

Milkweed Bug Reproduction

Question	Answer
How long do milkweed bugs live?	4 months
How old is a female when she mates?	2 months
How many eggs does a typical female lay in a lifetime?	100
What is the ratio of males to females?	50/50

Population reduction	Parents (male and female)	Offspring (male and female)	Total population	Total elapsed time
	1 1			2 months
				4 months
				6 months
				8 months
				10 months
				1 year

2. Based on this information, estimate how many milkweed bugs there would be at the end of the year if nothing limited the number of survivors. In other words there are no predators, there is plenty of food, water, space, everything that they need.

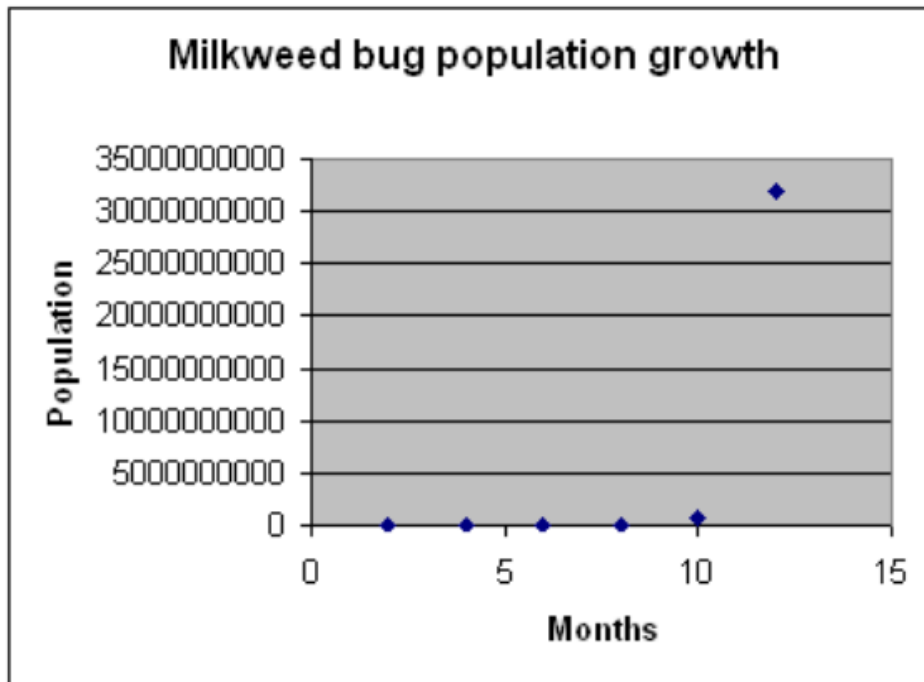
Estimate for the end of one year: (1/2 point)

Population reduction	Parents (male and female)	Offspring (male and female)	Total population	Total elapsed time
	1 ♂ 1 ♀	50 ♂ 50 ♀	102	2 mo.
2	50 ♂ 50 ♀	2500 ♂ 2500 ♀	5100	4 mo.
100	2500 ♂ 2500 ♀	125,000 ♂ 125,000 ♀	255,000	6 mo.
5000	125,000 ♂ 125,000 ♀	6,250,000 ♂ 6,250,000 ♀	12,750,000	8 mo.
250,000	6,250,000 ♂ 6,250,000 ♀	312,500,000 ♂ 312,500,000 ♀	637,500,000	10 mo.
12,500,000	312,500,000 ♂ 312,500,000 ♀	15,625,000,000 ♂ 15,625,000,000 ♀	31,875,000,000	12 mo.

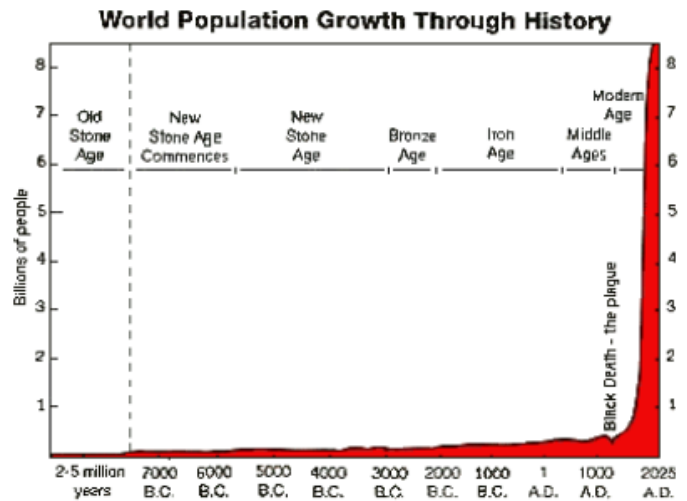
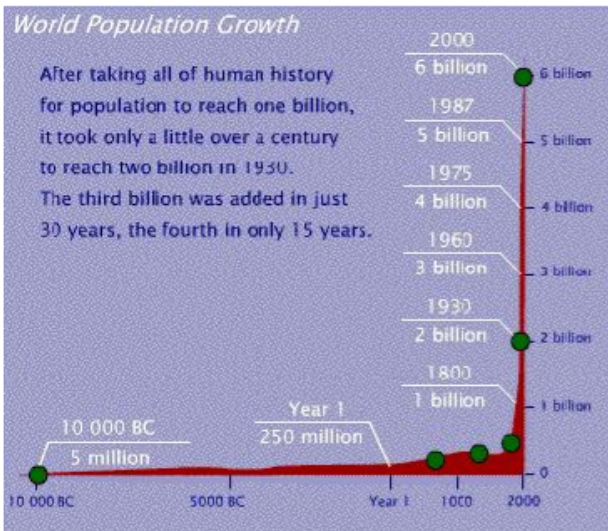
3. What is the number of milkweed bugs that is possible at the end of the year?
4. How did you do with your estimate? (1/2 point)

Background:

1. What is a limiting factor?
Something in the environment which keeps a population "under control".
2. Give three examples of abiotic limiting factors.
water, air, space, temperature, soil, wind
3. Give three examples of biotic limiting factors.
Predators, disease, food



Notice how the milkweed bug population really changes at the end.



Human population May, 2010 6.77 billion

The human population is similar to what we calculated with the milkweed bug population

Discussion:

For all the following questions assume that you are comparing the unlimited reproductive potential against what might happen with a possible limiting factor or the elimination of a possible limiting factor.

1. How many milkweed bugs were there after three generations of unlimited population growth?
(1/2 point)

Be specific as possible in answering these questions.

2. Space can be a limiting factor for milkweed bugs especially in experimental situations.
How might decreasing the available space affect the population size after three generations?
(1/2 point)