

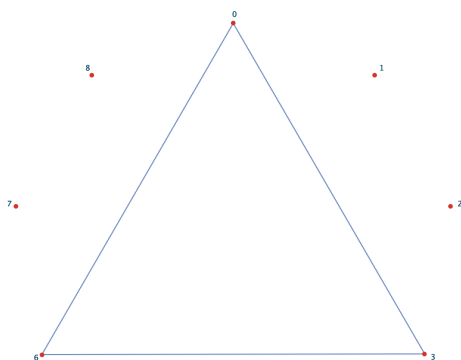
DRIMAS 2020/2021 Charlotte's CTD Blog

**Here are some definitions:* <https://docs.google.com/document/d/17Zmp3CaJBnTT5B3uDEE2-c7xRj3OnViQ04IKyNIVXpl/edit?usp=sharin>

**CTD Stands for connect the dot which is software on NetLogo that creates and circle with any amount of numbers of your choosing and create a shape of lines using that circle.*

Hi, Beautiful's!

Charlottes Triangle conjecture: Thank you so much for reading, I could never do what I love without you. you guys are the reason I get to do what I love every day! Today we have a special conjecture: If your dot number is 3 times your jump size you will get a



triangle! whoo! whoo! I originally thought of this conjecture when I was playing around in NetLogo and I just kept wondering was there a pattern in what I was studying? was there a connection between all the triangles?

So of course I decided to further research triangles like $d=9$ $j=3$. My first thought was to go through all the jump sizes and dot number combinations as possible. So that's exactly what I did, I grabbed my trusty notebook and my favorite pen and got to researching. I went through every dot num and jump size and wrote down which

works	didn't
d=3 j=1	d=3 j=3
d=3 j=2	d=4
d=6 j=2	d=5
d=6 j=4	d=6 j=3
d=9 j=3	d=6 j=5
d=9 j=6	d=7
	d=8 j=2
	d=8 j=3+4+5+6
	d=9 j=2
	d=9 j=4
	d=9 j=5+7+8+9
	d=10

number made a triangle. And when I say I went through every number I went through the numbers 1-10.

In the end, I had a bunch of yes's and no's and no lead. So I started looking for a pattern in everything.

As you can see from this

Worked	Didnt work
d=3 j=1	d=4 j=1
d=3 j=2	d=4 j=2
d=6 j=2	d=4
d=6 j=3	d=5
d=6 j=4	d=6 j=5
d=9 j=3	d=7
d=9 j=6	d=8 j=2
d=12 j=4	d=8
d=12 j=8	d=11

beautiful color-coordinated spreadsheet of all the times it worked and didn't. you can see how most of the ones that created triangles were even numbers or multiples of 3. If you were to put these numbers into NetLogo they would make

a perfect triangle. If you

Think about it makes sense since a triangle has three points and these are multiples of three.

I studied these numbers for quite a long time to find a pattern. Eventually, after days and days of staring at numbers, I got an idea. Triangles have 3 points so I looked at the numbers that were multiples of three. It happened that most of the times were multiples of three. After I found this similarity I went through all the multiples of 3 and sure enough, I got yeses!!! So I wrote my first conjecture: If your dot num is 3 times your jump size you will get a triangle.

Thank you so much for reading how I found my conjecture!

Here is my spreadsheet if you have any other questions:

<https://docs.google.com/spreadsheets/d/1jyjsfQAbuapj7uuw0w0w8pK336p4f92fl4vmK5utiwBk/edit?usp=sharing>

I hope you have a beautiful day!

-Charlotte



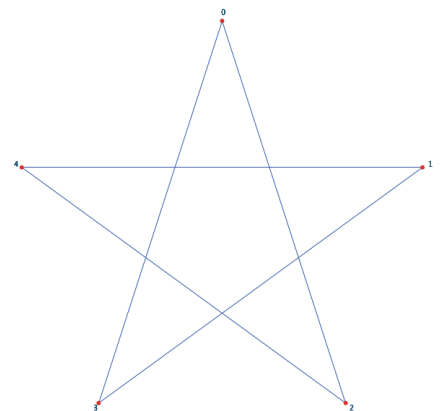
Charlotte's CTD Conjectures

By Charlotte Rice

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Hi Beautifuls!

Charlotte's star conjecture: How was your day? Did you learn anything new? you know what people always say "you learn something new every day" and I think they might be telling the truth. Today I found an awesome conjecture about stars (not the ones in the sky!) I discovered that if you have an odd number as your dot number and an odd number for your jump size then you will get a star. I know so awesome right!?



you wanna know my secret to figuring out a conjecture, Research! And this time was no different! To discover this conjecture about stars I first

d	j	Does it work?
5	3	yes
5	7	yes
5	8	yes
5	12	yes
5	13	yes
5	17	yes
5	18	yes
5	22	yes
5	23	yes
5	27	yes
5	28	yes

discovered this conjecture with an OBSERVATION! I noticed when I was working with 5 as my dot num there was a pattern. I discovered: If your Dot number is 5, and your jump size starts at 3 if you add 4 to your number the next two numbers will make stars. But This was not a conjecture.

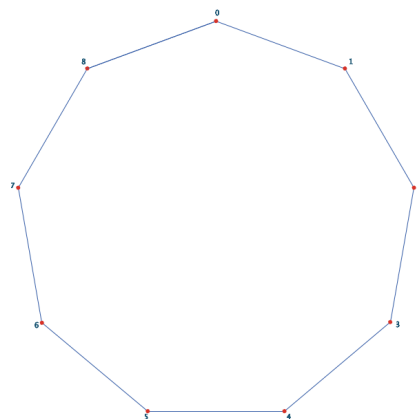
So I spent well over a week trying to find a pattern I tried looking into to multiples and connections between the numbers. Eventually, I was officially stuck. That is until I finally starting looking at other numbers that might have connections (now looking back that was kinda a duh moment).

So I started looking into other numbers. I went through a lot of numbers and then looked back and realized that almost all of the dot numbers that were making a star happened to be odd numbers and then looked back at all of my jump size numbers and discovered that I worked for all of the odd numbers but didn't work for all of the even numbers.

d	j	Star?
9	1	no
9	2	yes
9	3	no
9	4	yes
9	5	yes
9	6	no
9	7	yes
9	8	no
9	9	no shape
6	1	no
6	2	no
6	3	no shape
6	4	no
6	5	no
6	6	no shape
4	1	no
4	2	no(line)
4	3	no
4	4	no
4	5	no
4	6	no
4	7	no
4	8	no

After I had this Light bulb moment, I was able to put together a conjecture which I will tell you again because I know you forgot: If you have an odd number as your dot number and an odd jump size, you will get a star. Thank you so much for reading! your support means the world to me! until The next time!

-charlotte



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