

MINISTRY OF EDUCATION
CHRISTMAS TERM
SEPTEMBER 2020

GRADE 11
SUBJECT: MATHEMATICS

WEEK 6: LESSON 1

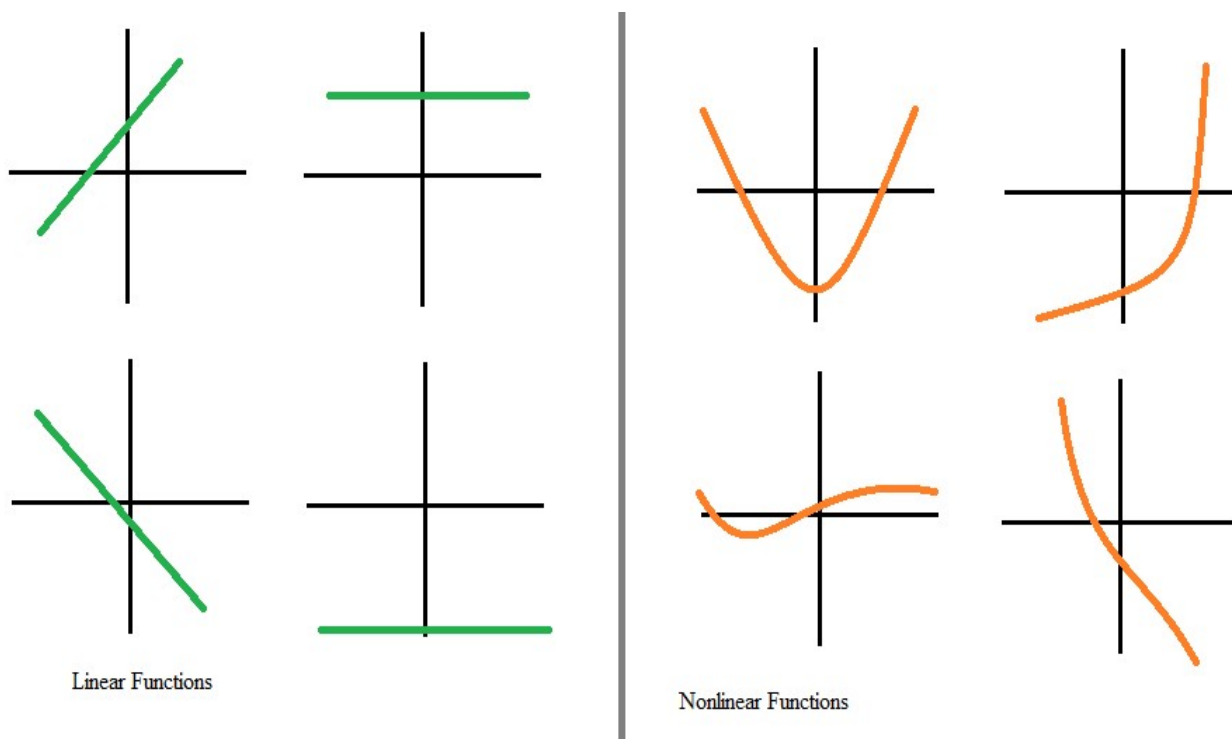
TOPIC: RELATIONS FUNCTIONS AND GRAPHS

SUB-TOPIC: Non-linear functions.

OBJECTIVE: Draw and interpret the graphs of non-linear graphs.

Content:

The **graph** of a **linear** function is a line. Thus, the **graph** of a **nonlinear** function is **not** a line. **Linear** functions have a constant slope, so **nonlinear** functions have a slope that varies between points. ... **Nonlinear** functions are all other functions. An example of a **nonlinear** function is $y = x^2$



ACTIVITY

Laura and Lucas each receive birthday gifts in the form of money from their grandparents. Laura's grandparents give her \$10 multiplied by her age for every birthday. On her first birthday she receives \$10, on her second birthday she receives \$20, on her third birthday she receives \$30, and so on.

Lucas's grandparents give him \$1 on his first birthday, and then they double the size of the gift for each consecutive birthday. On his first birthday he receives \$1, on his second birthday he receives \$2, on his third birthday he receives \$4, and so on.

Make a table showing the amount of the birthday gift for the first 10 birthdays for each person.

Calculate the slope for each person using birthdays 1 and 2 and birthdays 9 and 10.

Questions

- Do the slopes for Laura remain constant over these times?
- If you choose two more sets of points to calculate the slopes for Laura, is the result the same?
- Do the slopes for Lucas remain constant over time?

Make a graph showing the amount of the birthday gift for the first 10 birthdays for each person.

Questions

- Is the graph for Laura linear or nonlinear?
- Is the graph for Lucas linear or nonlinear?
- How much money did Laura receive on her 10th birthday?
- How much money did Lucas receive on his 10th birthday?
- On what birthday does the gift for Lucas surpass the gift for Laura?

Reference: <https://www.math.uh.edu/~bekki/NonlinearFunctions.pdf>