

NAME: _____

UNIT 3 • LINEAR AND EXPONENTIAL FUNCTIONS

Lesson 6: Building Functions

Problem-Based Task 3.6.1: Texting for the Win

Lucas's friend Isabel is performing in a singing competition. The winner of the competition will be determined by call-in votes. To help Isabel earn votes, Lucas sends text messages to 8 of his friends. He then asks each of his friends to send texts to 8 more friends, and asks his friends to ask each of their friends to send 8 texts. He is hoping this pattern will continue and that many people will receive text messages telling them to vote for Isabel. Call each set of text messages a "round" of text messages, where Lucas's messages are the first round, Lucas's friends messages are the second round, and so on. Assuming that no one sends texts to the same person, how many texts will be sent after x rounds of text messages?

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Coaching

- a. Draw a diagram to model the situation.

- b. How many texts were sent the first round?

- c. How many texts were sent the second round?

- d. Determine how many texts were sent in rounds 3, 4, and 5.

- e. Create a table showing the number of texts sent after the first five rounds.

- f. If you know the number of texts sent in round $x - 1$, how many texts will be sent in round x ?

- g. How many texts will be sent in round x ? In other words, what is the explicit definition of the number of texts sent in any round, x ?