Pyramid Patterns

Suppose you are an ancient Egyptian stone worker. The queen
has hired you to make a pyramid sculpture for her garden.

"I will give you 140 blocks of stone," she says. "Do not waste them."

The queen shows you a model using 14 blocks. The model is 3 layers high.
The top layer has 1 block, the second layer has 4 blocks, and the third layer
has 9 blocks.

A mathematician whispers to you, "You will be able to use all of the blocks
if you follow the queen's model. Just look for the pattern."

After a while, the pattern becomes clear. You build the pyramid, using the blocks,
and are richly rewarded by the queen.

1. How many layers does your finished pyramid have? _____

2. How many blocks did you use for each layer?

_____

3. Describe the pattern the mathematician was talking about.

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4. Could you make another pyramid with 200 blocks following
the same pattern? Explain.

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5. How many blocks of stone would you need to follow the
same pattern and make a pyramid

a. 8 layers high? _____   **b.** 9 layers high? _____

c. 10 layers high? _____