Geometric Sequence Assignment

Solve each problem using your knowledge of sequences. You may have some arithmetic sequences in here in addition to geometric sequences!

1. You visit the Grand Canyon and drop a penny off the edge of a cliff. The distance the penny will fall is 16 feet the first second, 48 feet the next second, 80 feet the third second, and so on in an arithmetic sequence. What is the total distance the object will fall in 6 seconds?

2. After knee surgery, your trainer tells you to return to your jogging program slowly. He suggests jogging for 12 minutes each day for the first week. Each week thereafter, he suggests that you increase that time by 6 minutes per day. How many weeks will it be before you are up to jogging 60 minutes per day?

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3. A mine worker discovers an ore sample containing 500 mg of radioactive material. It is discovered that the radioactive material has a half life of 1 day. Find the amount of radioactive material in the sample at the beginning of the 7th day.

4. Heavy rain in Oxford caused the Brandywine Creek to rise. The creek rose three inches the first day, and each day twice as much as the previous day. How much did the creek rise on the fifth day?