Question: Vivian and Noelle both leave the park at the same time, but in opposite directions. If Noelle travels five mph faster than Vivian and after 8 hours, they are 136 miles apart, how fast in mile per hour is each traveling?

If h miles was taken to be the distance covered by Noelle in 8 hours then Vivian would have covered (136-h) miles in the same 8 hours.

The average speed equates to the total distance covered divided by the time taken to cover that distance. From this, the average speed of Noelle would be (h/8) miles per hour and Vivian's speed would be ((136-h)/8) miles per hour.

From the question, Noelle is 5 mph faster than Vivian therefore, subtracting Vivian's speed from Noelle's speed should be equal to 5 mph. (h/8)-((136-h)/8)=5. Simplifying the equation would give 2h-136=40. Add 136 to both sides of the equation to give 2h=176. Dividing both sides of the equation by 2 would eventually give h=88. This would mean Noelle had travelled 88 miles in 8 hours while Vivian had travelled 48 miles which is gotten from subtracting 88 from 136.

To find the speed then for Noelle we would take the distance covered by her, 88, divided by the time taken to cover that distance, 8, to give 11 mph. For Vivian the same would apply, 48/8 = 6. Therefore, Vivian travelled at a speed of 6 mph while Noelle at a speed of 11 mph.