THE RUMOR

A student at your school decides to start a rumor that the school has a serious safety flaw and is going to be shut down by the Building Department. On the first day the student tells two other students the rumor with the instructions that each of them is to spread the rumor to two more students the next day and that each of these new students is to spread the rumor to two more students on the third day, and so on. In other words, three students would have heard the rumor after the first day, four more hear it on the second day for a total of seven, and eight more hear it on the third day for a total of 15.

a. If the rumor continues to spread in this way, how many students will have heard the rumor on the 10th day?

b. If the rumor started on October 1 and if there are 8,000 students in the district, is it possible that all could have heard the rumor by October 14?

c. Construct a graph showing the number of students who could have heard the rumor by the end of each of the first 15 days a month, assuming that the rumor was started on the first day of the month.

[Source: A Guide to K-12 Program Development in Mathematics, State of Connecticut]