Sequences and Series Review

1. A group of ten numbers form an arithmetic sequence: -4, -7, -10, -13, -16….. State the value of *t*1 and *d* and find the tenth term.
2. Determine the first term of the arithmetic sequence in which the 16th term is 110 and the common difference is 7.
3. Josh has set up a display of cans in his father’s grocery store. The top row has 2 cans, the second row has six cans, and the third row has 10 cans. If the display has 6 rows, how many cans are there in total?
4. A bacteria culture initially has 200 bacteria and the number increases by 8% every hour. How many bacteria are present at the end of 8 hours?
5. A set of bowls are made so they can be nested for easy storage. The largest bowl has a radius of 40 cm and each successive bowl has a radius of 9/10 of the preceding one. What is the radius of the fifth bowl?
6. As a teacher, Mrs. Borys gets paid on a salary grid. The sequence of salaries from year one to year ten forms an arithmetic sequence. She earned $37 500 in the first year and received increases of $4500 each year. What is the total amount of money that she could make in her first ten years of teaching?
7. Mrs. Borys moved to another province and had to work on a different salary grid. This time, the sequence of salaries from year one to year ten form a geometric sequence. She earned $43 000 in her first year and received an increase of 2.5% each year. After year ten she reached her maximum salary and did not receive any more increases. What would be the total amount of money she would receive if she worked in this province for 15 years?
8. An internet NFL football pool pays out money to its top 8 winners. The first prize is $800 and each place below gets 50% of the prize before it. What amount of money would the person in 8th place get?
9. If you put $50 into a savings account today that pays 3% per year in interest. What amount of money will you have in 40 years?
10. A pile driver pounds a metal post into the ground. With the first impact, the post moves 30 cm; with the second impact it moves 27 cm. Predict the total distance that the post will be driven into the ground if
11. The distances form an arithmetic sequence and the post is pounded 8 times.
12. The distances form a geometric sequence and the post is pounded 8 times.
13. The distances form a geometric sequence and the post is pounded indefinitely.