

APP. Assign #5

How long until the zombies take over?



On the TV show The Walking Dead, a disease was contracted that turns people into zombies or Walkers. If the Walkers bite a human, the human is turned in to a Walker. Assume that the each Walker turns one person a week into a zombie and that none of the Walkers are killed.

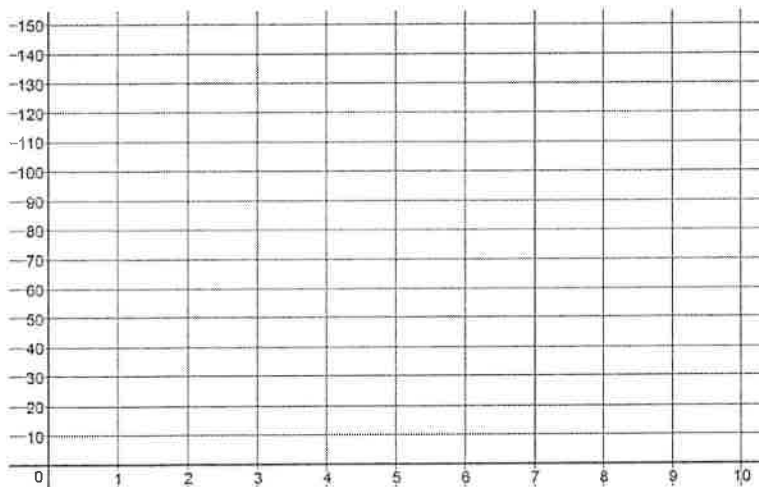
- The diagram below represents a town with 150 people. Each box represents a human; each filled in box represents a Walker. Keep track of the Walker and human populations over time.



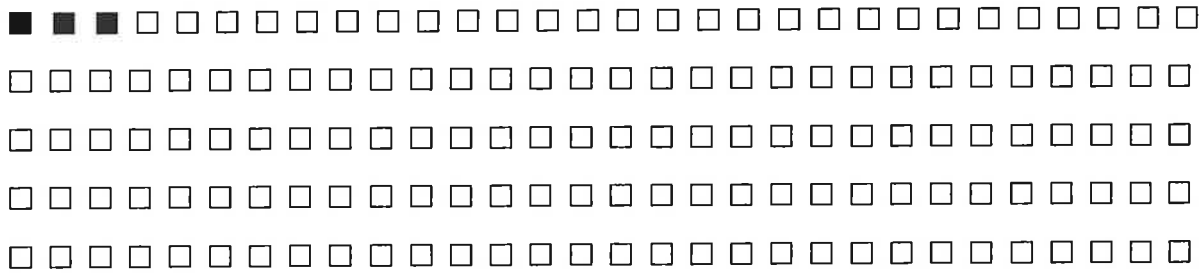
Weeks	0	1	2	3	4	5	6	7	8	9	10
■ Walkers	1										
□ Humans	149										

- How does the Walker population change each week, and how long will it take before everyone in town is a Walker?
- List the number of Walkers as a sequence for the first 5 weeks.
- Write a ~~recursive~~ ^{explicit} formula for the sequence.

- Graph the sequence.
- What x values are used?
- What y values are used?



2. A different town of 150 people started with 3 Walkers. Complete the table below.



Weeks	0	1	2	3	4	5	6	7	8	9	10
■ Walkers	3										
□ Humans	147										

- How long will it take for everyone in that town to become a Walker?
- List the number of Walkers as a sequence for the first 5 weeks.
- Write a recursive formula for the sequence. How is it different from your answer to 1c?

3. Imagine there is an infinite number of people who can be infected by the Walkers.

- Create a sequence showing how many people are infected if there are 4 Walkers to start at week 0. Show weeks 0 to 5.

- Write a ~~recursive~~^{explicit} formula for the sequence.

- How many Walkers will there be in...

Week 8?

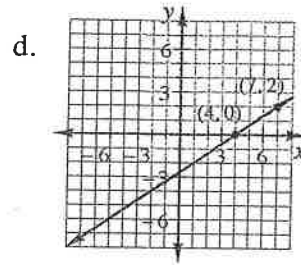
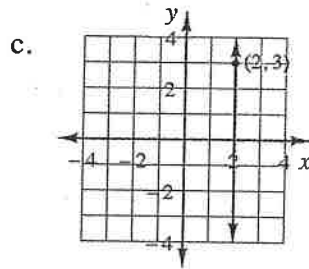
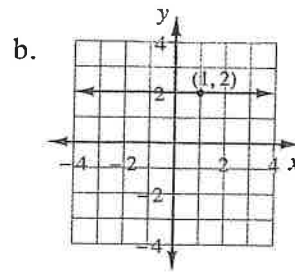
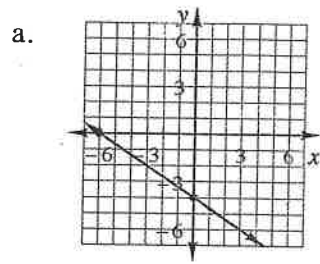
Week 13?

Week 24?

- How can you figure out how many total Walkers there will be for ANY week?

2-9

Write the equation for each graph.



B-119

Write an equation of a straight line (not an exponential function) in $y = mx + b$ form.

The line should pass through $(-5, 4)$ and $(3, -2)$

You should be able to do this using algebraic techniques at this point, not with a table or a graph.

B-94
b

Find an exponential function that passes through the pair of points. ($y = ab^x$)

$(-1, 1.25)$ and $(3, 0.032)$

← Follow your notes if you don't have the process memorized yet.

B-75

Solve the system (algebraically). Use the substitution method.

$$2x - 3y = 12$$

$$x + y = -9$$