

Many quantities in the world change over time in some regular fashion. There are various patterns that come up often. A very common pattern is linear growth which is explored quite a bit in various algebra courses (equation of a straight line, slope, etc.) Another common pattern is exponential growth. In this section, we learn some of the characteristics of exponential growth.

Class discussion 1. Page 473.

Activity 1. (Groups – 10 minutes) In example 1 on page 473 work all five parts and then work exercises 10, 11, and 12 at the end of the section.

Class discussion 2: Parable 1, Hero to Headless. p. 474. Use a spreadsheet to show how fast the number of grains per square grows for squares 1 to 7. And make a graph. (Use labels “square” and “grains per square” and then Insert > Scatter .) Then continue the same pattern to see how many cells are on square 64.

Activity 2. (Groups) Parable 1. (p. 475) Work together in groups to make a spreadsheet and make the graph for squares 1 to 7. Then continue the same pattern to see how many cells are on square 64.

Activity 3. (Groups) Parable 2. (p. 475) With the same group, but a different student typing the spreadsheet, read the first paragraph and make a similar spreadsheet to answer the question of how much money is under the pillow on each day, up to about day 7. Then use your spreadsheet to answer the questions in the second paragraph.

Activity 4: (Groups) Parable 3. (p. 475-476) Read the first 2 paragraphs. Without a spreadsheet, just by discussion, answer these questions:

1. If the tragedy occurred because the bottle was full at 12:00, how full was the bottle at 11:59?
2. How full was the bottle at 11:56?
3. Suppose that, magically, at 12:00 when the bottle was full, the bacteria got a LOT more space – their bottle quadrupled in volume! Does this help them in the long term? Discuss.
4. On page 477, read Question 4 and discuss.

Activity 5: (Groups) On page 478, read the two “Key Facts about Exponential Growth” and see where each was illustrated in your previous work.

HW 9 and Quiz 9: Due March 27 at the beginning of class.

8A : 1, 3, 5, 6, 7, 8, 9, 13, 15, 17, 23, 25, 29

8B: 9, 10, 11, 12, 15, 17, 19, 21, 25, 29, 31, 33, 35, 37, 43, 45, 49, 55, 57

Quiz 9: 8A: 18 8B: 22, 40, 50

For ongoing spreadsheet work, be able to start with a blank spreadsheet and make tables and graphs as those we did today. This includes Exercises 9-16, answering questions for a larger number of years than these questions asked about.