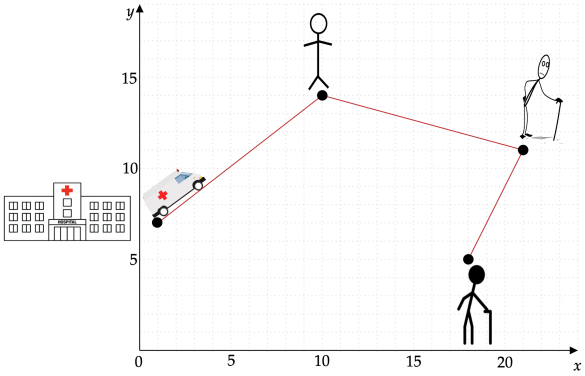
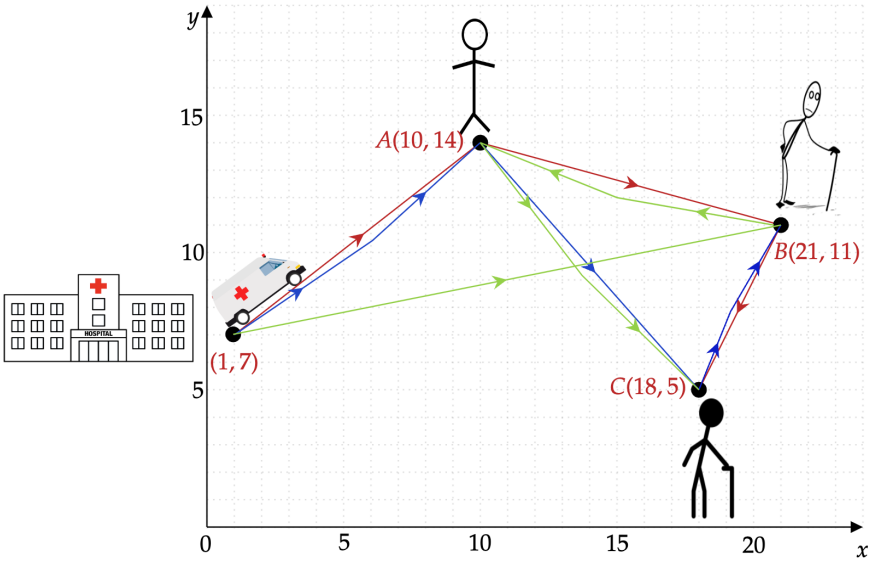
Do Now: Point-of-Care Testing

Hayat Al Sindi has made significant contributions to point-of-care testing, in which medical tests are performed near patients, instead of the patient being taken to a hospital where samples are taken to be analyzed at the lab. Point-of-care testing is fast and cheap. This worksheet focuses on optimization. For this Do Now, a hospital is sending an ambulance to patients around the city. Draw one possible path that the ambulance can take, if it must visit all patients.



Big Idea: Optimization Problem

A hospital is running a pilot program on point-of-care testing, and would like to determine its cost. The hospital sends an ambulance to each of the patients below. Draw the paths ABC, ACB and BAC between the patients and determine the average cost. Every mile the ambulance drives costs $5. If taking all the patients to the hospital and administering tests costs $60 per patient, should the hospital use point-of-care testing or not? Explain. Yes, the hospital should use point-of-care testing, because $172.33<$180, so point-of-care is cheaper than taking the patients to the hospital, as shown below.



Path	Distance (miles)	Cost
#1 (Red, ABC)	$\sqrt{(14-7)^2+(10-1)^2} = 11.4 + \sqrt{(11-14)^2+(21-10)^2} = 11.4 + \sqrt{(5-11)^2+(18-21)^2} = 6.7 = \boxed{29.5}$	$29.5*5 = \$147.5$
#2 (Blue, ACB)	$\sqrt{(14-7)^2+(10-1)^2} = 11.4 + \sqrt{(5-14)^2+(18-10)^2} = 12.0 + \sqrt{(11-5)^2+(21-18)^2} = 6.7 = \boxed{30.1}$	$30.1*5 = \$150.5$
#3 (Green, BAC)	$\sqrt{(11-7)^2+(21-1)^2} = 20.4 + \sqrt{(14-11)^2+(10-21)^2} = 11.4 + \sqrt{(5-14)^2+(18-10)^2} = 12.0 = \boxed{43.8}$	$43.8*5 = \$219.0$
Average	34.46 miles	$172.33