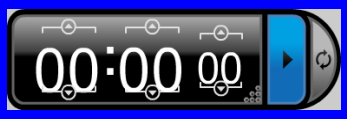
January 9th

Due Today: HW 6.3
Due Next Class: HW 6.4

Unit 6: Exponents

Lesson 6.4: Exponential Growth and Decay



Get Ready: Use your calculator to evaluate the following expressions.

1) 0.7^2 0.49

2) 0.7^6 0.117649...

3) 0.7^{12} 0.0138...

4) 1^8 1

5) 1^{16} 1

6) 1^{23} 1

7) 1.2^4 2.0736

8) 1.2^9 5.1597...

9) 1.2^{17} 22.186.

① $F(t) = A(1 \pm r)^t$

t ← time

A ↑ original amount

r ↑ Rate as a decimal

Jan 9-10:08 AM

HW 6.3

1) $f(t) = 1780(1.12)^3$ $(1+0.12)$

There will be about 2501 ducks.

2) $f(t) = 10000(1.03)^{12}$

Mr. Mack will have $14,257.61.

3) $f(t) = 8200(.68)^{12}$

There will be about 80 bees.

4) $f(t) = 65536(.5)^{10}$

64 ping pong participants remain.

5) a) $f(t) = 500(1.02)^{24}$ 502.41

you will have ~~$804.22~~ after 2 years

b) $f(t) = 500(1.02)^2$ 500.20

you will have ~~$520.20~~ after 2 years

6) a) Growth b) Growth

c) Decay d) Decay

Jan 6-8:56 PM

(5) (D)

$A = 65,536$

$R = 0.5$

$t = 10$

$f(t) = 65,536(1-0.5)^{10}$

$(0.5)^{10}$

Jan 9-10:11 AM

(6) a)

growth

$A = 500$

$R = 0.02\%$

$= 0.0002$

$t = 24$

$f(t) = 500(1 + 0.0002)^{24}$

Jan 9-10:13 AM

Folding a piece of paper...

–	x
1	$2x$
2	$4x$
3	$8x$
4	$16x$
5	$32x$
6	$64x$
7	$128x$

$A = x = 0.05cm$

$R = 100\%$

$t = 7?!$

$f(42) = 0.05(1+1)^{42}$

$= 2.19... \in 11$

$= 2.19 \times 10^{11}$

$219,000,000,000$

Jan 9-9:54 AM

Carmen's grandparents gave her $1000 for her 15th birthday.

She has decided to invest the money and save it for college (in 3 years).

She has three options. Determine how much money each option will give her:

6

a savings account that earns 2% every year	a stock that earns 1.1% interest every month.	a bond that earns 1.5% interest every 3 months
$A = 1000$ $R = 0.02$ $t = 3$ $f(t) = 1000(1+0.02)^3$ $= \$1061.21$	$A = 1000$ $R = 0.011$ $t = 36$ $f(t) = 1000(1+0.011)^{36}$ $= \$1482.66$	$A = 1000$ $R = 0.015$ $t = 12$ $f(t) = 1000(1+0.015)^{12}$ $= \$1195.62$

Growth vs. Decay

$f(t) = A(1+r)^t$

growth factor

always > 1

$f(t) = A(1-r)^t$

decay factor

always < 1

Jan 6-9:15 AM

Formula	G/D	Amount	Rate %	Time
$f(t) = 500(1+.25)^{10}$	g	500	25%	10
$f(t) = 200(0.75)^{5}$ (1−r)	D	200	25%	5
$f(t) = 100(1.33)^{2}$				
$f(t) = 1000(1-0.001)^{10}$				

Jan 6-1:43 PM

Complete the rest of the exponential growth and decay worksheet as a group!

Jan 7-12:35 PM

Recap

Key Points

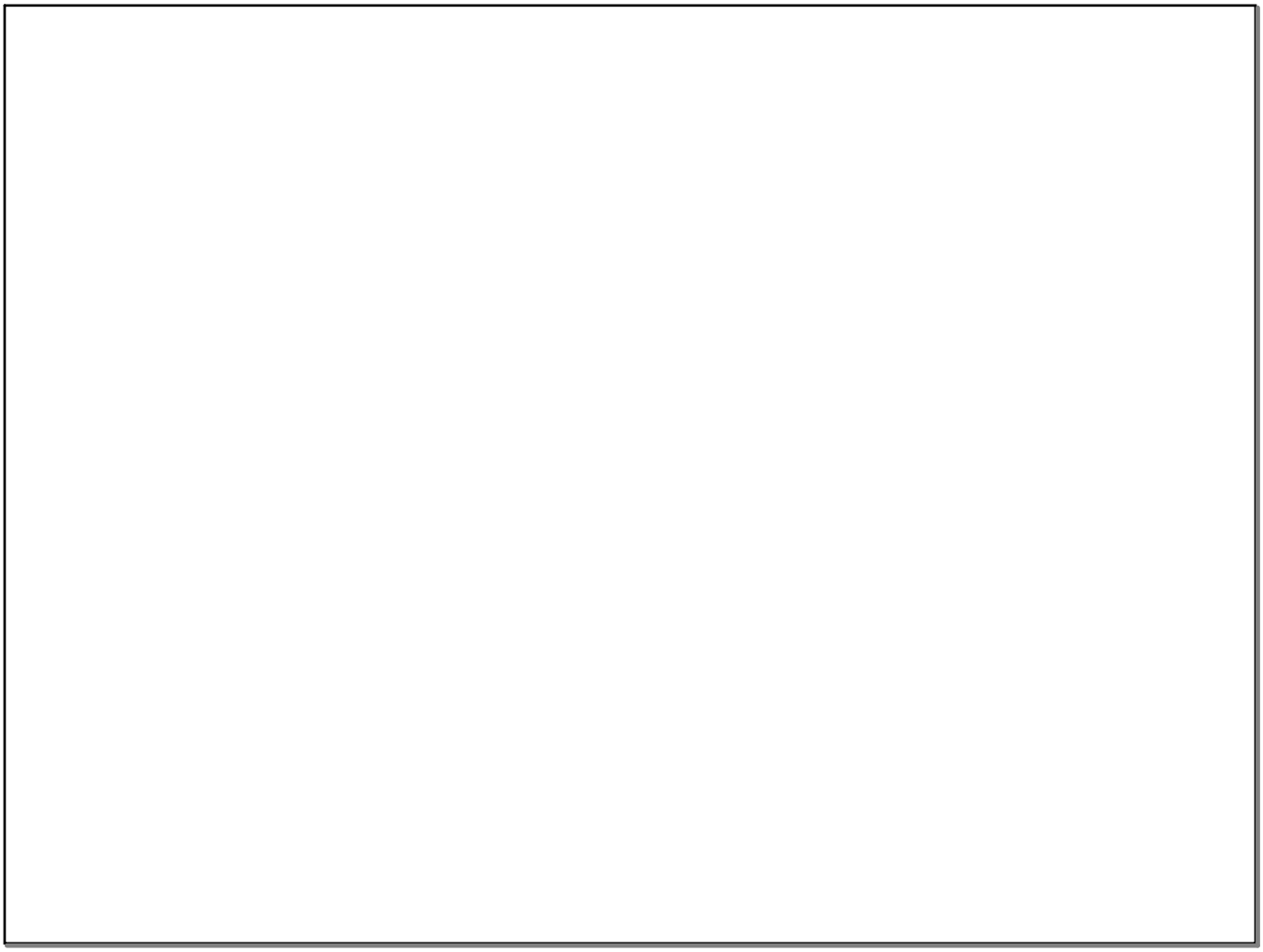
Homework:

Finish 6.4 wksht
+ HW 6.4

Next Class:

Quiz (g/d)
+ Radicals

Aug 9-11:14 PM



Jan 7-12:24 PM

You just got a new part-time job and they offer you two options.

Plan A: They will pay you $200 each week.

or

Plan B: They will pay you $0.01 the first week, $0.02 the next week, $0.04 the next week, and so on doubling your pay each week

Which plan would you pick and why?

Jan 6-8:59 AM

The population of the Australian Sea Turtle decreases at a rate of 12% a year. If there were 8,350 sea turtles in January of 2009, how many turtles are there now?

Miranda invested $4,000 in a bank with 1.2% interest per year. How much money will she have in 5 years?

Kimmy bought a $500 ipad on her credit card. The card earns 2% interest a month. If Kimmy doesn't pay off the card, how much will she owe in 3 months? In 1 year?

Kelli's mom takes a 400 mg dose of aspirin. Each hour, the amount of aspirin in a person's system decreases by about 29%. How much aspirin is left in her system after 6 hours?

Feb 9-9:40 AM

Feb 9-9:40 AM