



College Algebra: A Recipe for Success

Dr. Rebecca Segal

Virginia Commonwealth University

College Algebra at VCU

- College Algebra is the lowest level non-terminal mathematics course offered at VCU.
- It is taken by over 1500 students per year.
- We offer approximately 35 sections in the fall and 20 in the spring

Reformulation

- Previously we ran large, traditional lectures
- Piloted new format starting in 2004
- Since 2008, all sections are in modeling format
 - use real world data
 - long-term student projects
 - active student engagement
 - extensive group work

Additional Support

- Professional Development
 - 20+ instructors/adjuncts
 - Pre-semester training
 - Weekly meetings
 - Semester workshop
- Stretch Sections
 - Low placement test scores
 - Repeat students
 - Extra class time
 - Strict attendance policy

Improved Student Performance

- The DFW rate was reduced from 38% in traditional classes to 22% in the modeling sections.
- Even though more students completed the modeling course, they were more successful in subsequent courses than students who completed the traditional course.

Motivating Functions with Data

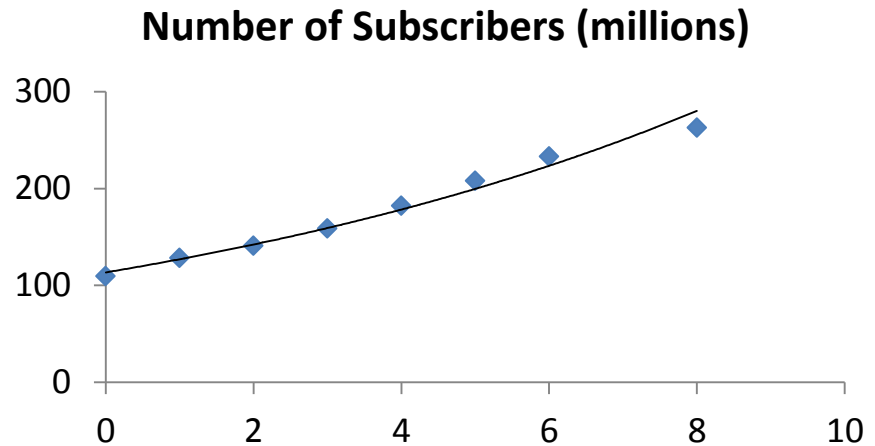
Weight (pounds)	19	19.5	20	20.5	21	22	22.5	23.5	24
Height (inches)	10.35	10.3	10.25	10.2	10.1	9.85	9.8	9.7	9.6

In BMX dirt-bike racing, jumping high or "getting air" depends on many factors: the rider's skill, the angle of the jump, and the weight of the bike. Here are data about the maximum height for various bike weights.

- Plot the data in your calculator.
- Is there a positive, negative, or no relationship between bike weight and jump height? Explain your answer.
- As the weight increases, the maximum height _____.
- Find the slope or rate of change using the first and last points given. Interpret the slope in terms of the real situation.

Motivating Logarithms

Year	Number of Subscribers (millions)
2000	109.5
2001	128.4
2002	140.8
2003	158.7
2004	182.1
2005	207.9
2006	233
2008	262.7



Source: CTIA-The Wireless Association

- Make a plot of the data
- Model it with an exponential function
- When will subscribers reach 300?
 - Solved graphically by finding the intersection of function with $y=300$

Motivating Function Composition



$$W(T) = 0.2T$$

$$M(W) = 1600 - 20W$$

$$V(M) = 0.025 - 20$$



Contact Information

Rebecca Segal

rasegal@vcu.edu

We are happy to share materials.