

Lesson 2  
Megha Sunny  
12 October 2012

## **Graphing functions in MATLAB**

This Lesson gives an introduction to graphing different functions in MATLAB. Students will first plot the parent function and then observe how the graph of function is different from parent function when we do direct variations, vertical, horizontal and diagonal translations in the parent function. Students will learn about multiple plotting and assigning different line styles to each data set by passing line style identifier strings to plot. The graphs with different colors and line styles help students to see the shifting of graph from the parent function.

## Science Lesson Plan

**Teacher: Megha Sunny**  
**Period: Lesson Plan 2**  
**Date(s): October 12 2012**

<b>SETTING THE STAGE</b>	
<u>Essential Question</u>	How to solve problems in MATLAB? In this lesson we will introduce plotting different functions in MATLAB
<u>Content Objective(s)</u> (Student-friendly)	Understand how to plot functions in MATLAB and visualize the graphs of different functions and the translations that can be done on that graph.
<u>Connection to previous or future lessons</u>	This is the second lesson in MATLAB. An introduction to graphing functions in MATLAB was provided in the first lesson.
<u>Critical Thinking Questions</u>	How to plot a function in MATLAB? How the graph of a function is different from its parent function?
<u>Key Vocabulary</u>	Linear, Absolute, Quadratic
<u>Materials Needed/Safety</u>	Laptops, MATLAB, Pencil, Paper
<b>ACTIVE INSTRUCTION</b>	
<ul style="list-style-type: none"> <li>• Launch (Engage)</li> </ul>	Students will turn on the laptops and open MATLAB in it. Working with laptops will grab the student's attention.
<ul style="list-style-type: none"> <li>• Investigation (Explore)</li> </ul>	
<b>TIME FOR REFLECTION</b>	
<ul style="list-style-type: none"> <li>• Summarization (Explain &amp; Extend)</li> </ul>	Students will learn about graphing in MATLAB and see the graphs of different functions.
<ul style="list-style-type: none"> <li>• Assessment (Evaluate)</li> </ul>	Observation Listening Questions

**Science Lesson Plan**

<ul style="list-style-type: none"><li>• Homework</li></ul>	None

# Graphing Functions in MATLAB

---

Linear Functions:

Parent Function	Function	Explain how the graph of function is different from parent function
$y=x$	$y+2=x+4$	
	$y+2=2(x+4)$	
	$y+2=-2(x+4)$	
	$y+2=-2(x+4)+5$	

Absolute Value:

Parent Function	Function	Explain how the graph of function is different from parent function
$y= x $	$y= x+4 -2$	
	$y=2 x+4 -2$	
	$y=-2 x+4 -2$	
	$y+2=-2(x+4)+5$	

Quadratic Functions:

Parent Function	Function	Explain how the graph of function is different from parent function
$y=x^2$	$y=(x+4)^2-2$	
	$y=2(x+4)^2-2$	
	$y=-2(x+4)^2-2$	
	$y+2=-2(x+4)+5$	

Practice Problems:

Predict the appearance of the graphs of each function. Then use MATLAB to test the accuracy of each prediction.