



# NCEA Math Lesson Plan

**Grade:** 8

**Subject:** Mathematics

<p><b>Domain:</b> Properties of Functions</p>
<p><b>Standard Number(s) and Description:</b> 8.F.2 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change.</p>
<p><b>Vocabulary to be Highlighted:</b></p>
<p><b>Mathematical Practices (#):</b> 1. Make sense of problems and persevere in solving them. 4. Model with mathematics. 5. Use appropriate tools strategically. 7. Look for and make use of structure.</p> <p><b>Essential Questions:</b> How can algebra describe the relationship between sets of numbers? How do we use the collection, organization, interpretation, and display of data to answer questions? How can the representation of data influence decisions? How can we use a linear equation in two variables to model and solve real-life problems? How would we sketch a graph of this function? What is the general equation of a linear function? How can we recognize a linear equation?</p>
<p><b>Materials/Tools (include technology):</b> Map of Israel on graph Internet access Handouts for Lesson 2 Graphing calculators Paper Pencils</p>
<p><b>Connections to Other Math Domains:</b></p>
<p><b>Connections to Other Subject Areas:</b> Religion</p>
<p><b>Catholic Identity Component:</b> Students will use cities from the Bible on a coordinate plane to generate data for a function table and a line to compare properties of the two functions.</p>

Resources (attachments):

Lesson 1:

Learn Zillion

[https://learnzillion.com/lesson\\_plans/5196-compare-two-functions-by-analyzing-an-equation-and-a-graph#fndtn-lesson](https://learnzillion.com/lesson_plans/5196-compare-two-functions-by-analyzing-an-equation-and-a-graph#fndtn-lesson)

Tables to Compare Linear Equations

<http://www.docstoc.com/docs/841578/Tables-to-Compare-Linear-Equations%5B1%5D>

Review of Functions

<https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions>

Rent A Car

<http://math.rice.edu/~lanius/Algebra/rentacarja.html>

Lesson 2:

<https://wikis.uit.tufts.edu/confluence/pages/viewpage.action?pageId=33416542>

### **Activities/Timeline:**

Lesson 1 (see resources above)

1. Review vocabulary related to functions.
2. Review functions and the core lesson on how to analyze an equation and a graph. Show the video from Learn Zillion.
3. Perform the activity found on Docstoc.com: compare two linear functions of cost of copies by writing an equation from a story. Organize the solutions in a function table. Decide when each company would be the best buy.
4. Complete the Rent A Car activity: compare options of renting a car by making a tale and graphing.

Lesson 2 (see resource above)

Practice analyzing functions from equation, graph, table, and story. Students will be given one function and will need to find other students who share the same function but in a different form. Students will then list three reasons why the functions are the same and present their findings to the class.

Lesson 3

1. Practice rate of change in word, graph, table, and equations form.
2. Use the map of Israel in Jesus' time (below) on a coordinate plane to identify Cana (site of the wedding feast and Jesus' first public miracle), Capernaum (Jesus' base in Galilee, site of the synagogue where Jesus taught, and the home of Peter, James, Andrew, John, and Matthew), and Bethsaida (likely location of the feeding of the 5,000). Construct a function table using these points.
3. Using the same map of Israel on the coordinate plane, draw a line to connect the towns of Nazareth (home of the Holy Family) and Tiberias (where Jesus revealed Himself to his disciples). Find the rate of change of the table and the graph.
4. Compare the rate of change of the function table and the graph. Discuss results with the class. Explore reasons for results that may not be the same.

### **Formative Assessment (what to look for, how/when to look):**

Observe class work

### **Summative Assessment:**

Map of Galilee

