IB Math Studies Name: _____

Sequences and Series Review

Use the given information to determine the indicated value for each arithmetic sequence. Use a formula.

1) $u_1 = -7$, $d = 5$; determine u_{30}
2) $u_1 = 12$, $d = -4$; determine u_{14}.
3) 2, 5, 8, 11, ... ; determine u_{50}
4) $u_6 = 10$, $u_{10} = 16$; determine u_{25}

Use the given information to determine the indicated value for each geometric sequence. Use a formula.

5) $u_1 = -2$, $r = 3$; determine u_9
6) $-3, 1, -\frac{1}{3}, \frac{1}{9}, \ldots$; determine u_7 exactly
7) $u_1 = \frac{1}{4}$, $u_6 = 8$; determine u_{12}

Use the given information to determine the indicated sum for each arithmetic series. Use a formula.

8) $-6 - 4.5 - 3 - 1.5 \ldots + 10.5$; determine S_{12}
9) $u_1 = 40$, $d = -3$; determine S_{18}
10) $\sum_{i=1}^{25}(2i - 3)$

Use the given information to determine the indicated sum for each geometric series. Use a formula.

11) 16 – 8 + 4 – ... ; determine S_6
12) 6 + 12 + 24 + ... ; determine S_7
13) $\sum_{i=1}^{15}(5(-2)^{i-1})$

Solve the following application problems

14) A colony of bacteria doubles in number every 30 minutes. If there are 1,000 bacteria to start with, how long will it take for the number of bacteria to reach 128,000?

15) If an automobile is worth 60% of its value the preceding year, what is the value at the end of four years of a car with a purchase price of $15,000?

16) Determine the number of terms in the sequence {–20, –9, 2, 13, ... , 46}

17) A formation for a marching band has 14 marchers in the front row, 16 in the second row, 18 in the third, and so on, for 25 rows total. How many marchers are in the last row?

18) A ball is dropped to the ground from a height of 54 feet and each time it bounces it rebounds $^2/_3$ as high as it did on the previous bounce. How high does It rebound on the sixth bounce?

19) A contest offers 15 prizes. The first prize is $5000 and each successive prize is $250 less than the preceding prize. What is the total amount of money to be distributed in prizes?

20) A company's first-year sales were $60,000 and its sales increased 10% per year. Find the total sales for the first ten years.

21) A movie theater has 20 rows with 18 seats in the first row, 20 in the second row, 22 in the third row, and so on. How many seats are in the theater?

22) The maximum that a part time worker can expect to earn in a year is $7200. The starting salary is $5100 and it is increased by $75 each year. How long will it take a part time worker to earn the maximum available amount?

23) A computer loses 30% of its value each year. If the computer is originally worth $3500, after how many years will its value be below $1800?

24) How many odd numbers (beginning with 1) must be added before the total sum reaches 1,000,000?