Name(s): WAMC Team

Lesson Title: Barbie and Ken Go Bungee Jumping

Date: February 23, 2013

Text: None

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| Domain: Quantities, Interpreting Functions | |
| Big Idea (Cluster):  N-Q Reason Quantitatively and use units to solve problems  F-IF Interpret function that arise in applications in terms of the context | |
| Common Core Standards: N-Q.1-3, F-IF.6 | |
| Mathematical Practice(s): MP.1, MP.2, MP.4, MP.5, MP.6, MP.7 | |
| Content Objectives:  Gather data about the number of rubber bands “Barbie and Ken” need to successfully bungee jump at a variety of heights. They will describe quantities graphically and then interpret the subsequent function(s) as evidenced by students predicting and describing results. | Language Objectives:  Discuss and describe the strategy for solving this problem by using the verbs related to Quantities and Interpreting Functions.  Students will talk with their group members using mathematical language.  Students will write answers using mathematical language. |
| Vocabulary:  Domain  Range  Line of Best Fit  Slope  Coordinate  Extrapolate  Interpret  Variable | Connections Prior to Learning  Students will have had experienced how to label a graph, how to read a graph, and have cooperative learning experience. Students will have experience summarizing data. |
| Questions to Develop Mathematical Thinking:   * What does the slope represent in the context of this problem? * What information do you need to gather in order to discern a pattern or structure? * What information is critical for you to capture in your graph in order to make precise predictions? * Why do results look different from group to group and yet we can make accurate predictions? | Common Misconceptions:   * Students struggle to represent data accurately in their graph. * Students need reminding of connections between domain and range and the ordered pairs. * Students need to be encouraged to develop accurate scale. * What happens when students graph the ordered pairs incorrectly? |

Assessment (Formative and Summative):

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| Formative: Quick check to make sure students are accurately measuring distance and are collecting data precisely. Students’ conversations should reflect thoughtful and organized engagement in the process.  Summative: Students are able to make accurate predictions based on data collection and generating linear functions. Students share out results and explain findings and fill out reflection sheet |

Materials:

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| * Rubber bands * Dolls (Barbie, Ken, Barney, etc.) * Yard sticks, meter sticks, tape measures * Masking Tape * Graph paper * Writing paper * Calculators * Adding machine tape (optional) |

Instruction Plan:

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| Launch: Have you ever wondered how safe bungee jumping really is? Ken and Barbie are going bungee jumping with your help. We will be exploring how to calculate their safety. |
| Explore: Hand out Barbie Bungee Direction Sheet and have students read, discuss, and proceed. |
| When I observe students: They are actively engaged in discourse using academic language. Students are on floor looking at how close their “Barbie” gets to the floor. Students are using data to make guesses. |
| Questions to Develop Mathematical Thinking as you observe: Are you consistent in your procedures? What are noticing about the types and amounts of rubber bands you are using? |
| Answers: Many different answers will be generated. |
| Summarize: What was the most interesting thing you learned and what effect did precision have on your results? |

Career Application(s):

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| * Rock Climbing * Crane operator * Bungee Jumper * Industrial Safety Officer |

21st Century Skills and Interdisciplinary Themes:

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| 21st Century Interdisciplinary themes (Check those that apply to the above activity.)  Global Awareness  Financial/Economic/Business/Entrepreneurial Literacy  Civic Literacy  Health/Safety Literacy  Environmental Literacy  21st Century Skills(Check those that students will demonstrate in the above activity.) | | | |
| **LEARNING AND INNOVATION**  Creativity and Innovation  Think Creatively  Work Creatively with Others  Implement Innovations  Critical Thinking and Problem Solving  Reason Effectively  Use Systems Thinking  Make Judgments and Decisions  Solve Problems  Communication and Collaboration  Communicate Clearly  Collaborate with Others | **INFORMATION, MEDIA &**  **TECHNOLOGY SKILLS**  Information Literacy  Access and Evaluate Information  Use and manage Information  Media Literacy  Analyze Media  Create Media Products  Information, Communications and Technology (ICT Literacy)  Apply Technology Effectively | **LIFE & CAREER SKILLS**  Flexibility and Adaptability  Adapt to Change  Be Flexible  Initiative and Self-Direction  Manage Goals and Time  Work Independently  Be Self-Directed Learners  Social and Cross-Cultural  Interact Effectively with Others  Work Effectively in Diverse Teams | **Productivity and Accountability**  Manage Projects  Produce Results  Leadership and Responsibility  Guide and Lead Others  Be Responsible to Others |