



*Doubling*

# Math 1030 #11a

*Absolute Growth*

Linear Growth vs Exponential Growth

*Relative growth*

The Concept and Examples

## Basic Growth Patterns

Linear growth -- when a quantity grows by the same absolute amount in each unit of time.

Exponential growth -- when a quantity grows by the same relative amount in each unit of time.

EX 1: Identify the growth pattern in each of these as linear, exponential or neither. Then answer the question.

- a) Your allowance for each week starts with \$1.00 the first day, \$1.00 the second day, \$2.00 on the third day, then \$3.00 on the fourth day, each day's allowance being the sum of the two previous days'. The pattern starts over each week. How much will you have after 2 weeks?
  
  
  
  
  
  
  
  
  
  
- b) The value of your house is decreasing by 7% per year. If it is worth \$250,000 today, what will it be worth in five years?
  
  
  
  
  
  
  
  
  
  
- c) The price of a gallon of gas is increased by 3 cents per week. If the price is \$3.10/gal today, what will it be in ten weeks?

EX 2: A rare snake gives birth to exactly 3 babies and expires immediately. Those snakes each give birth to 3 more after six months, expiring immediately.

Zootown starts with 15 of these snakes.

a) Fill in this table to answer the questions below.

# months	# snakes
0	
6	
12	
18	
24	
30	

b) How many snakes are there in 16 years?

c) If Zootown has room for only 250 of these snakes, when do they have to start selling them to other zoos?

EX 3: You have so many Facebook friends to keep track of, that you decide to pare down your list to 15 friends. You allow yourself to add only 3 friends each six months.

a) Make a table of the total number of contacts you have.

<u># months</u>	<u># Friends</u>
0	
6	
12	
18	
24	
30	

b) How long will it take to get 250 friends?

c) How many total friends will there be after 16 years?

EX 4: Let's compare the tables in the two preceding examples.

months	snakes	Facebook contacts
0	15	15
6	45	18
12	135	21
18	405	24
24	1215	27
30	3645	30
36	10,935	33

