

Growth and Decay Activity Solutions

BLM 5.2.2 E-Mail Friendly

1. The bottom row of the Tree Diagram (Round 4) will show 81 e-mails. Encourage students to use a small dot to represent each e-mail so that all 81 will fit in the space provided.
2. b) The number of e-mails is 243. Students may justify this by saying there is a constant ratio of 3. They may refer to the fact that there would be 3 e-mails sent from each of the 81 individuals in Round 4, meaning there would be $81 \times 3 = 243$ e-mails.
2. c) Students may see that both columns have a constant ratio of 3. They may comment on the fact that the First Differences are always twice as big as the values in the 2nd column (e.g., 6 is twice as big as 3, 18 is twice as big as 9, 54 is twice as big as 27 etc.)
2. d) e) There is a constant ratio of 3. This is the same as the number of e-mails sent by each person on each round.
3. Make a scatterplot. Have students join the points with a smooth curve in order to see the shape of the graph better. Discuss the fact that this is discrete data.
4. triples
5. 19683. Students will probably calculate the number of e-mails by successively multiplying by 3. Some students may see the pattern as 3^9 but this can be discussed in more depth in the consolidation phase of the lesson.
6. 12th round. Students will likely guess and test. This will depend on their level of understanding at this point. Some may test values of 3^n while others will use successive multiplication by 3.
7. The total value will be $\$4000 + \$16\,000 + \$64\,000 = \$84\,000$. (Assuming the person at the top of the pyramid doesn't invest any money.)

BLM 5.3.1 Tiling a Floor

3. These First Differences are negative, whereas the First Differences for exponential growth data were positive.
4. The constant ratio of $\frac{1}{2}$ in the first table tells us that the areas of consecutive dark grey slabs are being cut in half. The constant ratio of $\frac{2}{3}$ in the second table tells us that each consecutive light grey slab has an area that is $\frac{2}{3}$ of the previous slab.
6. The total dark grey area is 93 square metres and the total light grey area is 211 metres.
7. The dark grey cost is $93 \times \$950 = \$88\,350$. The light grey cost is $211 \times \$700 = \$147\,700$. Therefore the total is: $\$88\,350 + \$147\,700 = \$236\,050$. If the whole foyer is completed using the light grey, then the total area is $93 + 211 = 304$ square metres at a cost of \$700 per metre is: $\$212\,800$. The cost savings is: $\$236\,050 - \$212\,800 = \$23\,250$.