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)
o Representations of function (8.F.2, F-IF.8-9)
  ▪ ACTIVITY: Bus Stop

o 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)