

Suppose a new species of pig *Sus-Gigantis* in a small region had the following population

Age Groups	Birth Rate	Survival Rate
0-2	0.00	0.60
2-4	0.00	0.85
4-6	1.20	0.90
6-8	0.70	0.80
8-10	0.60	0.50
10-12	0.05	0.00

	Age Groups (in years)					
Year: 2008	0-2	2-4	4-6	6-8	8-10	10-12
# of Pigs in initial population	30	25	26	28	22	15

a. Calculate how many 0-2 year olds there will be in the next 5 year cycle.

b. Complete the Table for the next cycle and show your steps.

	Age Groups (in years)					
	0-2	2-4	4-6	6-8	8-10	10-12
in initial pop (Year:2008)	30	25	26	28	22	15
Population (Year: 2010)						

c. Complete the Table for the next cycle and show your steps.

	Age Groups (in years)					
	0-2	2-4	4-6	6-8	8-10	10-12
in initial pop (Year:2010)						
Population (Year: 2012)						

DO THIS PROBLEM AGAIN BUT USING MATRICES.....

Suppose a species of pig, *Sus-Gigantis*, has characteristics as described below:

<i>Age Groups</i>	Birth Rate	Survival Rate
0-2	0.00	0.60
2-4	0.00	0.85
4-6	1.20	0.90
6-8	0.70	0.80
8-10	0.60	0.50
10-12	0.05	0.00

<i>Year: 2008</i>	Age Groups (in years)					
	0-2	2-4	4-6	6-8	8-10	10-12
# of Pigs in initial population	30	25	26	28	22	15

a. Create the initial population matrix and the corresponding LESLIE matrix.

b. How many Leslie Cycles would have been completed by the year 2010?

c. Using your calculator and the Matrices created in “part a” of this question determine the population of monkeys for each age group in the year 2010.

	Age Groups (in years)					
	0-2	2-4	4-6	6-8	8-10	10-12
Population (Year: 2010)						

d. How would you suggest estimating how many pigs were in each age group in the year 2011?

e. What would be your estimate for the year 2011 using your suggestion from part d?

	Age Groups (in years)					
	0-2	2-4	4-6	6-8	8-10	10-12
Population (Year: 2011)						

f. Why is it necessary for the survival rate of the last group to be 0 for this model to work?

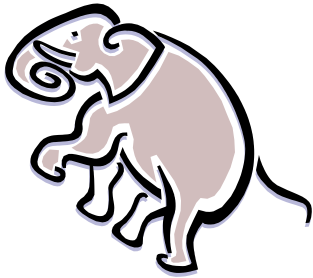
2. Suppose a certain species of Elephants has characteristics as described:

Age Groups	Birth Rate	Survival Rate
0-5	0.00	0.50
5-10	0.10	0.70
10-15	0.40	0.80
15-20	0.90	0.70
20-25	1.10	0.60
25-30	0.30	0.40
30-35	0.00	0

	Age Groups (in years)						
Year: 2000	0-5	5-10	10-15	15-20	20-25	25-30	30-35
# of elephants in initial population	20	30	10	30	12	10	6

a. Calculate how many 0-5 year olds there will be in the next 5 year cycle.

b. Complete the Table for the next cycle and show your steps.



	Age Groups (in years)						
	0-5	5-10	10-15	15-20	20-25	25-30	30-35
in initial pop (Year:2000)	20	30	10	30	12	10	6
Population (Year: 2005)							

c. Create the initial population matrix and the corresponding LESLIE matrix.

d. How many Leslie Cycles would have been completed by the year 2025?

e. Using your calculator and the Matrices created in “part a” of this question determine the population of elephants for each age group in the year 2025.

	Age Groups (in years)						
	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Population (Year: 2025)							

f. It appears that the overall population is declining. If this trend continues how long (or in what year) would you estimate until the population of all of the subgroup categories finally fall below 1 elephant.

g. BONUS: How would you suggest estimating elephant populations in each age group in 2026?

h. What would be your estimate for the year 2026 using your suggestion from part e?

	Age Groups (in years)						
	0-5	5-10	10-15	15-20	20-25	25-30	30-35
Population (Year: 2026)							