

Warm Up

12/18

The population of carp in a lake is increasing by 17% each year. If there are currently 300 carp in the lake, how many will there be in 5 years?



$$300(1.17^5) = 657.73$$

658

Assuming the same rate, how many fish were there last year?

$$300 \div 1.17 = 256$$

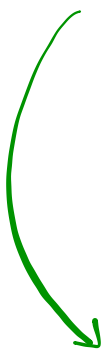
Homework Questions?

Page 51, #'s 21-23, 34-37

21. Multiple Choice Ms. Diaz wants to invest \$500 in a savings bond. At which bank would her investment grow the most over 8 years?

- ✓ A. Bank 1: 7% annual interest for 8 years
- B. Bank 2: 2% annual interest for the first 4 years and 12% annual interest for the next four years
- C. Bank 3: 12% annual interest for the first 4 years and 2% annual interest for the next four years
- D. All three result in the same growth.

$$y = 500(1.07)^8 = \$859.69$$



First
4 yrs

$$500(1.02)^4 = 541.22$$

2nd
4 yrs

$$541.22(1.12)^4 = 851.62$$

$$\begin{array}{l} \text{Plan B: } 500(1.02)^4 (1.12)^4 \\ \text{Plan C: } 500(1.12)^4 (1.02)^4 \end{array} \left. \vphantom{\begin{array}{l} \text{Plan B: } \\ \text{Plan C: } \end{array}} \right\} \begin{array}{l} \text{the} \\ \text{same} \end{array}$$

- 22.** Oscar made the following calculation to predict the value of his baseball card collection several years from now:

$$\text{Value} = \$130 \times 1.07 \times 1.07 \times 1.07 \times 1.07 \times 1.07$$

7% increase

- a.** What initial value, growth rate, growth factor, and number of years is Oscar assuming?
- b.** If the value continues to increase at this rate, how much would the collection be worth in three more years?

23. Carlos, Latanya, and Mila work in a biology laboratory. Each of them is responsible for a population of mice.

The growth factor for Carlos's population of mice is $\frac{3}{8}$.

$$GF < 1$$

The growth factor for Latanya's population of mice is 3.

$$GF = 3$$

The growth ~~factor~~^{rate} for Mila's population of mice is 125%.

$$GF = 2.25$$

- Whose mice are reproducing fastest?
- Whose mice are reproducing slowest?

These mice are dying!

34. Kwan cuts lawns every summer to make money. One customer offers to give her a 3% raise next summer and a 4% raise the summer after that.

Kwan says she would prefer to get a 4% raise next summer and a 3% raise the summer after that. She claims she will earn more money this way. Is she correct? Explain.

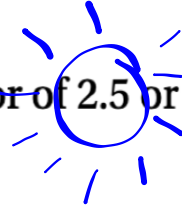
Summer #1 *Summer #2*

1st plan: $y = a(1.03)(1.04)$

2nd plan: $y = a(1.04)(1.03)$

- 35.** After graduating from high school, Kim accepts a job with a package delivery service, earning \$9 per hour.
- a.** How much will Kim earn in a year if she works 40 hours per week for 50 weeks and gets 2 weeks of paid vacation time?
 - b.** Write an equation showing the relationship between the number of weeks Kim works w and the amount she earns a .
 - c.** Kim writes the following equation: $9,000 = 360w$. What question is she trying to answer? What is the answer to that question?
 - d.** Suppose Kim works for the company for 10 years, receiving a 3% raise each year. Make a table showing how her annual income grows over this time period.
 - e.** When Kim was hired, her manager told her that instead of a 3% annual raise, she could choose to receive a \$600 raise each year. How do the two raise plans compare over a 10-year period? Which plan do you think is better? Explain your answer.

36. Which represents faster growth, a growth factor of 2.5 or a growth rate of 25%?



↙ = GF of 1.25

37. Order these scale factors from least to greatest.

130%

$\frac{3}{2}$

2

1.475

(130%)

(3/2)

1.3

1.475

1.5

2

What Did Dr. Frug's Wife Say When Dr. Frug Said He Needed to Spend More Time Studying Bacteria?

Complete the table and graph.
For table cells with letters, write the letter in the corresponding box at the bottom of the page.
(Answers are rounded.)

Dr. Frug has three kinds of bacteria in three lab dishes. Each dish contains 100 cells. However, in Dish A, the number is increasing 10% each hour. In Dish B, the number is increasing 30% each hour, and in Dish C, the number is increasing 50% each hour. Complete the table and graph to show the number of cells in each dish for the next 9 hours.

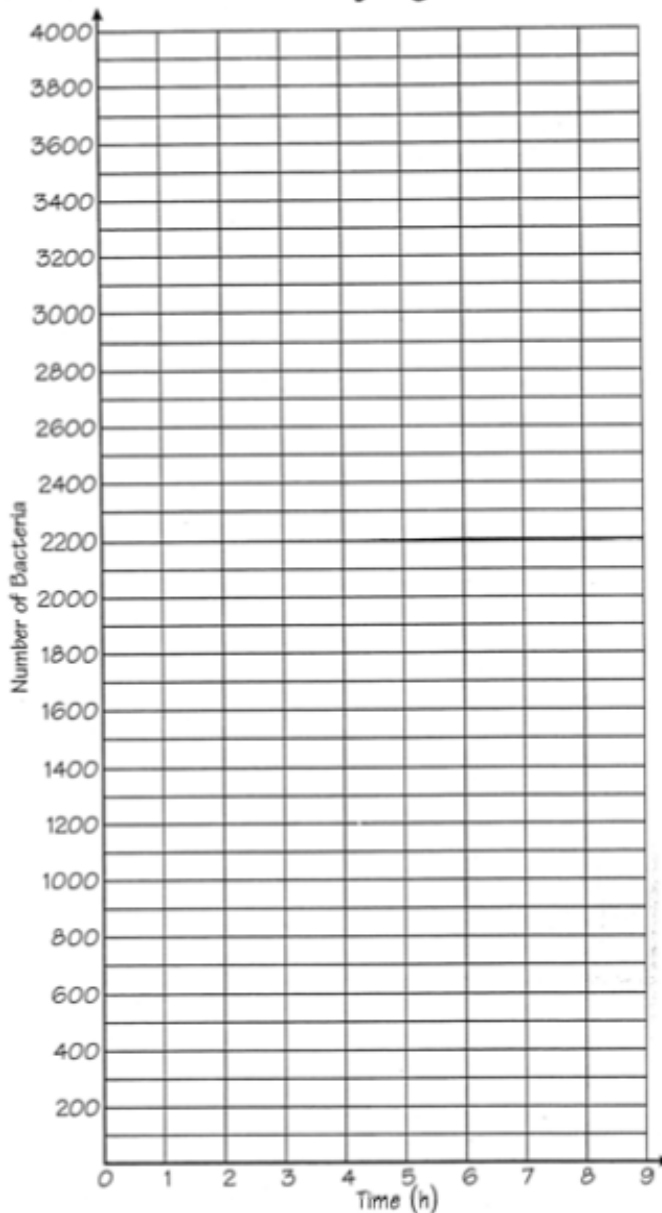
Let t = Time (h)

A = Number of bacteria in lab dish A.

B = Number of bacteria in lab dish B.

C = Number of bacteria in lab dish C.

t	A	B	C
0	100	100	100
1	O		O
2		I	
3		T	
4	I		B
5		L	
6			L
7	H		N
8		D	
9	A		C



233	150	195	915	816	110	1709	220	1911	506	236	3844	146	371	1139	169	480
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Homework

Finish classwork