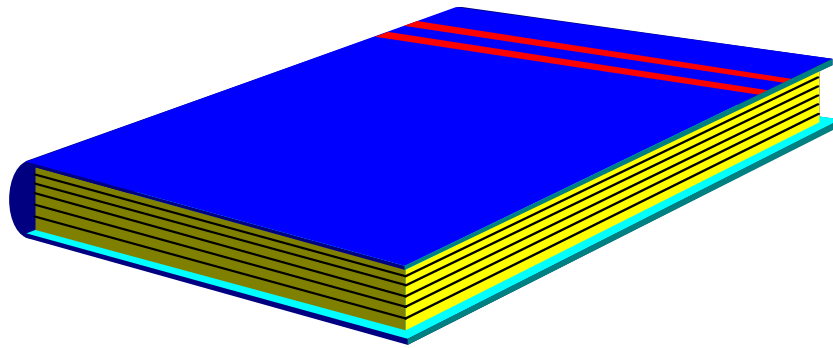


Idea Packet

The Function Book



Developed by:
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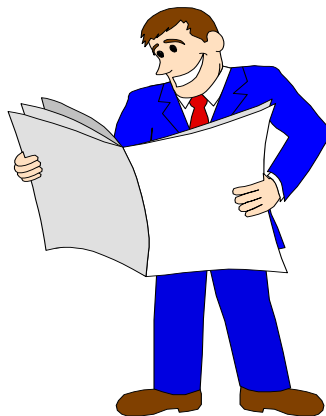
from

Design and Architecture Senior High
4001 NE 2nd Ave.
Miami, FL 33137
305-573-7135
Mail Code: 7081

For information concerning IMPACT II opportunities, such as interschool visits, Adapter, and Disseminator grants, please contact:

Dade Public Education Fund
4299 N 36th St., Suite 203
Miami, Florida 33166
305-884-2172
E-mail: impact11@bellsouth.net

Table

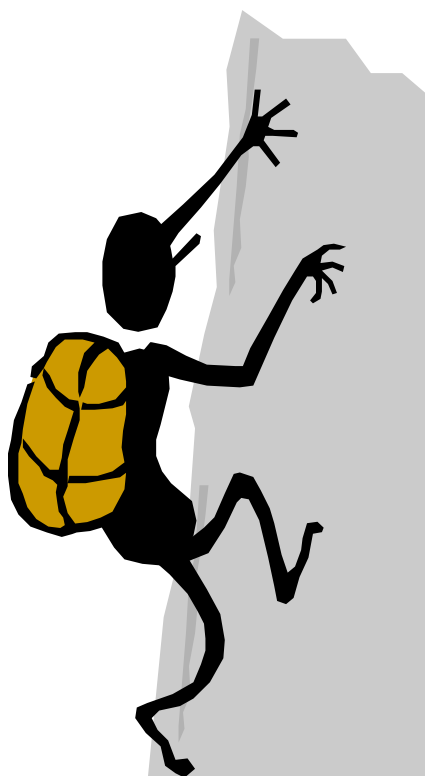


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GOALS

Goals

The Function Book provides the students with a different way to review the functions learned during the year.

Allowing the students to use their creativity in designing the book gives them a sense of ownership of the work. Students get more involved and excited when they can contribute their own ideas.

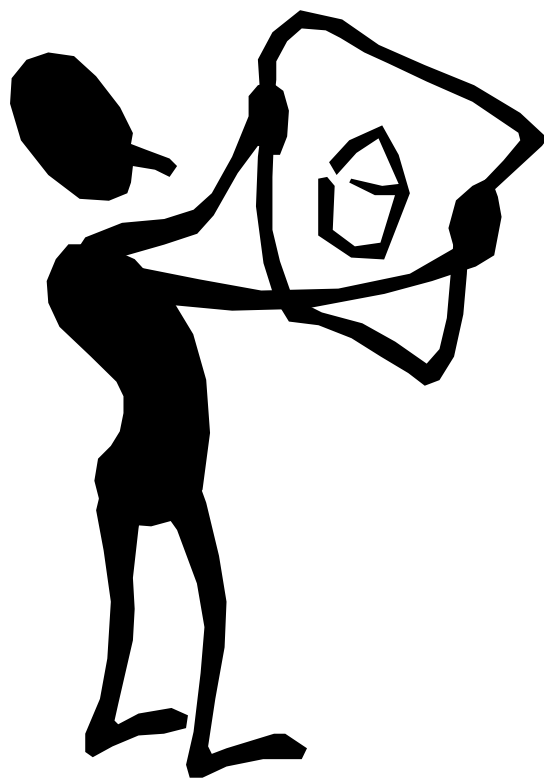
Individualized learning and a better comprehension takes place when students have to do their own research of the definitions, graphs and applications of each function.

By summarizing it all in an organized written form, students reinforce their knowledge and build the self-confidence and experience in communicating information to others.

Brings math to life. Math is more relevant when students see it in their lives and make real-world connections.

Provides for alternative assessment of the student's comprehension of the work. Allows students who don't test well, to show their understanding of the functions in their own way.

OBJECTIVES



Objectives

The objectives of the functions book are based on the Algebra 1 and higher level courses.

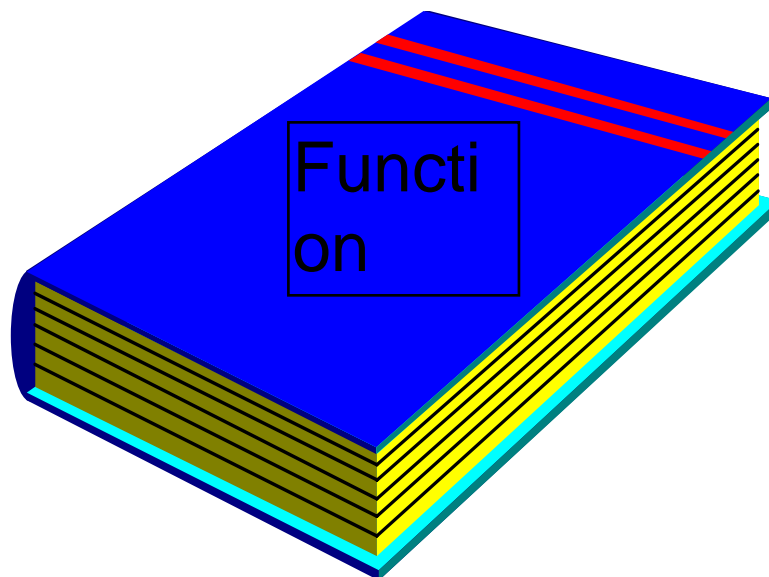
From the *Sunshine State Standards*:

- The Student describes, analyses, and generalizes a wide variety of patterns, relations, and functions.

From the *Competency-Based Curriculum* competencies for the specific Mathematics course of the Miami-Dade County Public Schools.

- Identify and graph different functions and determine (when applicable):
 - domain and range
 - inverse
 - asymptotes and intercepts
 - phase shift and vertical shift

PROJECT



DESCRIPTION

The Function Book

Project description

The Function Book is a book written and put together by each student according to his/her own design.

Each student will design and create a book that includes definitions, descriptions and graphs of the various functions learned throughout the year. The student will personalize his/he own book by choosing a theme, a special cover or a different type of binding that will make it unique. The book can be of any size or shape. The book needs to include certain requirements, however it may be organized in any order or form the student wishes.

Functions requirements vary depending on the subject: Algebra 1, Algebra 2, Analysis of Functions or PreCalculus.

Instructions of the project are handed out to students. The following is a sample instructions form.

Final Project
The Function Book

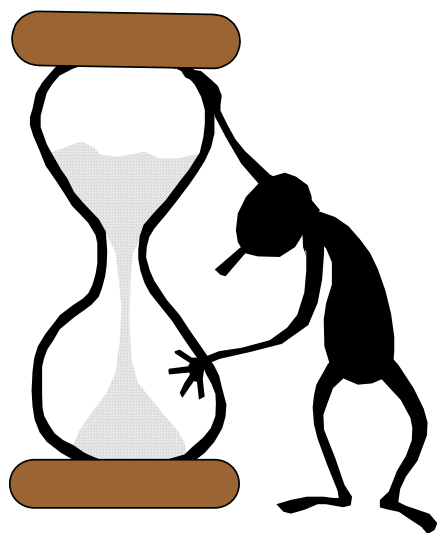
The purpose of this book is to summarize all the different mathematical functions you have learned. Please include a book cover and back. You may decorate and design your book any way you like and use any format or order. Graphs may be done by computer or manually.

The book must include definitions and examples of:
function
inverse
composite
domain
range
asymptote
x-intercept
y-intercept
horizontal shift
vertical shift

For each function:

Specify the general form
graph
specify domain and range
describe special characteristics
provide a “real world application problem”

Due date _____



Time

Line

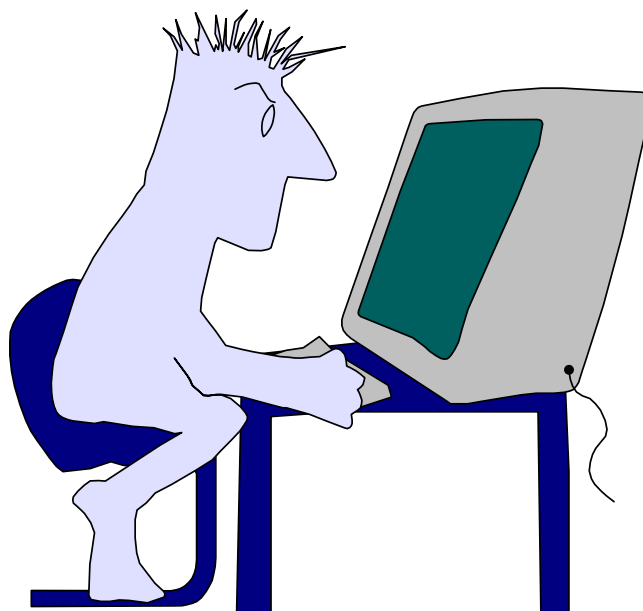
Time Line

The instructions for the function book and the due date should be towards the end of the year since it is intended to be a review. However, students should be informed of this requirement since the first day of school. This allows them time to think and prepare as they learn about each function during the year.

Class time should be given for students to share ideas and information with each other. Also other text books and resources should be available for students to research information in class.

If available, students could be allowed to use the internet for research as well. Also a trip to the media center could be part of the research time.

Technology



Technology can be a great asset in working with functions. The graphing calculator is a great tool and can be used to print graphs with the proper attachments for the computer. Texas Instruments calculators have a graph link that can be used. To get more information from Texas Instruments, call 1-800-TI-CARES.

Most computers also offer a choice for graphs. The PowerMac has a built-in graphing calculator that can be used to print graphs. If a graphing calculator is not built into the computer, there are various software programs that can be used for graphing equations.

Computer use should be encouraged, however we must make sure that all students have equal access to it. Many students have computers and printers at home, but not all. If you are going to expect the project to be done on the computer, you need to make sure

that every student has access to a computer. They also need to have enough time in school to properly enter and print all the information.

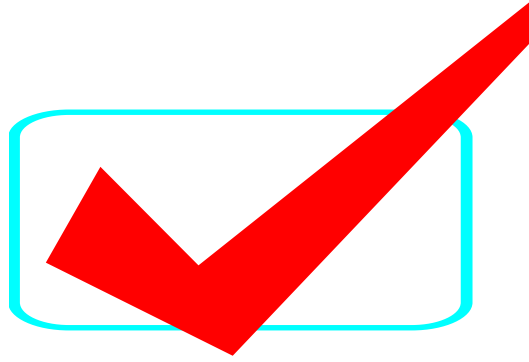


Class Presentation

It is very important to allow students to show their finished product to the rest of the class and discuss their thoughts and ideas of the how and why of their books.

Students are proud of their work and like to show it to others. Also knowing that it is going to be presented in front of the class gives students an incentive to deliver a better product.

It would also be a good idea to take pictures or video of each student's presentation to share with other classes and to show the following year.



Grading the Function Book

The following pages can be used for grading the Function Book. It includes the components that need to be included for Appearance and Presentation and for Content.

There is a separate content grading sheet. This is more specific for the content and for each function. It can be expanded to include all the other functions as well.

The Function Book Grade

Student Name _____

Class _____

Period _____

Date turned in _____

Grading Components:

Appearance and Presentation:

Cover design _____

Originality _____

Neatness _____

Presented information

clearly _____

Organization _____

Content:

definitions _____

functions included _____

Final Grade _____

The Function Book

Content Evaluation

Student Name _____

Points given for each required correct definition:

	points
function	_____
inverse	_____
composite	_____
domain	_____
range	_____
asymptote	_____
x-intercept	_____
y-intercept	_____
horizontal shift	_____
vertical shift	_____

Linear Function

general form	_____
graph	_____
domain and range	_____
special characteristics	_____
“real world application problem”	_____

Quadratic Function

general form	_____
graph	_____
domain and range	_____
special characteristics	_____
“real world application problem”	_____

Sample

Pages

from



Student's

Books

These samples pages are copies from the books of several students. Some were all done on computers, others were done on computers with graphs drawn by hand and others all by hand. These were printed and/or pasted on different types and colors of papers and they all vary in size and in bindings. These include samples of:

- Front cover pages
- Index and Glossary
- Basic concepts functions
- Definitions
- Functions
 - Linear
 - Quadratic
 - Rational
 - Exponential
 - Logarithmic

