

Section 1.2

(#6) Understanding the problem:

Use understanding of the first 6 terms to find and describe the seventh term. We know the sixth term is 91. Determine if it is geometric or arithmetic sequence. Find expression.

Devising a plan:

Find the number of cannonballs for n^{th} term, find a relationship between all the terms to come up with n^{th} description, expression and sequence.

Carrying out the plan:

a) The seventh pyramid would have a base of 49 balls because the sequence number (7) corresponds to how many balls on each side of square base. So $7 \times 7 = 49$ then you add the number of balls found in the previous term. We said there was 91 balls in 6th term so $49 + 91 = 140$ balls in 7th term.

b) The successive figures are found by taking the term number multiply by itself and adding the number of balls in the previous term. So it is not an arithmetic sequence because not a fixed number diff.

c) $a_1 = 1$

$$a_{20} = (20)(20) + (a_{19})$$

✓
✓
✓

Looking back:

By looking at the sequences given in the book you can see that the base of the square pyramid corresponds with the sequence number

So the next sequence number is the base with 15
Sequence # (sequen #) + # of balls in previous sequence $n_2 = (20)(20) + 1 = 5$