http://faculty.salisbury.edu/~smhetzler/

Web Assign Access Key:

Salisbury 2117 7653

Thursday @ 2:00 In HS 111, Help Sessions

Entry Slips — Every day
Half Sheet of Paper (or less)

In 1994 Blue Crab Population in C.B.
850 million

In 2006, population was 400 million

Population Decreased.

Q: How fast?

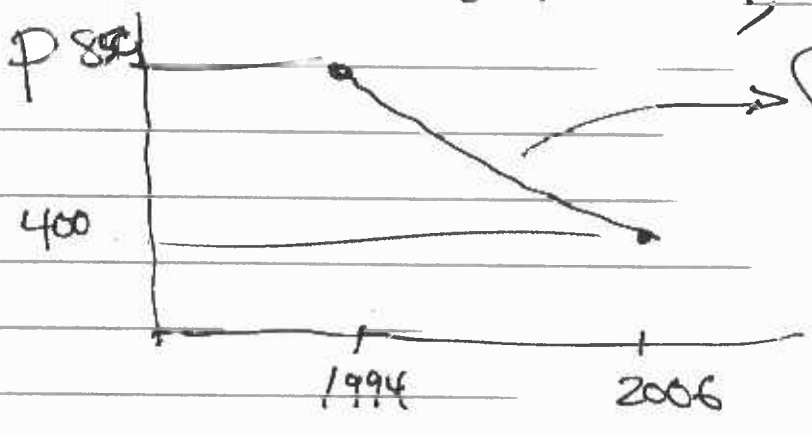
Solution:
Problem: We don't know what happened in between.
Solution to Problem: Assume Constant Change.

Find Rate of Change: Ratio $\frac{\text{Population Change}}{\text{Time Change}}$

OR: Find Slope $\frac{850 - 400}{1994 - 2006} = \frac{450 \text{ million}}{-12 \text{ yrs}}$,

$= -37.5 \frac{\text{million crabs}}{\text{year}}$

This is the Average Rate of Change of Population over [1994, 2006].



Slope = Average Rate of Change

More data:

In 2001, there were 250 million crabs

	t	P
(1994)	0	850
	7	250
	12	400

Q: What was the average rate of change for $0 \le t \le 7$?

Solution: $\frac{550 - 250}{0 - 7}$

$\approx -86 \frac{\text{million crabs}}{\text{year}}$

Q: ARC for $7 \le t \le 12$

Solution: $\frac{400 - 250}{12 - 7} = 30 \frac{\text{mil crabs}}{\text{year}}$

Page 3

From Website (2 Fundamental Questions)
Ball height $h = -16t^2 + 75t + 6$ feet after t seconds,

$h(t) = -16t^2 + 75t + 6$

An interval: $[0, 1]$ or $0 \le t \le 1$

What's Average Rate of Change for $[0, 1]$

$$ARC = Slope = \frac{h(0) - h(1)}{0 - 1}$$

$$= \frac{6 - 65}{0 - 1} = \frac{-59}{-1} = 59 \text{ ft/sec}$$

Better Answer: ARC for $\frac{1}{2} \le t \le 1$

$$h\left(\tfrac{1}{2}\right) = -16\left(\tfrac{1}{2}\right)^2 + 75\left(\tfrac{1}{2}\right) + 6 = 39.5$$

$$\frac{h\left(\frac{1}{2}\right) - h(1)}{\frac{1}{2} - 1} = \frac{39.5 - 65}{\frac{1}{2} - 1} = \frac{-25.5}{\left(-\frac{1}{2}\right)} = 51 \text{ ft/sec}$$