

Additional Practice *(continued)*

Investigation 4

Growing, Growing, Growing

2. A tree farm has begun to harvest a section of trees that was planted a number of years ago.

Supply of Trees

Year	0	1	2	3	4	5	6	7	8
Trees Remaining	10,000	9,502	9,026	8,574	8,145	7,737	7,350	6,892	6,543

- a. Suppose the relationship between the year and the trees remaining is exponential. Approximate the decay factor for this relationship.
- b. Write an equation for the relationship between time and trees remaining.
- c. Evaluate your equation for each of the years shown in the table below to find the approximate number of trees remaining.

Supply of Trees

Year	10	15	20	25	30	35	40
Trees Remaining							

- d. The owners of the farm intend to stop harvesting when only 15% of the trees remain. During which year will this occur? Explain your reasoning.

Additional Practice *(continued)***Investigation 4****Growing, Growing, Growing**

3. Kai's brother collects fuzzy insects called tribetts. The tribett population decreases by 30% each year.
- a. Complete the table to show the number of tribetts at the end of the first 5 years for a starting population of 10,000 tribetts.

Tribett Population

Year	0	1	2	3	4	5
Tribetts						

- b. Write an equation for the relationship between years and number of tribetts.
- c. In what year will there first be fewer than 1,000 tribetts?
4. There are 64 volleyball teams entered in the state competition. In the first round of play, each team plays one other team, so 32 games will be played in the single elimination tournament. The winners from these games play each other in a second round. The winners of the second round play each other in a third round. This continues until there is a final winning team. There are no tie games; games are played into overtime if needed.
- a. How many rounds of play are needed before a winner is determined? Explain your reasoning.
- b. How many total games are played before a winner is determined? Explain.
- c. Suppose an additional round of play is added to the playoffs. How many teams would start in the playoffs? Explain.

Name : _____

Score : _____

Teacher : _____

Date : _____

Operations with Scientific Notation

Simplify. Write each answer in scientific notation. Round to the nearest thousandth if needed.

1) $(2.2 \times 10^5)(4 \times 10^4)$

7) $(8 \times 10^3)^2$

2) $\frac{9 \times 10^{-6}}{6 \times 10^{-5}}$

8) $(7 \times 10^{-3})^{-3}$

3) $(3.23 \times 10^4)(8.97 \times 10^2)$

9) $\frac{4.9 \times 10^4}{1.35 \times 10^6}$

4) $(3 \times 10^{-4})(8 \times 10^{-6})$

10) $(8 \times 10^{-2})^2$

5) $\frac{6.77 \times 10^5}{5 \times 10^3}$

11) $(9.3 \times 10^3)^2$

6) $(6 \times 10^{-5})(9.8 \times 10^{-3})$

12) $\frac{3.59 \times 10^{-5}}{3 \times 10^{-2}}$



Name : _____

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Operations with Exponents

Simplify the exponents.

1) $(3c^2 \cdot c \cdot 2)^3$

7) $(\frac{3}{5})^5 \cdot (\frac{3}{5})^3$

2) $(2b^2 \cdot 4b)^3$

8) $\frac{2^4}{2^3}$

3) $(\frac{r}{r^5})^3$

9) $(\frac{1}{8})^2 \cdot (\frac{1}{8})^6$

4) $(\frac{hn}{5h^5n^4})^3$

10) $\frac{n^3}{n^5}$

5) $h^3 \cdot h^{-5} \cdot h^{-4}$

11) $(2y^3 \cdot y^2 \cdot 3y)^3$

6) $(\frac{8^4}{8^3})^2$

12) $\frac{3d^2b^5}{2db^4}$

