

Knowledge & Understanding	Application	Thinking	Communication
/13	/13	/12	/4

IT IS EXPECTED THAT YOU WILL SHOW APPROPRIATE USE OF A FORMULA FOR THESE QUESTIONS AND NOT ONLY TRIAL AND ERROR, TO RECEIVE FULL MARKS.

Formulas

$t_n = a + (n - 1)d$ $S_n = \frac{n}{2}[2a + (n - 1)d]$ $S_n = \frac{a(r^n - 1)}{r - 1}$ $S_n = \frac{n}{2}(a + t_n)$ $t_n = ar^{(n - 1)}$

Part A: Knowledge & Understanding:

1. Determine the first three terms in the sequence

defined by: $t_n = \frac{4n}{4 - n}$

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2. Determine S_{11} for the following series: $-3 + 15 - 75 \dots$

/3
3. Determine the sum of the series: $16 + 24 + 32 + \dots + 128$

/4
4. The 21st term in an arithmetic series is 38, and the sum of the first 21 terms is $- 567$. Determine the 9th term of the sequence.

/4

Part B: Application

5. A new Honda cost \$28 500. It depreciates by 18% in the first year and then by 9% every year after that. What is the value after 6 years?

/4

6. Photos 4 U has cameras on sale this month. On the first day 8 cameras were sold. Each day 6 more cameras were sold than on the previous day. The entire shipment of 1428 cameras must be sold. If the same pattern of sales continues, how many days will it take to sell all of the cameras?

/5

7. Celine deposited \$158 into her savings account. Each week, she deposits \$12 less than the previous week until she makes her last deposit of \$2. Determine the total value of the deposits.

/4

Part C: Thinking

8. A sequence has $t_4 = 108$ and $t_7 = 2916$. Determine the first three terms if the sequence is:

a) arithmetic b) geometric

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11. A ball is thrown 10 m into the air. The ball falls, rebounds to half of its previous height, and falls again. If the ball continues to rebound and fall in this manner, find the total distance the ball travels until it hits the ground for the fifth time.

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Part D: Communication

Your communication mark will be determined by how well you answer all of the questions, including proper mathematical form, notation and narration (where appropriate). A level will be assigned according to the following rubric: [4 marks]

Communication - The conveying of meaning through various forms				
Expectation	1	2	3	4
- provides explanation in writing; communicates ideas & solutions effectively using numbers & algebraic symbols, and/or using pictures, diagrams, charts, tables, graphs. etc	This student expressed & organized mathematical thinking with limited effectiveness. Please show all steps neatly and clearly, using proper form.	This student expressed & organized mathematical thinking with some effectiveness. Please show all steps neatly and clearly, using proper form.	This student expressed & organized mathematical thinking with considerable effectiveness. Please make sure all steps are shown neatly and clearly, using proper form.	This student expressed & organized mathematical thinking with a high degree of effectiveness. Please continue to show all steps neatly and clearly, using proper form.