

## **Transcript of the Video on V-Patterns**

**Tchr:** The other day, I come out of my house and ... I heard this. (Plays recording from his computer of geese honking). It was a sure sign of fall. Does anybody know what that might be? ... Jesus?

**Jesus:** It would probably be the birds that fly in a pattern, with the V-line. I forgot the name.

**Another Student:** Geese.

**Jesus:** Yeah, geese.

**Tchr:** I've got these geese right here. (Shows some cut-out geese.) Can someone come up to the board and show me how you might see them flying in the air?

**Tchr:** (Voiceover) *The goal of this lesson is to introduce students to patterns and... symbols... basic algebraic thinking. The fact that the kids said right away... they fly in a V, that really surprised me.*

**Tchr:** Say I had just three geese. Can someone come up and put them on the board, someone else, Ashley, please?

(Student comes up and places them in a V-pattern.)

**Tchr:** It would look like that, that's great

**Tchr:** What happens if other birds join? What would it look like then?

(Another student makes 2<sup>nd</sup> v-pattern with 5 geese.)

**Tchr:** So what happened to the number right there when we went from this one to this one? (Indicates v-pattern with 3 and v-pattern with 5.)

**John:** It grew.

**Tchr:** It grew? What did it grow by?

**John:** 2.

**Tchr:** What happens if another couple birds fly in? What would it look like then?

**John:** It will grow more.

**Tchr:** OK, these are called V patterns. The way the birds fly is in a V pattern.

**Tchr:** This happens to be the first V. This is number 1, OK, the first V. Another V pattern, this is the second V, we'll call it V2. And then we get this next one, this is the third V pattern. And it looks like this. How many birds are in the first V pattern? Jenny?

**Jenny:** There are 3 birds in the first V pattern.

**Tchr:** Does anybody see any pattern that's happening here? What seems to be happening? (Lots of hands go up.) Oh, everybody seems to be seeing something. Ayesha?

**Ayesha:** Two is adding to every one.

**Tchr:** Two is adding to every one? What do you mean by that?

**Ayesha:** One plus two is three.

**Tchr:** So how does it go to the second one?

**Ayesha:** 2 X 2 is 4, plus one.

**Tchr:** And where are you getting that plus one from?

**Ayesha:** The middle

**Tchr:** What do you mean, can you show us? What do you mean by the middle? (waits) Josh, can you help her out?

**Josh:** The um, two on the one side, two on the other side, that's four, plus the one on the bottom.

**Tchr:** ... does anybody see another pattern?

**Sulanette:** I see that they're all odd numbers.

**Tchr:** ... Why do you think they're all odd numbers?

**Sulanette:** Because it starts off with the V1, right, it shows 3. Well, 3 is an odd number. If it was an even number, I don't know where it should go in the V pattern, so they're all odd numbers.

**Tchr:** I think Sulanette was saying something pretty interesting. She was saying that she didn't know if it could be an even number. Can there be an even number? Can I say, if there were 84 birds, what V pattern would that be? Could there be 84 birds? ...

**Ashley:** I think that it can never be an even number because as in the V pattern of number 1, that is actually a complete V, and an even number couldn't make that.

**Tchr:** Why not?

**Ashley:** Because the V is made up of 3 birds.

**Tchr:** OK the V is made up of three birds.

**Ashley:** And if you keep going and adding two, it's made up of all odd number of birds, the V patterns.

**Tchr:** So here's the first one right here (draws line around it). And then you say that two more birds come in like that, and so it's going to be odd - why?

**Ashley:** It's going to be odd because if you add two more birds to three, that'll make five, and five's an odd number.

**Tchr:** Can someone tell me the number of geese that would be in the V number 10, the 10th pattern along?

**Oscar:** They'll be 21.

**Tchr:** And how did you find that information?

**Oscar:** I multiplied 10 X 2

**Tchr:** Why did you do that?

**Oscar:** Because I was thinking that every time the two extra birds come, they come and then they have a group ...

**Oscar:** Then I multiplied it by 2 and it comes out to 20, and then I added a 1, the one in the middle, then it came out to 21.

**Jenny:** What they are saying is that there are two geese in a pair and there are 10 pairs, so he would try and multiply it by 2 X 10 and then add the leader would be 21.

**Tchr:** .. Does anybody see another relationship on how they could have found out 10 without doing ... if they didn't know that it's times 2 plus 1. Alande?

**Alande:** I think that from the beginning, like if you put one in the top of the 3 and you keep adding two, and you keep going on and then you get to the 10th V-pattern and you get to 21.

**Tchr:** So we're going to go back to what Oscar said originally and Oscar said you take the V-number, Oscar, and what do you do with it?

**Oscar:** Multiply it by 2 and add 1.

**Tchr:** ... Does everybody agree, anybody want to try it out? Let's try it out for ... a V-number of 15. How many geese would that be? Use your geese right there.

**Ashley:** In V-pattern #3, the V means that there are three groups, or three pairs, plus that extra one. So let's say there's 15 pairs in the 15th pattern, plus this one here.

**Alande:** I think that if you like make it from the 6th V-pattern, and to the 15th, you keep adding two and going down, and when the V-pattern gets to 15, we could check it to see if it's right.

**Tchr:** If our V-number is 100, Oleg, what would our number of geese be?

**Oleg:** 201.

**Tchr:** How many people know or understand that if the V-number was 100, there would be 201 geese? John, how do you know?

**John:** 100 is half of 200, and with the leader, I just added that.

**Tchr:** So 100 X 2 plus the leader, and there you go. How many people got that? That's great.