4.1 Exercises

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Gossip Gossip is informal conversation, usually about the personal details of other people's lives. Gossip tends to spread very quickly and can be distorted and exaggerated from person to person. In Exercises 1–4, use the following information. *(See Example 1.)*

You win the lottery and share the news with three family members. You want to keep it a secret until you cash in your ticket and do all the paperwork. Somehow your secret gets out, and the number of people who hear about your good fortune grows by 25% each hour.

1. Write a formula that can be used to model the exponential growth of the gossip about you winning the lottery.

2. Use the formula from Exercise 1 to complete the table.

Time, n	Informed People
0 hr	3
2 hr	
4 hr	
6 hr	
8 hr	

3. The gossip about you winning the lottery continues to grow exponentially. How many people will know about you winning the lottery after 24 hours?

4. Suppose the gossip growth rate is changed from 25% each hour to 50% each hour. Does the second column of the table double? Explain your reasoning.

	A	B
1	**Minutes, n**	**Informed People**
2	0	100
3	3	
4	6	
5	9	
6	12	
7	15	
8	18	
9	21	
10	24	
11	27	
12	30	

DATA

5. Celebrity Wedding As a result of the Internet and modern technology, gossip spreads much faster today than it did a few decades ago. This is especially true with news from Hollywood. Suppose a celebrity has a private, unannounced wedding with 100 guests. Once the news breaks, the number of people who know about the wedding grows by 45% each minute. Use a spreadsheet to illustrate the number of informed people every 3 minutes for up to 30 minutes. *(See Examples 1 and 2.)*

6. Social Network Do you think social networking websites and blogs are effective ways to communicate or get information? Explain your reasoning.