

110 WORKSHEET 9.2

NAME _____

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.

