

Warm up		WEEK 12
Rewrite in decimal form.		
1. 2.49×10^5	2. 9.6×10^{-3}	
<u>249000</u>	<u>.0096</u>	
3. 4.00027×10^7	4. $(4 \times 10^{-2}) \cdot (3 \times 10)^2$	
<u>40002700</u>	<u>$4 \times 10^{-2} \cdot 9 \times 10^2$</u> <u>36</u>	
Rewrite in scientific notation.		
5. 0.006	6. 800,200,000,000	
<u>6.0×10^{-3}</u>	<u>8.002×10^{11}</u>	
7. 0.0000037	8. $\frac{1.4 \times 10^{-1}}{3.5 \times 10^{-4}}$	
<u>3.7×10^{-6}</u>	<u>0.4×10^3</u> <u>$4 \times 10^{-1} \times 10^3$</u> <u>$4 \times 10^2$</u>	

Homework Questions?

Self Scoring Scale

4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.

8.3-8.4 Quiz

Out of 30 points

A - 27

B - 24

C - 21

D - 18

8.5 Exponential Growth Functions

- Goals:**
- Write and use models for exponential growth.
 - Graph models for exponential growth.

EQ: In the eqn. $y = C(1+r)^t$
 what do the letters represent?

The Unit Organizer

NAME _____
DATE _____ Mo/Date/Year

④ BIGGER PICTURE Algebra 1.5 Concepts

② LAST UNIT/Experience Systems	① CURRENT UNIT Exponents & Exponential Functions	③ NEXT UNIT/Experience Quadratics
-----------------------------------	--	--------------------------------------

⑧ Student Activities or Assignments 8.1 8.2 8.3 8.4 8.5 8.6	⑤ UNIT MAP
---	--------------------

⑦ UNIT SELF-TEST QUESTIONS 1. What properties can be used to simplify & evaluate exponential expressions? 2. What do exponential graphs look like? 3. Can you write numbers in both decimal form and in scientific notation? 4. How can exponential growth and decay equations be used to represent and solve real world problems?	⑥ UNIT RELATIONSHIPS Simplify Graph Apply Represent
--	---

Vocabulary

Exponential growth:

Quantity that is increasing by the same % for each time period

EXPONENTIAL GROWTH MODEL

C is the initial amount.

t is the time period.

Total Balance →

$$y = C(1+r)^t$$

Rate % → Decimal
(1 + r) is the growth factor, r is the growth rate.

The percent of increase is 100r.

Example 1: Finding the Balance in an Account

Compound Interest - You deposit \$450 in an account that pays 2.5% annual interest compound yearly. What is the account balance after 10 years?

$$y = C(1+r)^t$$

↑ total ↑ Begin ↑ % → Decimal

$$\begin{aligned} y &= 450(1+.025)^{10} \\ &= 450(1.025)^{10} \\ &\approx 576.0380 \\ &\text{\$}576.04 \end{aligned}$$

$$2.5\% = 0.025$$

Simple Interest

$$\begin{aligned} I &= PRT \\ &= 450(.025)(10) \end{aligned}$$

$$I = 112.50$$

$$\text{\$}450 + 112.50 = \text{\$}562.50$$

Example 2: Writing an Exponential Growth Model

Population Growth - A population of 25 mice doubles each year for 4 years.

$$y = c(1+r)^t$$

a) What is the percent of increase each year?

$$\begin{aligned} 1+r &= 2 \\ \therefore 1 &= r \end{aligned}$$

100% increase

$$\begin{array}{r} 25 \\ \textcircled{1} \quad 50 \end{array}$$

$$\textcircled{2} \quad 100$$

$$\textcircled{3} \quad 200$$

$$\textcircled{4} \quad 400$$

b) What is the population after 4 years?

$$\begin{aligned} y &= 25(2)^4 \\ &= 400 \text{ mice} \end{aligned}$$

Try It

.03

1) You deposit \$375 in an account that pays 3.0% annual interest compounded yearly. What is the account balance after 10 years?

$$y = c(1+r)^t$$

↑
r → Decimal

$$y = 375(1+.03)^{10}$$

$$\approx 503.9686$$

$$\textcircled{\$503.97}$$

2) A company starts with 20 employees and after one year it has 30. The company increases employees at the same rate every year for 6 years.

a) What is the percent of increase each year?

$$r = \frac{10}{20} = \textcircled{50\%} \text{ increase}$$

b) What is the population after 6 years?

$$\begin{aligned} y &= 20(1+.5)^6 \\ &= 20(1.5)^6 \\ &\approx 227.8125 \end{aligned}$$

$\textcircled{227 \text{ employees}}$

Summary

EQ:

$$\rightarrow y = C(1+r)^t \leftarrow$$

8.5 Homework

p.480 #6-22, 24

(SHOW SET-UP)