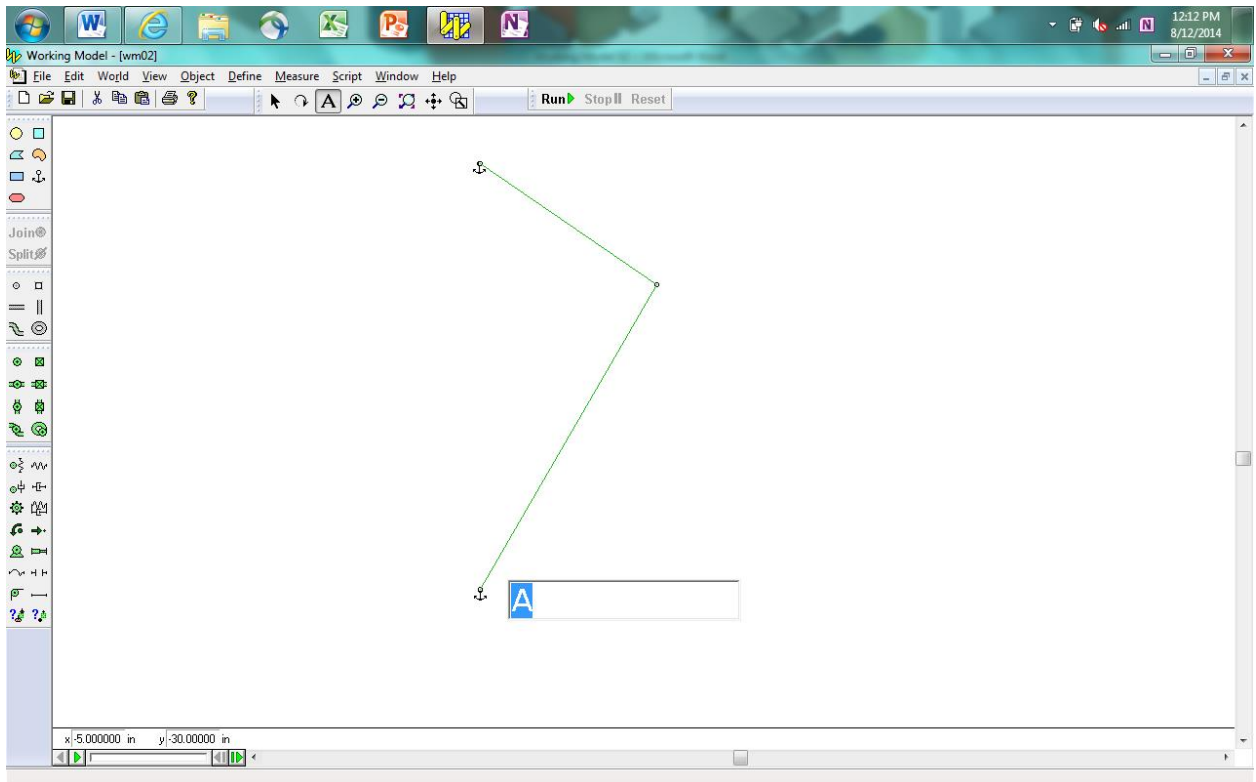
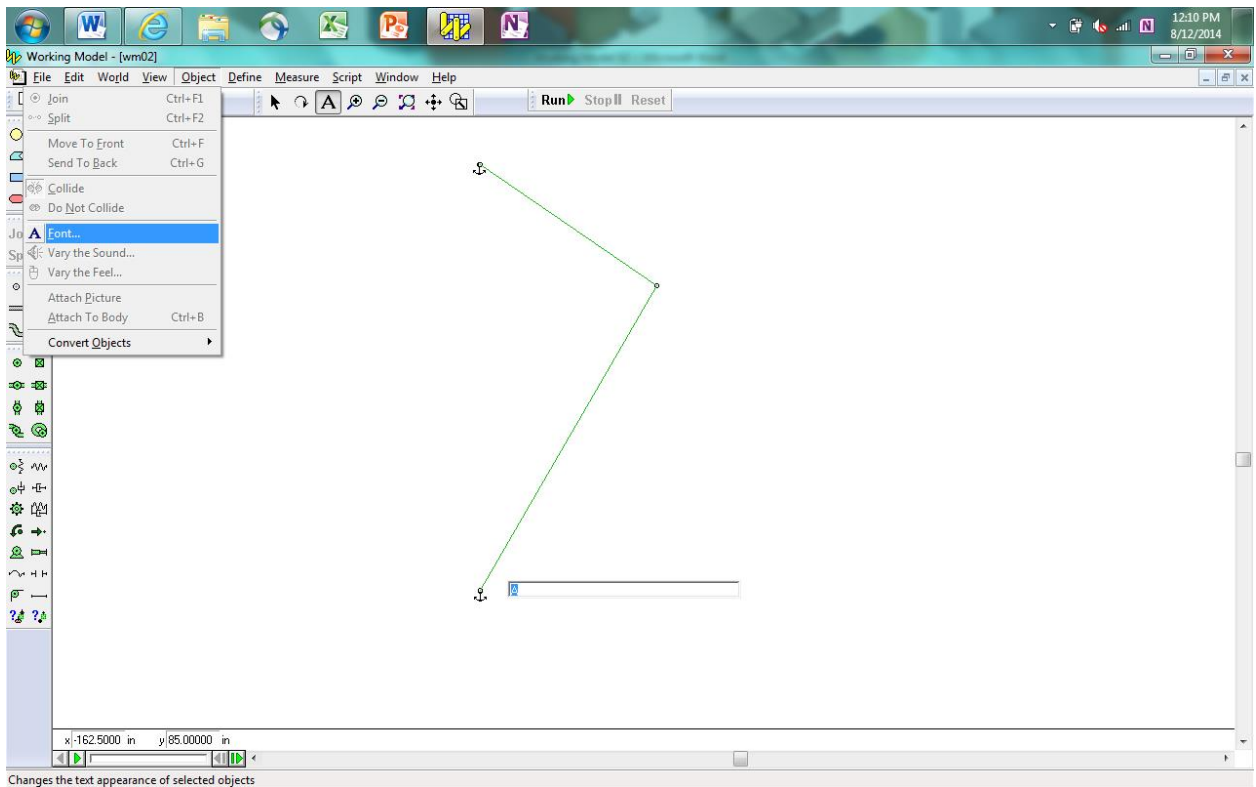
Use the Rope tool to connect the upper circle to the circle on the right. It will be easier if you zoom in on these two circles.



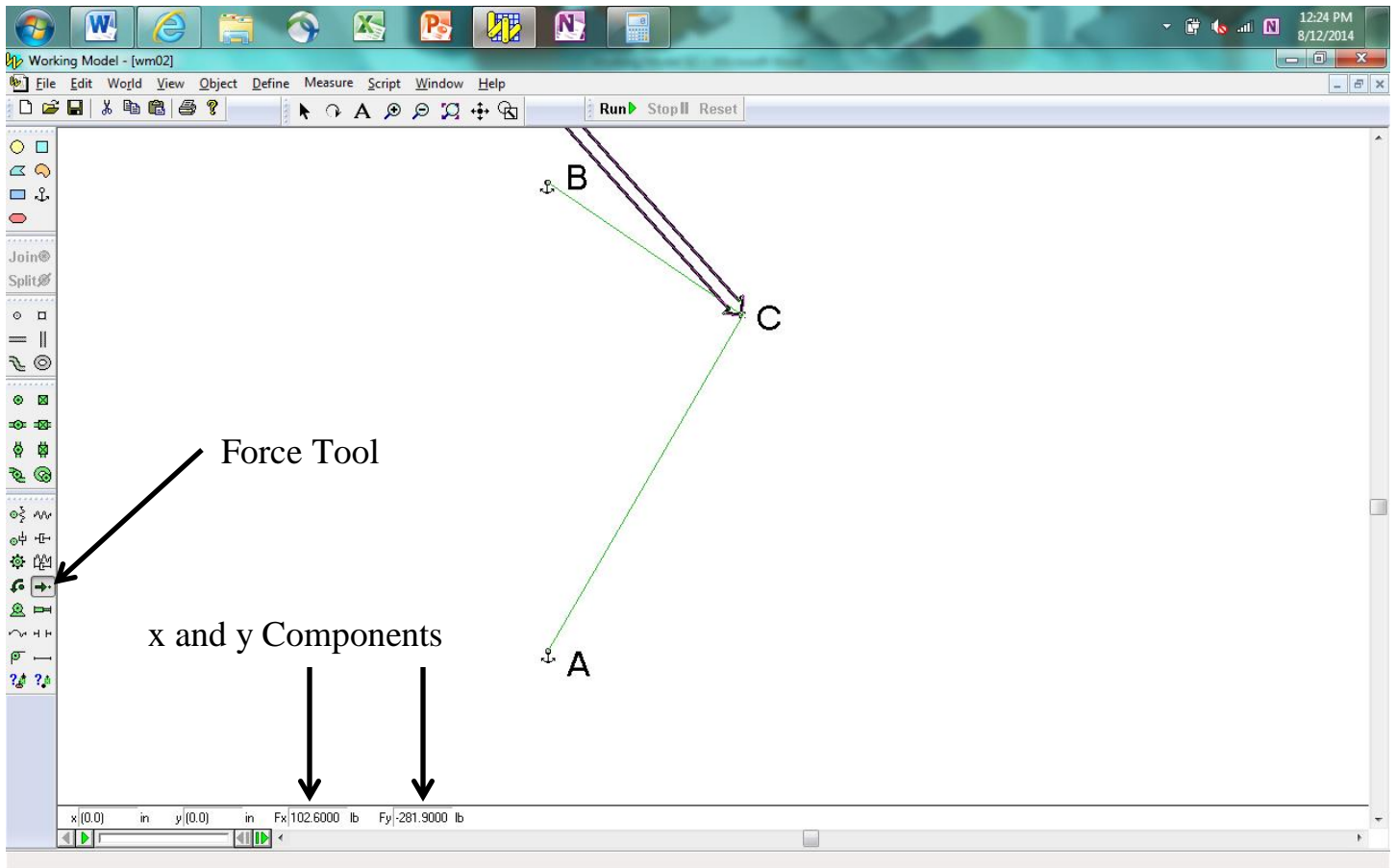
Use the Rod Tool to connect the lower circle to the circle on the right.



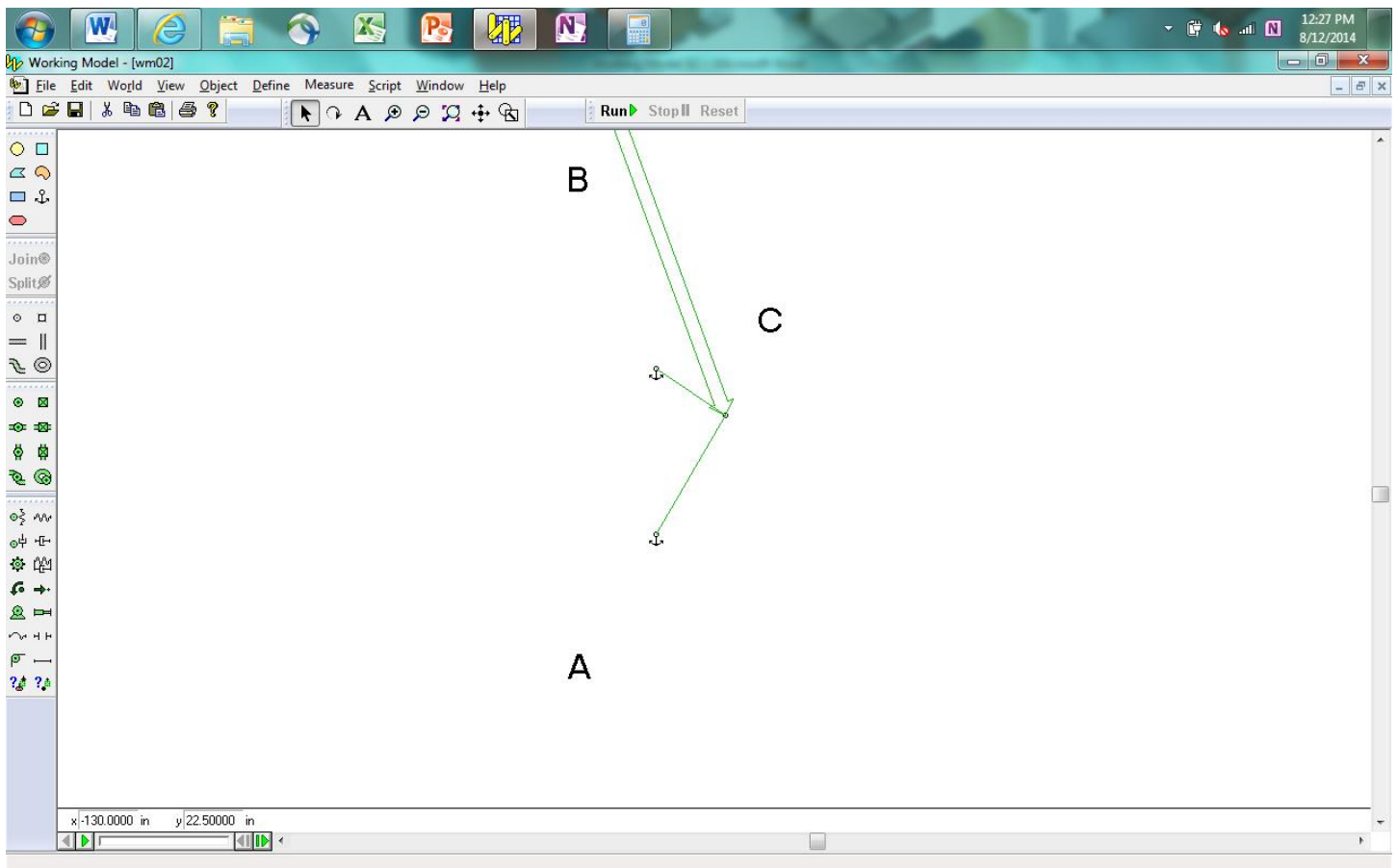
Use the Text Tool to label the three points. Select the text, and use the Object/Font drop-down menu to increase the font size of the text.



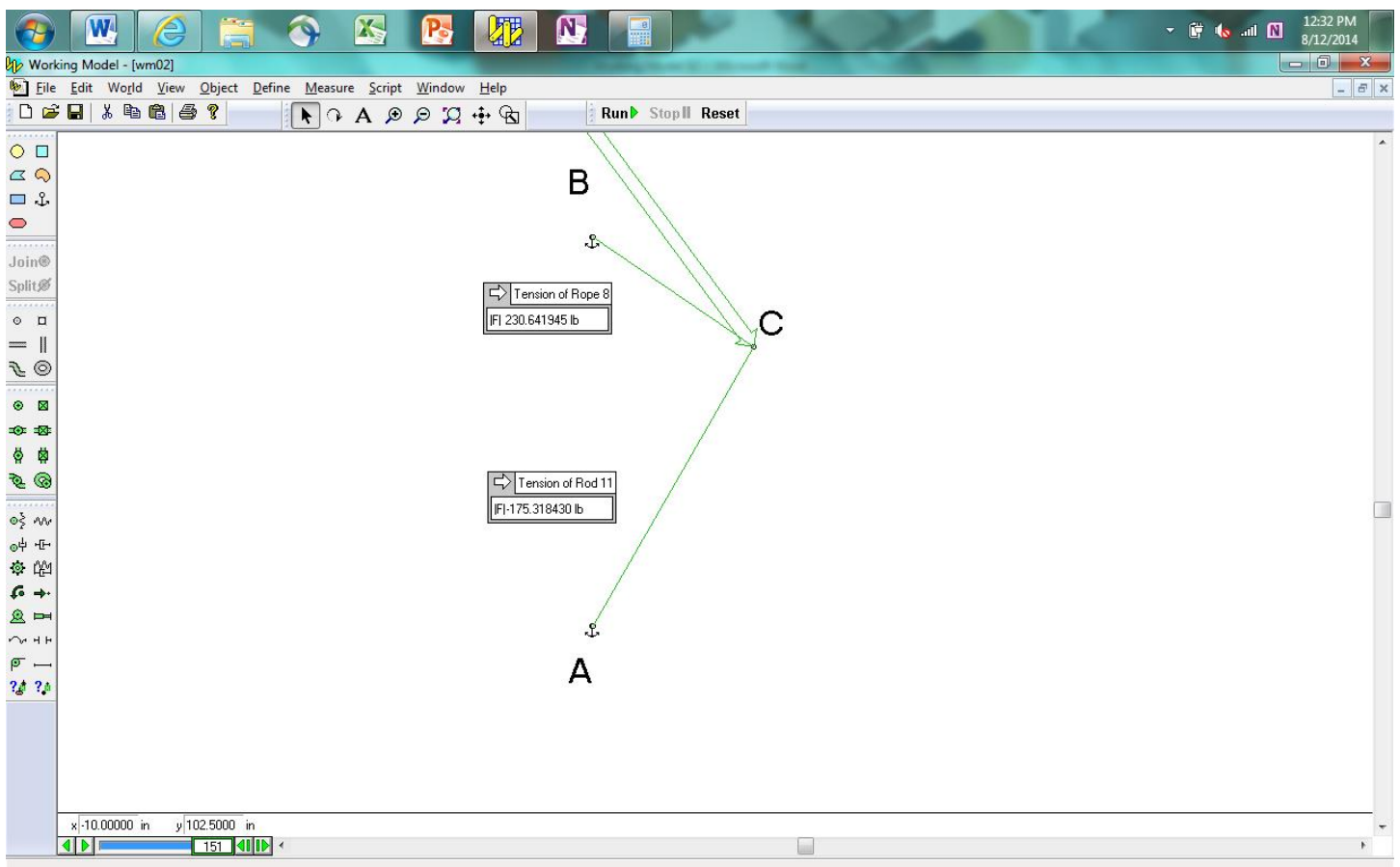
Place a force on point C using the Force Tool. Use the Force Input boxes to input the sine and cosine of the force. Make sure to account for the signs of the components.



The force may not look correct, so use the mouse scroll to zoom out until the direction of the force does not change.



Select rod AC and place a force output box on the window. Do the same for the rope BC. Run the simulation.



The negative sign on the output for rod AC means that the rod is in compression, instead of tension.

When the results of your model match those shown above, take a screenshot of the model (with numerical values showing), copy and paste it into Microsoft Word, save it as a pdf file, and submit it to the Dropbox in Pilot.