2-3-1 in tandem with 2-3-2 Activity

1. Give sequences of decimals (as in 2-1-1). Are they linear, exponential or other?
2. In stories: Convert a R^x to a e^(bx) (or do as in Google Drive?). Need logs. Also end behavior.
3. Math 107: Billy the Bouncing Ball OR Calc-Medic: 3.1 (Which tennis balls are bad?)
4. Calc-Medic 3.1 #3: Describe situation: Mult. Choice of formula.
5. MFG: 4.1 : Checkpoint 4.6: 3x 2^(t/3): What is the annual growth factor?

MFG: 4.1: example 4.11: During a period of rapid inflation, prices rose by 1212% over 66 months. At the beginning of the inflationary period, a pound of butter cost $2.2.

1. Make a table of values showing the rise in the cost of butter over the next 22 years.
2. Write a function that gives the price of a pound of butter tt years after inflation began.
3. How much did a pound of butter cost after 33 years? After 1515 months?
4. Graph the function you found in part (b).

[Solution](https://yoshiwarabooks.org/mfg/Exponential-Growth-and-Decay.html)

MFG HW #5 (4.1): The population of Summerville is currently 1212 hundred people.

1. Write a formula for the population if it grows at a constant rate of 1.51.5 hundred people per year. What is the population after 33 years?
2. Write a formula for the population if it has a constant growth factor of 1.51.5 per year. What is the population after 33 years?

MFG (4.1) HW #17: During a vigorous spraying program, the mosquito population was reduced to 3434 of its previous size every 22 weeks. If the mosquito population was originally estimated at 250,000,250,000, how many mosquitoes remained after 33 weeks of spraying? After 88 weeks?

MFG (4.1) HW #20: Arch's motorboat cost $15,00015,000 in 20052005 and has depreciated by 10%10% every 33 years. How much was the boat worth in 2014?2014? In 2015?2015?

MFG (4.1) HW #61: Francine says that if a population grew by 48%48% in 66 years, then it grew by 8%8% per year. Is she correct? Either justify or correct her calculation.

MFG 4.1 HW #41:

1. Riverside County is the fastest growing county in California. In 2000,2000, the population was 1,545,387.1,545,387. Write a formula for the population of Riverside County. (You do not know the value of the growth factor, b,b, yet.)
2. In 2004,2004, the population had grown to 1,871,950.1,871,950. Find the growth factor and the percent rate of growth, rounded to the nearest tenth of a percent.
3. Estimate the population of Riverside County in 2010.2010.

MFG 4.1 HW #71: The world’s population of tigers declined from 10,40010,400 in 19801980 to 60006000 in 1998.1998.

1. If the population declined linearly, what was its annual rate of decrease?
2. If the population declined exponentially, what was its annual decay factor? What was its annual percent decrease?
3. Predict the number of tigers in 20102010 under each assumption, linear or exponential decline.

Active Reading: Each function below represents the population of a different city, measured in thousands of people, where the input t is time in years.

A(t)=50(0.95)tB(t)=50(0.75)tC(t)=25(1.05)tD(t)=25(1.5)t

For each verbal description, choose the correct function:

* “The city begins with 25,000 people and increases by 5% per year.”

Answer:

?

A

B

C

D

* “The city begins with 50,000 and decreases by 5% per year.”

Answer:

?

A

B

C

D

* “The city begins with 25,000 and increases by 50% per year.”

Answer:

?

A

B

C

D

* “The city begins with 50,000 and decreases by 25% per year.”

Answer:

?

A

B

C

D

Active Reading: 3.4.18: For each verbal description, decide if a *linear* or *exponential* function best models the situation.

1. “The money in the savings account was growing by 1.25% per year.”

?

linear

exponential

1. “The temperature in the freezer was dropping 6 degrees per minute.”

?

linear

exponential

1. “The phone battery started at 100% charge and was decreasing by 5% per hour.”

?

linear

exponential

1. “Every week, the number of subscribers was dropping to half of what it had been the week before.”

?

linear

exponential

Active Reading HW 3.4 #20: If the side lengths of a square are each increasing by 6% per hour, by what percent will the *area* of the square increase after 5 hours? Give your answer to the nearest hundredth of a percent.

Answer: