

In this exercise, all questions relate to the basic concepts of rapid positioning. The first six questions are tied to the two following illustrations:

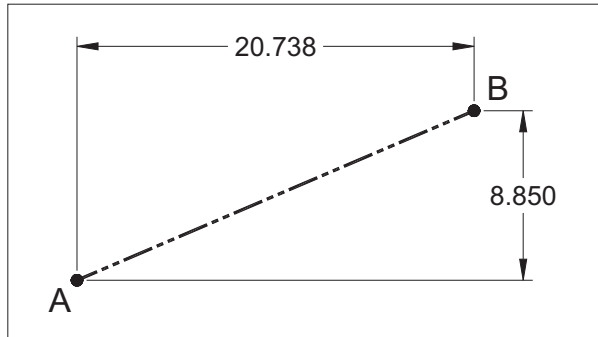


Figure 20-01-A

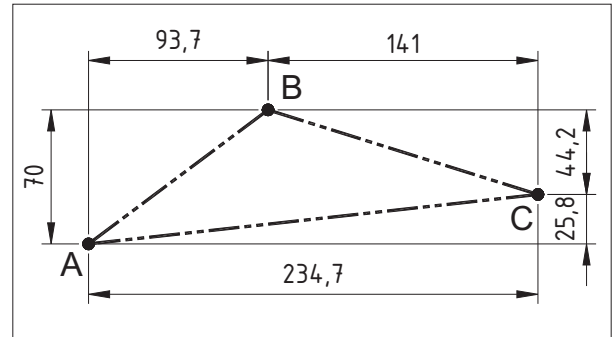


Figure 20-01-B

Questions relating to Figure 20-01-A Answers to be in 100th second accuracy	Answers
1. If both X and Y axes have a rapid traverse rate of 600 ipm, how long does it take to travel from point A to point B along the X-axis only ?	
2. If both X and Y axes have a rapid traverse rate of 600 ipm, how long does it take to travel from point A to point B along the Y-axis only ?	
3. If both X and Y axes have a rapid traverse rate of 600 ipm, how long does it take to travel from point A to point B along both X and Y axes simultaneously ?	
4. If the X-axis rapid rate is 400 ipm and the rate of the Y-axis is 350 ipm, how long does it take to travel from point A to point B ?	

Questions relating to Figure 20-01-B Answers to be in 100th second accuracy	Answers
5. If the X-axis rapid rate is 12000 mm/m and the rate of the Y-axis is 10000 mm/min, how long does it take to travel from point A to point B , then to point C and back to point A ?	
6. If both X and Y axes have a rapid traverse rate of 20000 mm/min, how long does it take to travel from point A to point C along both X and Y axes simultaneously ?	

General Questions	Answers
<p>7. In the order of axes, what is the best rapid approach towards the part, from machine zero, for a 3-axis vertical CNC mill?</p>	<p>First axis motion:</p> <p>Second axis motion:</p> <p>Third axis motion:</p>
<p>8. In the order of axes, what is the best rapid retract away from the part, to machine zero, for a 3-axis vertical CNC mill?</p>	<p>First axis motion:</p> <p>Second axis motion:</p> <p>Third axis motion:</p>
<p>9. In the order of axes, what is the best rapid approach towards the part, from machine zero, for a 2-axis CNC lathe?</p>	<p>First axis motion:</p> <p>Second axis motion:</p>
<p>10. In the order of axes, what is the best rapid retract away from the part, to machine zero, for a 2-axis CNC lathe?</p>	<p>First axis motion:</p> <p>Second axis motion:</p>
<p>11. If the time for a 100% rapid motion is 4.6 seconds, and the length of travel is 920 mm, what is the rapid rate of the machine?</p>	
<p>12. If the active cutting feedrate is 250.0 mm/min, and the length of travel is 500 mm, how long will it take to rapid this distance? (XY axes rapid rate is 10000 mm/min)</p>	
<p>13. Calculate the total travel time from the tool position in block N17 (Z is at machine zero), to the tool position in block N19:</p> <p>N17 G90 G00 G54 X23.0 Y75.0 N18 G43 Z20.0 H03 N19 G91 Z-18.0</p> <p>XY axes rapid rate is 10000 mm/min, Z-axis rapid rate is 8000 mm/min, and H03 has a stored value of -543.000.</p>	
<p>14. What will happen at the control, if this block appears in the part program?</p> <p>N55 G00 X12.75 F10.0</p>	