A large city has three competing newspapers, The Herald, The Post, and The Times. It has been discovered that of the people who buy the Herald on a given day, 50% will buy The Herald the next day, 40% will buy The Post and 10% will buy The Times. Of the people who bought The Post, 30% of them will buy The Herald the next day and 70% will buy The Post again the next day. Of the people who buy The Times, 20% of them will buy The Times again the next day, 70% will buy The Post and 10% will buy The Herald the next day.

A. Write & label the transition matrix for this situation. Call this matrix $P$.

B. Suppose that people in this city buy a paper every day and that on Monday 30% of the people buy The Herald, 30% buy The Post, and 40% buy The Times. Write the initial-state distribution matrix for this situation. Call this matrix $S_0$.

C. What is the percentage will buy The Post on Thursday? Indicate the matrix multiplication that you performed in terms of $S_0$ and $P$.

D. What is the percentage will buy The Herald on Saturday? Indicate the matrix multiplication that you performed in terms of $S_0$ and $P$.

E. If this trend continues indefinitely, what percentage of people will buy each paper in the long run?

F. Based on your answer to part E, which paper would you say is the favorite? Explain.