Geometric Application Problems Name Key

1. **Demographics** The population if Sunville increases by 10% each year. It currently has a population of 20,000.
   A. Predict its population to the nearest 100 people 5 years from now. ≈ 32,200

   B. At this rate in how many years will the population be at least 100,000? 17 yrs

2. **Geometry** Starting with an equilateral triangle with sides of length 1, new triangles are formed by joining the midpoints of the sides of each preceding triangle.
   a. What is the length of a side of the 6th triangle? $\frac{1}{32}$

   b. What is the sum of the perimeters of the 1st 6 triangles? 5.905

3. **Recreation** One minute after it is released a balloon rose 80 feet. In each succeeding minute the balloon rose only 60% as far as it rose in the previous minute.
   A. Write a geometric sequence that describes the rise of the hot air balloon during the first 5 minutes.
   80, 48, 28.8, 17.28, 10.368

   B. How far will the balloon rise in 6 minutes? 190.69'

4. **Meteorology** A 5-day rain caused the Olentangy River to rise. After the first day, the river rose one inch. Each day the rise in the river tripled. How much has the river risen after 5 days?
   121"

5. **Aviation** A hot air balloon rises 80 feet in the first minute of flight. If in each succeeding minute the balloon rises only 90% as far as in the previous minute, what will be its maximum altitude if it is allowed to rise without limit?
   800'

6. **Sports** A tennis ball fell 60 inches from the line judge's chair during the intermission at Wimbledon. The ball rebounds 2/3 that distance on the first bounce. It continues that pattern on each succeeding bounce before it comes to rest. Assuming that the ball bounces straight up and down, how far did it travel before it came to rest?
   300'

7. **Physics** Ann T. Gravity has developed WackoPutty, which, if dropped, rebounds to 108% of its previous height. A ball of WackoPutty is dropped from a height of 6 feet.
   A. How high does it bounce on the 10th bounce? 12.95'

   B. How far has it traveled up and down from when it was dropped to the top of the 10th bounce? 180.8'

8. **Physics** A ball is dropped from a building 65 ft tall. If on each bounce the ball rebounds to 75% of the height of the previous bounce, how far does it travel? 455'

9. **Aeronautics** A vacuum pump removes 1/10 of the air from a space capsule on each stroke of its piston. What percent of the air remains after 10 strokes of the piston?
   34.86%