Data Modelling 3-Act-Task Outline

Task and Focus Question	Important Mathematical Details
How are the Covid-19 modelling projections created? **Why do models from different sources show different projections?**	*Students will need a basic understanding of graphs.*

Lesson Outline	Notes

Act One: The Question	
● Students will watch the video or slideshow of a text conversation between friends. At the end there are two discrepant graphs of Covid modelling predictions for the next few months. ● Students will be asked what they notice or what they wonder about the situation that has been presented. ● Discuss the students observations and questions as a group. Narrow and focus the question towards: "How do experts create Covid projections?" and "What are possible reasons for these graphs being different?"	*Students should notice that the two graphs are the same until January.* *Students should notice the first graph projects a sharp increase in Covid cases while the second graph projects a slow decrease in Covid cases.* *Some possible student questions:* *Why are the graphs different?* *What is the source of each graph?* *Who made each graph?* *How were the graphs made?* *When were the graphs made?*

Act Two: Gathering Information	
● Students will be split into smaller groups to consider the focus question. They will discuss what they know and what further information they will need to answer the question. ● Students will ask for the information they feel they need to answer the question. They will be given links to Sources with answers to their questions. ● Students will discuss the information provided and formulate an answer to the focus question that will be shared with the rest of the class.	*Some possible student questions:* **What factors are considered when making projections?** *Public Health Agency of Canada* *(Primarily Slides 9 - 14)* *The Institute for Health Metrics and Evaluation COVID-19 projections* **What factors cause the projected cases to increase or decrease?** *BBC Explanation of the Reproductive Number Covid R rate: What is the R number and why does it matter?* **Which variables are considered most important?**

Act Three: Connecting Models ● Student groups will share their findings with the class and explain their reasoning. ● After student groups have shared, hold a brief discussion of the connections between models, estimates, and real world situations	*Students should have found the most significant factor in the projections is physical distancing and limiting contacts* ***Possible explanations for the different models:*** *Matthew's model was released later and would likely include the rise in Covid cases after Christmas. It may also have included the emergence of more infectious variants.* **Summary Discussion:** *Models and projections are based on the information available at a given time.* *Models and projections must be revised as new information becomes available, such as the emergence of variants that are more infectious or community outbreaks*
Extension and Follow-Up ● Call to action: Have students consider their role in lowering Covid transmission and brainstorm ideas to help their local communities. ● For grades 11 and 12, have students explore what mathematical functions are involved in these models. ● Have students create and share their own models and projections based on the data in your local community.	***Possible Action Items:*** *Write letters to the community leaders supporting measures that lower transmission.* *Asking experts in the community about local transmission and public health measures.* *Write letters to Dr. Henry asking for clearer links, data transparency, etc*