Building functions quiz NAME_____ pd_____

For each problem:

a. Write a function [2 points]
b. Use the function to answer a question [2 points]

Useful formulas: $y = mx + b$; $y = a(b)^{\frac{x}{t}}$; $y = a(1 \pm r)^{\frac{x}{t}}$; $y = a\left(1 + \frac{r}{n}\right)^{\frac{x}{t}}$

1. The number of frogs in a pond doubles every seven months. The pond started with 5 frogs. What will the population of frogs be in four years?

2 (a) $y = 5(2)^{\frac{x}{7 \text{ months}}}$

2 (b) $y = 5(2)^{\frac{48}{7}}$

1 $y = 579.7$ frogs

2. Paola has $372 in her Thundermans piggy bank. She saves $18 per week and puts it into the piggy bank. How many weeks until she has saved $606?

2 (a) $y = 18x + 372$

2 (b) $606 = 18x + 372$

$-372 \quad -372$

$234 = 18x$

$\frac{234}{18} = \frac{18x}{18}$

$13 = x$

13 weeks

1

8/10

Useful formulas: $y = mx + b$; $y = a(b)^{\frac{x}{t}}$; $y = a(1 \pm r)^{\frac{x}{t}}$; $y = a\left(1 + \frac{r}{n}\right)^{\frac{x}{t}}$

3. The mice population in Hall County is currently 450,000 and is decreasing by 18% per year. What will the population be in 18.74 years?

$\frac{x}{1}$

(a) $y = 450000(1 - .18)^{18.74}$

(b) $y = 450000(.82)$

10,916.5 mice

4. Ryan owes $500 and pays it back $35 per month. How much does he owe after 14 months?

(a) $y = -35x + 500$

(b) $y = -35(14) + 500$

$y = -490 + 500$

$y = 10$ $10

BONUS: Mrs. Martin deposited $950 into an account paying 8.75% compounded quarterly. How much is in her account after 7 years?

$\frac{84}{3 \text{ months}}$

$950\left(1 + \frac{.0875}{4}\right)$

$1741.25

$12 \cdot 7 = 84$

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1. The number of frogs in a pond triples every seven months. The pond started with 4 frogs. What will the population of frogs be in four years?

12
4
48

(a) $y = 4(3)^{\frac{x}{7 \text{ months}}}$

(b) $y = 4(3)^{\frac{48}{7}}$

$= 7477$ frogs after 4 years

2. Paola has $382 in her Thundermans piggy bank. She saves $19 per week and puts it into the piggy bank. How many weeks until she has saved $610?

(a) $y = 19x + 382$

(b) $610 = 19x + 382$
$-382 \quad -382$

$\frac{228}{19} = \frac{19x}{19}$

$12 = x$ twelve weeks

Useful formulas: $y = mx + b$; $y = a(b)^{\frac{x}{t}}$; $y = a(1 \pm r)^{\frac{x}{t}}$; $y = a\left(1 + \frac{r}{n}\right)^{\frac{x}{t}}$

3. The mice population in Hall County is currently 250,000 and is decreasing by 8% per year. What will the population be in 18.74 years?

(a) $y = 250000(1 - .08)^{\frac{x}{1}}$

(b) $y = 250000(.92)^{18.74}$

52399 mice

4. Ryan owes $500 and pays it back $18 per month. How much does he owe after 14 months?

(a) $y = -18x + 500$

(b) $y = -18(14) + 500$

$y = -252 + 500$

$y = 248$ owes 248

BONUS: Mrs. Martin deposited $950 into an account paying 8.75% compounded quarterly. How much is in her account after 7 years?

$950\left(1 + \frac{.0875}{4}\right)^{\frac{84}{3 \text{ months}}}$

12
7
84

II 1741.25