11-8-05

Test 3: Thurs Nov 17

Ch 7, 8 only.

Review Tuesday.

Measles

$$S \xrightarrow{aSI} I \xrightarrow{bI} R.$$

$$\frac{\Delta S}{\Delta t} = -aSI$$

$$\frac{\Delta I}{\Delta t} = +aSI - bI$$

$$\frac{\Delta R}{\Delta t} = +bI$$

Make a spreadsheet like p 329

$$a = \frac{\#\text{contacts} * \text{inf rate}}{\text{Total Pop}} \qquad b = \frac{1}{\text{time in } I}$$

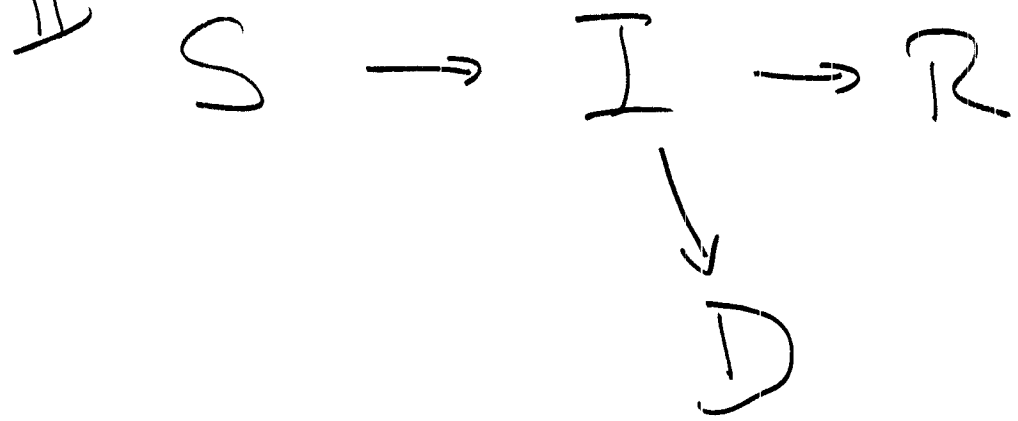
$S_{new} = S_{old} + \Delta S$

↑ # ↑ formula.

I_{new}

R_{new}

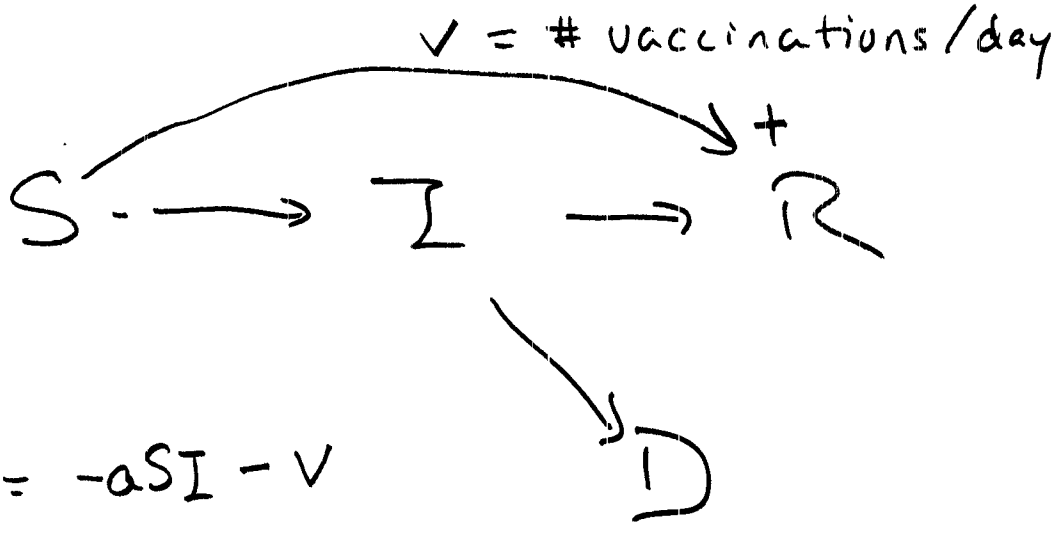
II



$$\frac{\Delta R}{\Delta t} = (1-d)\, b\, I$$

$$\frac{\Delta D}{\Delta t} = d \cdot b I$$ d = death rate

III Vaccine



$$\frac{\Delta S}{\Delta t} = -aSI - V$$

$$\frac{\Delta R}{\Delta t} = +(1-d)\, b\, I + V$$

Mrs Knotts raises cats/dogs for profit. The more cats, dogs she sells, the more money she makes.

* each cat eats 2 lbs fish waste / week, 1 lb meat scraps, 1 dose vitamins / week
* each dog eats 1 lb fish, 3 lbs meat, 1 dose vitamin / week.
* Each week: 90 lbs fish
  120 lbs meat
  54 ~~Auctr~~. vitamins/wk
* Her profit / cat = $100
  - - - - / dog = $125

Try Random Combinations

C = 10, D = 10 eat

40 lbs meat = $1^{lb/cat} \cdot 10$ cats + $3^{lbs/dog} \times 10$ dogs

30 lbs fish = $2^{lbs/cat} \cdot 10$ cats + $1^{lb/dog} \times 10$ dogs

20 vitamins = $1 \cdot 10 + 1 \cdot 10$

Profit = $\$100/cat \times 10$ cats + $\$125/dog \times 10$ dogs

= $2250

(4)

	<120 Meat	<90 Fish	<54 V	P	
(C, d)					
(50, 0)	50	100	50	5000	X
(25, 25)	100	75	50	5625	✓
(27, 27)	108	81	54	6075	✓
(10, 30)	100	50	40	4750	✓