

F-LE Rumors

Task

Susanna heard some exciting news about a well-known celebrity.

Within a day she told 4 friends who hadn't heard the news yet.

By the next day each of those friends told 4 other people who also hadn't yet heard the news.

By the next day each of those people told four more, and so on.

- Assume the rumor continues to spread in this manner. Let N be the function that assigns to d the number of people who hear the rumor on the d^{th} day. Write an expression for $N(d)$.
- On which day will at least 100,000 people hear the rumor for the first time?
- How many people will hear the rumor for the first time on the 20th day?
- Is the answer to (c) realistic? Explain your reasoning.



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