

Vege Rows

Purpose:

The purpose of this activity is to engage students in using mathematical strategies to solve a sequence problem.

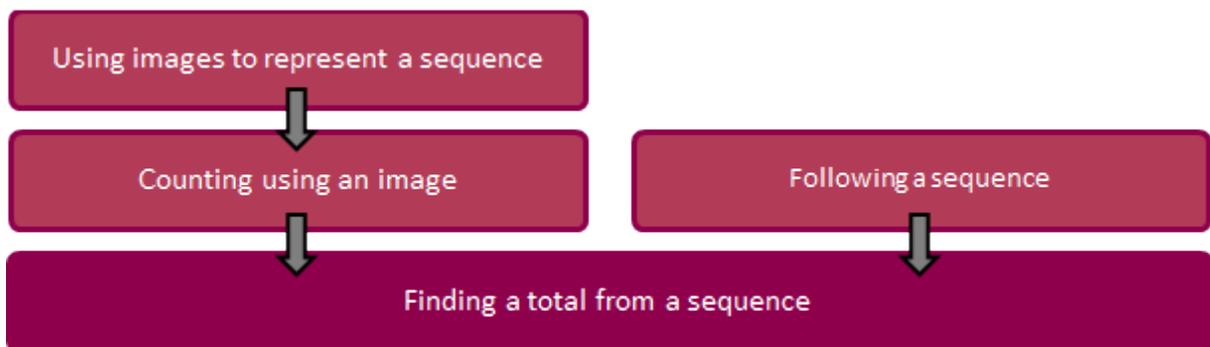
Achievement Objectives:

NA3-3: Know counting sequences for whole numbers.

NA3-8: Connect members of sequential patterns with their ordinal position and use tables, graphs, and diagrams to find relationships between successive elements of number and spatial patterns.

Description of mathematics:

The background knowledge and skills that should be established before and/or during this activity are outlined in the diagram below:



Using images to represent a sequence

Give the next three symbols in this sequence. $\rightarrow \downarrow \uparrow \rightarrow \rightarrow \downarrow \uparrow \rightarrow \dots$

Counting using an image

How many \rightarrow will there be in the first 20 terms of this sequence? $\rightarrow \downarrow \uparrow \rightarrow \rightarrow \downarrow \uparrow \rightarrow \dots$

Following a sequence

A website gets the following number of hits each day 100, 150, 200, 250, 300, ... How many hits would they expect the next day?

Finding a total from a sequence

A website gets the following number of hits each day 100, 150, 200, 250, 300, ... How many hits in total would they expect that week (7 days)?

This activity may be carried out with step by step guidance, or by allowing the student to follow their own method of solution. The approach should be chosen in sympathy with students' skills and depth of understanding.

Activity:

A gardener has a triangular patch of dirt that she wants to plant broccoli seedlings in.

If she spaces the seedlings correctly, she can fit twelve rows, with one seedling in the first row, four seedlings in the next, seven in the next and so on.

How many broccoli seedlings can she plant?



The conceptual approach

The student is able to solve a problem based on a sequence.

Prompts from the teacher could be:

1. How many plants are in each of the first three rows?
2. Use your diagram or table to look for a pattern. How many plants will be in the next row?
3. Find how many plants will be in each of the 12 rows.
4. How can you find the total number of plants? Do you need to count them up or are there other ways?
5. How many plants are there in total?

Row 1 2 3 4 5 6 7 8 9 10 11 12
Seedlings 1 4 7 10 13 16 19 22 25 28 31 34
3 3

T: I'm very interested in what you were thinking when you collected up these 35s.

S: I didn't know that it would be 35, but I could see a pattern going up in threes. I thought the pairs being one before and one after would add up to the same number, because one would be three more and one would be three less, and that ends up the same.

$34 + 1 = 35$
 $31 + 4 = 35$
 $28 + 7 = 35$
 $25 + 10 = 35$
 $22 + 13 = 35$
 $19 + 16 = 35$

$35 + 35 = 70$
 $3 \times 70 = 210$
Answer