Spreading Rumors!

At Rumor Middle School, news spreads quickly!

When a student hears a rumor, he or she repeats it to two other students (who haven’t yet heard the rumor) in 10 minutes, and then tells no one else.

Then, the two students who just heard the rumor each repeat it to two other students (who haven’t yet heard it) during the next 10 minutes. …and so on.

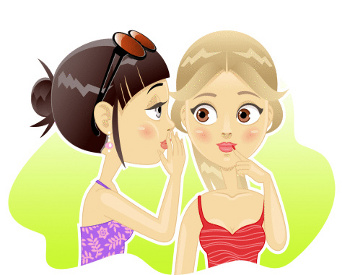
A student heard a rumor at 8:30 a.m.

1) How many students will know the rumor at 9:50 a.m.?

2) If 4,095 students know the rumor, what time is it?

Describe the pattern, and be prepared to defend your work!





Solution:

QUESTION 1

8:30 1 student

8:40 1 + 2 students = 3 students

8:50 1 + 2 + 4 students = 7 students

9:00 1 + 2 + 4 + 8 students = 15 students

9:10 1 + 2 + 4 + 8 + 16 students = 31 students

9:20 1 + 2 + 4 + 8 + 16 + 32 students = 63 students

9:30 1 + 2 + 4 + 8 + 16 + 32 + 64 students = 127 students

9:40 1 + 2 + 4 + 8 + 16 + 32 + 64 + 128 students = 255 students

9:50 1 + 2 + 4 + 8 + 16 + 32 + 64 + 128 + 256 students = 511 students

QUESTION 2

4,095 students will know the rumor at 10:20 (by continuing the same pattern demonstrated above).