1. A patient is given 30 mg of a therapeutic drug. Each day, 50% of the drug is metabolized by the patient's body. If the patient is given a 30 mg dose of the drug each day at the same time, write a geometric series that indicates the drug level in the body after \( n \) days. What would be the level after 5 days? After 8 days?

2. A ball is dropped from a height of 20 feet. On each bounce, it goes back to \( \frac{3}{4} \) of the previous height. Represent the total distance traveled. Find the total distance traveled by the ball before it comes to a rest.

3. The cost of laying a new television cable is a constant amount of $5000 for every 100 feet and a variable cost of $5000 for the first 100 feet and $3000 for the next 100 feet, $1800 for the next 100 feet, $1080 for the next 100 feet, and so on. Calculate the cost for laying 600 feet of cable. Show that the total cost variable theoretically speaking can not exceed $12,500.