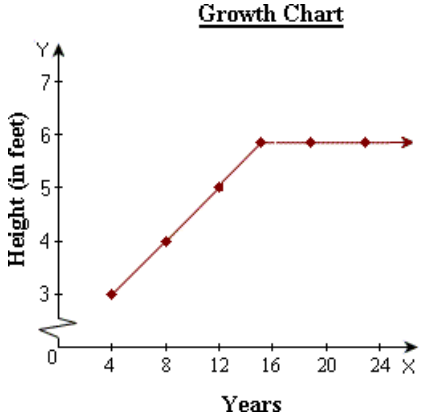
Hints and Tips to writing a good Math Exploration

- Start with an introduction that includes your exploration question.
- Then state your aim and rationale.
  Aim: What is the point of your exploration?
  Rationale: Why did you choose this topic? What do you hope your reader will learn?
- Create an outline to help you organize your ideas and streamline your information.
- While doing your research, keep a record of each website you visited and include the date.
- If you need to round any decimal, consider the degree of accuracy. For your topic, how many decimal places are relevant? For example, while a difference of one tenth may not matter if you are talking about speed of a locomotive, it could matter if you are talking about the amount of milligrams of morphine administered to a patient.
- Use ≈ for any rounded values.
- Include page numbers for easier reference later on.
- Only use mathematics that YOU understand. Khan Academy or YouTube could help. If you still can't figure it out, it's probably too hard for this level of math.
- Ask and answer personal questions ("I wonder if…, What if…)?. Make conjectures (an opinion or theory without sufficient evidence or proof).
- Use proper math vocabulary (~~plug in~~ →substitute) and notation (~~x^2~~ →x^2). Use Equation Editor or similar for mathematical expressions and equations.
- Consider the historical and global perspectives of your topic.
  Historical perspective: things that have happened with your topic in the past
  Global perspective: the links between your own life and others throughout the world
- Discuss the implications of your results. (What do they mean? Why are they important? How do they affect your life?...)
- Discuss your results in the context of your topic, not just in general terms.

Ex:



~~*The graph levels off at x > 15*~~
The graph levels off after the age of 15 because that is the average age when girls tend to reach their maximum height.

- Discuss possible limitations and/or extensions of your topic.
  Limitation: a restriction, a defect or failing
  Extension: an occurrence in another area
- Make connections between your topic and different disciplines and/or areas of mathematics?
- Add "your voice" to your paper.

IB MATH SL **CHECKLIST FOR WRITING YOUR DRAFT EXPLORATION**

Communication & Mathematical presentation

□ Did you start with an introduction?

□ Do you have a clearly written aim and rationale?

□ Does the entire paper focus on the aim and avoiding irrelevance? Don't go off on a tangent.

□ Does the writing flow nicely?

□ Is your exploration coherent? (logically organized, understandable, having clarity)

□ Did you include graphs, tables and diagrams at appropriate places and not attach them all at the end?

□ Have you had someone (not a student in Math SL) edit your paper?

□ Did you cite all references in your bibliography and acknowledge direct quotes appropriately?

□ Did you use appropriate mathematical language and representation? (No computer notation *, ^, etc)

□ Did you define key terms where necessary?

□ Did you use appropriate technology?

□ Did you think about the degree of accuracy? (For your topic, how many decimal places are relevant?)

□ Did you end with a conclusion and relate it back to your aim and rationale?

□ Do you have page numbers?

Use of mathematics

□ Did you explore unfamiliar math, or apply familiar math to a new situation?

□ Did you create mathematical models for real-world situations, if this applied to your topic?

□ Did you apply problem-solving techniques?

□ Did you look for and explain patterns, if this applied to your topic?

Reflection

□ Did you ask questions, make conjectures and investigate mathematical ideas?

□ Did you consider the historical and global perspectives of your topic?

□ Did you discuss the implications of your results? (What do they mean? Why are they important?...)

□ Did you consider the significance of your paper?

□ Did you look for possible limitations and/or extensions of your topic?

□ Did you make links between your topic and different fields and/or areas of mathematics?

Personal engagement

□ Did you ask and answer personal questions ("I wonder if…, What if…)?

□ Did you try to think independently and creatively?

□ Did you address why you think your topic is interesting or why it appealed to you?

□ Did you present mathematical ideas in your own way (as opposed to copy someone else' theory)?

□ Did you try to add "your voice" to the work?

□ Did you relate the results to your own life?