The original problem is below. We know that $d = r\,t$ where d is the distance, r is the rate, and t is the time. Let t_1 be the time going and t_2 be the time returning, so we know that $d = 80\,t_1$ and $d = 55\,t_2$. This means that $80\,t_1 = 55\,t_2$. We also know that the total time is 45 minutes = ¾ hour, which gives $t_1 + t_2 = 3/4$ or $t_2 = ¾ - t_1$. Substituting t_2 back into the first equation yields $80\,t_1 = 55(3/4 - t_1)$. Solving this gives $t_1 = 11/36$. Finally we know that $d = 80\,t_1 = 80\,(11/36) = 220/9 = 24\,4/9 = 24.4444\ldots$ miles.

Scenic Route

On a vacation trip, Alfred averaged 80 mph traveling from Harrisonburg to Briery Branch. Returning by a different route which covered the same number of miles, he averaged 55 mph. What is the distance between the two "cities" if his total traveling time was 45 min?