

MATHEMATICS COMMON CORE CURRICULUM UNIT 3
North Smithfield Public Schools

TITLE OF UNIT: Functions **COURSE OR GRADE:** 8

DATE PRESENTED: _____ **DATE DUE:** _____ **LENGTH OF TIME:** 19 Days

OVERVIEW OF UNIT:

Students will define, evaluate, compare and graph linear equations.
 Students will determine a line of best fit for the graph of a function.
 Students will compare multiple representations of functions.

**ESSENTIAL QUESTION, PROMPT,
 PROBLEM/UNIT**

Functions

STANDARDS: Common Core Math Standards – Grade level domains 6-8

Ratios and Proportional Relationships RP	The Number System NS	Expressions and Equations EE	Functions (grade 8) F	Geometry G	Statistics and Probability SP
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Mathematical Practices grades K-12

- | | | | | |
|---------------------------------------------------------|--------------------------------------------------------------------|----------------------------------------|---------------------------------------|----------------------------------------------------------|
| 1. Make sense of problems and persevere in solving them | 3. Construct viable arguments and critique the reasoning of others | 5. Use appropriate tools strategically | 7. Look for and make use of structure | 8. Look for and express regularity in repeated reasoning |
| 2. Reason abstractly and quantitatively | 4. Model with mathematics ★ | 6. Attend to precision | | |

FOCUS MATHEMATICS STANDARDS: see curriculum _____ for specific standards, e.g. **(CUT AND PASTE FROM MAP)**

- Define, evaluate, and compare functions. **8.F.1, 2, 3**
- Investigate patterns of association in bivariate data. **8.SP.1, 2, 3, 4**

Applied Learning Standards:
 problem solving communication critical thinking research reflection/ evaluation

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ENDURING UNDERSTANDING: (CUT AND PASTE FROM CURRICULUM – ESSENTIAL KNOWLEDGE)

PRIOR KNOWLEDGE:

□

□

STUDENT OBJECTIVES, SKILLS and/or NEW KNOWLEDGE: (CUT AND PASTE FROM CURRICULUM – ESSENTIAL KNOWLEDGE)

F.1

- A function is a rule that assigns each input exactly one output.
- A graph of an equation is also the graph of that function consisting of inputs and the corresponding outputs.

F.2

- Functions can be represented algebraically, graphically, numerically in tables or by verbal descriptions.

F.3

- Linear functions are represented by the equation $y=mx+b$ and a straight line on a graph.

SP.1

- Data that is collected using two variables is called bivariate data.

SP.2

- Scatterplots can suggest a linear association/ relationships.

SP.3

- If a scatterplot suggests a linear relationship, then a line of best fit can be drawn and a linear equation can be created to model the relationship between the bivariate data.
- An equation of a line of best fit can be used to interpret and solve problems in the context of bivariate measurement data.

SP.4

- Scatterplots and two-way frequency tables are used to show patterns of association and relationships between bivariate categorical data.

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ACTIVITIES, PRODUCTS, PERFORMANCE, and ASSESSMENTS: see curriculum introduction

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|---------------------------------------|----------------------------|----------------------------------------------------------|---------------------------------------------------|
| 1. Application to real world problems | 6. Graphic organizers | 14. Problem/Performance based/common tasks | 18. Technology |
| 2. Creating charts/collecting data | 7. Graphing | 15. Real-life applications involving graphing | 19. Summarizing and note-taking |
| 3. Collaboration - interpersonal | 8. Interviews | 16. Represent numbers | 20. Tests and quizzes |
| 4. Conferencing | 9. Journals | 17. Rubrics/checklists (mathematical practice, modeling) | 21. Writing genres Arguments/ opinion Informative |
| 5. Exhibits | 10. KWL charts | | |
| | 11. Mathematical Practices | | |
| | 12. Modeling ★ | | |
| | 13. Oral presentations | | |

Lesson	Sections	Resources	Timeframe
Ordered Pairs	2.1	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	1
Graphing on a coordinate plane	2.2	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	1
Functions	2.4	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	2
Quiz			
Scatter Plots	9.1	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	2
Linear Best Fit Models	9.2	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	2
Linear Functions	9.3	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	2-3
Comparing Multiple Representations	9.4	HMH Mathematics <i>Explorations in Core Math Grade 8</i>	2
Quiz			
Application- With a partner we will give 32 pre-cut cards and have partners form the original matching groups of 4. *Follow up question if necessary.	Pg 185	Jossey-Bass CC <i>Hands-On Activities</i>	1
Review/ Practice			3
Unit Assessment			2

HIGHER ORDER THINKING SKILLS: Web's Depth of Knowledge 2 – 4 or Bloom's Taxonomy

Web's Depth of Knowledge

- skill/conceptual understanding
- strategic reasoning
- extended reasoning

Bloom's Taxonomy

- apply
- analyze
- synthesize/create
- evaluate

ADDITIONAL RESOURCES: see curriculum for specifics

- HMH Mathematics *Explorations in Core Math Grade 8*
- Jossey-Bass Teaching the Common Core Math Standards with Hands- On Activities
- Kuta Software Website

VOCABULARY (CUT AND PASTE FROM CURRICULUM)

- HMH Mathematics *Explorations in Core Math Grade 8*
 - Chapter 4 Pg 46
 - Chapter 9 Pg 338

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OBJECTIVES:

Lessons	Sections	Objective
Ordered Pairs	2.1	Students will determine if an ordered pair is a solution of an equation.
Graphing on a coordinate plane	2.2	Students will locate and name points on the coordinate plane.
Functions	2.4	Students will represent functions with a table or graph.
Quiz		
Scatter Plots	9.1	Students will construct and interpret scatter plots. Students will draw a line a best fit.
Linear Best Fit Models	9.2	Students will write the equation for a line of best fit and use it to make predictions.
Linear Functions	9.3	Students will draw the graph of an equation and determine if it is linear.
Comparing Multiple Representations	9.4	Students will use tables, graphs, and equations to compare functions.
Quiz		
Application	Pg 185 (JB)	Students will recognize functions that are represented in different ways.
Review/ Practice		
Unit Assessment		

- **Assessments:** see curriculum introduction
 - **Formative**

 - **Summative**

SUGGESTED PROBLEMS: (CUT AND PASTE FROM CURRICULUM TEACHING PROBLEMS OR ASSESSMENTS)