- 7.1 Exploring Exponential Models
- a. I can determine if an exponential equation or scenario is a growth or decay function
- b. I can create and solve an exponential function to model a situation.

# p. 26-27 Exponential Growth and Decay Models 7.1

Recall our standard forms of Exponential Growth and Decay functions which we used TO GRAPH:

p.26

#### **Growth Function**

$$y = a(b)^{x-h} + k$$

where b > 1

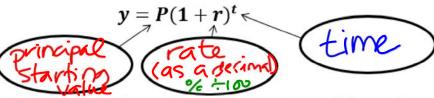
## **Decay Function**

$$y = a(b)^{x-h} + k$$

where 0 < b < 1

### Formula for Exponential Growth

When a real life quantity *increases* by a fixed % each year, the ending amount, y, after t years can be modeled with the following formula:

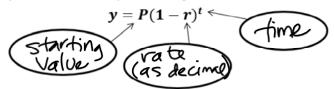


- 1) In 1990, the population of Stars Hollow was 6,191 and the population was increasing by 4% each year.
  - a. Using the Formula for Exponential Growth, write an equation that models the situation over any given time, t.
  - b. Using your equation from part A, determine Stars Hollow population in 2001.

$$y=6191\cdot(1+.04)^{11}$$
 $t=2001-1990$ 
 $t=11$ 
 $y=9530.76$ 
 $pap=9,531$ 

#### Formula for Exponential Decay

When a real life quantity decreases by a fixed % each year, the ending amount, y, after t years can be modeled by the following formula:



2) You buy a new car for \$24,000. The car depreciates by 16% each year.

a. Using the Formula for Exponential Decay, write an equation that models the situation over any given time, t.

value of the car after 4 years.

Homework - Worksheet Exp Growth/Decay Models - Day 1 HW

Only do #1 - 6