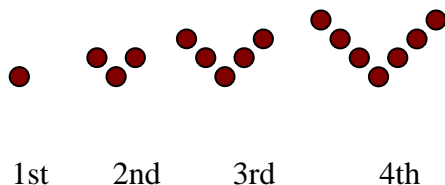


Content Strand: Algebra and Functions
 Grade: 8
 NAEP Item: Marcy's Dots
 Focus Task: Vee Numbers

Facilitator Notes: Vee Numbers

The vee numbers are 1, 3, 5, 7, The numbers are modeled in the picture below using dots.

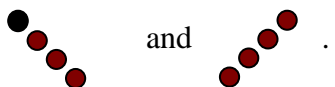


Suggested Solutions

- What is the 5th vee number? (9)
- The 10th? (19)
- The 75th? (149)
- What is the n th vee number? Explain how you arrived at the formula you used. ($V = 2n - 1$)
- How can your formula be explained with the dots?

Lead a discussion about the strategies that participants used in arriving at their formulas. Develop the idea that the model can be looked at in different ways. The following is an example:

For the 4th vee number, $2n - 1$ means 2×4 , which is represented by the two rows of dots,





But the corner dot was used twice, so subtract 1.

Lead participants in a discussion to discover other representations, for example,

$$V = 2(n - 1) + 1.$$



For the 4th Vee number,  and  ; then adding the corner dot gives

$V = (n - 1) + n:$  + 

Finally, $V = n^2 - (n - 1)^2:$

