

## **Module Outline and Pacing Schedule**

As participants enter they should walk around and read information on the eleven posters scattered around the room.

### **I. INTRO (15 minutes)**

- a. Introductions/housekeeping
- b. What themes did you notice on the posters posted around the room?
- c. Goals of workshop (slide 2). Participants will:
  1. Develop an understanding of the progression of the CCSS standards within the function domains for Grade 8 & Algebra I
  2. Develop a deeper understanding of the function concept to inform our instruction
  3. Focus on the types of experiences students should have in grades 6 – 9 in order to fully “grasp” the concept of function
  4. Explore resources for rich classroom activities aimed at developing function sense that incorporate the Standards for Mathematical Practice

### **II. Overview of Function domains (slides 3 - 9) (15 minutes)**

- a. New Domain Functions – Grade 8
- b. High School Conceptual Categories/ shifts from GLE’s/GSE’s

### **III. What does it mean to have “Function Sense” (90 minutes)**

- a. Group brain-storming for web of ideas /gallery walk (slide 10 – 12)
- b. Function Sense Indicators (Slides 13– 20)

- Representations of function (8.F.2, F-IF.8-9)
  - **ACTIVITY:** Bus Stop
- Ability to apply concept to real-world settings
  - **ACTIVITY:** Matching Distance-Time graphs
- c. Implications for instruction (slides 21 – 23)
- d. Critical Foundations for Developing Function Sense\* (slide 24)
  1. Number Sense /Patterns & Sequences **F-IF.3, F-BF.2** (slides 25-32)
  2. Operation Sense (slides 33 – 34)
  3. Variable & Expression Sense (slides 35 - 42)
    - **ACTIVITY:** Relationship between ft & yd (slide 39 - animated)
  4. Graph Sense (**8.F.5**) (slides 43 – 47)
    - **ACTIVITY:** Bike Race

***BREAK (2 hr. mark)***

**IV. Incorporating the Standards for Mathematical Practice - Quick Review (Slides 49 – 52) (10 minutes)**

**V. Definitions of function and notation (8.F.1, F-IF.1-3) (Slides 53– 58) (30 minutes)**

- **ACTIVITY:** How would you respond? (slide 56)
- **ACTIVITY:** Yam in the Oven (in activities packet)
- **ACTIVITY:** PARCC item (in activities packet)

## VI. Function Families (3 hours –includes 45 min break for lunch) (slides 60 - 61)

### a. Functions in Context (slide 61)

1. Qualitative interpretation (**8.F.5, F-IF.2, F-IF. 4, F-LE.5**) (slide 62)
2. Interpreting Rate of change (**8.F.4, F-LE.1b**) (Slide 63 - 66)
  - **ACTIVITY:** Walk-a-Thon 2 (slide 63)
  - **ACTIVITY:** Chicken & Steak, Variation 1/Baseball Cards (if on schedule - slide 66)
3. Vocabulary (**F-IF.4, F-BF.3**) (slide 67)

### b. Linear Functions (slide 68)

1. Rate of change/Slope triangles (slide 69 – 74)
  - **ACTIVITY:** #11 from NY State Testing Program Mathematics CC Sample Questions (slide 69)
  - **ACTIVITY:** Slope triangles (slide 74 – also in packet)
2. Modeling Linear Relationships (8.F.4, F-LE.1a) (Slide 75)
3. Transformations (**F-BF.3**) (Slide 76 - 77)
  - **ACTIVITY:** Use emulation software to demonstrate effects of parameters  $m$  &  $b$ .

### c. Exponential Functions (slide 78) (F-IF.7e, F-IF.8b, F-LE.1c, F-LE.2&3)

- **ACTIVITY:** Moon Folding Activity
- **ACTIVITY:** Linear or Exponential

- d. Quadratic Functions (slide 79)
  - **ACTIVITY:** Springboard Dive
  - 1. Transformations (**F-BF.3**) (slide 80)
    - **ACTIVITY:** Which Function?
  - 2. Average rate of change (**F-IF.6**)
  - 3. Modeling (**F-BF.1a&b**)
- e. Other functions (**F-IF.7b**)/ Inverse Functions (**F-BF.4a**) (slides 81 – 82) (**30 minutes**)
  - **ACTIVITY:** Temperatures in degrees Fahrenheit and Celsius
  - **ACTIVITY:** Painted Cube Problem

**VII. Conclusion /Questions & Comments/Resources/Reflection/index cards for feedback (Slides 83 - 85) (30 minutes)**