Multiple Choice Questions (12 marks)

1. If the general term of a sequence is $a_n = 2^{n-1} + 1$, find the positive difference between the 4^{th} term and the 6^{th} term of the sequence.

   A. 4 B. 24 C. 42 D. 48

2. Consider the formula $P = 4a + 2$. If the value of a decreases by 1, the value of P

   A. does not change. B. decreases by 1. C. decreases by 2. D. decreases by 4.

3. Which of the following is NOT a triangular number?

   A. 35 B. 45 C. 55 D. 66

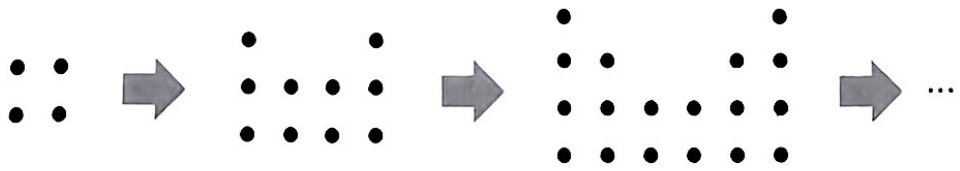
4. The profit of selling an apple is \$1.5, while that of selling an oranage is \$2. A total of 150 apples and oranges were sold today, and the total profit is \$260. How many apples were sold today?

   A. 60 B. 70 C. 80 D. 90

5. Consider the formula $F = \frac{9}{5}C + 32$, where F and C are temperatures in degree Fahrenheit ($^\circ$F) and degree Celsius ($^\circ$C) respectively. If a temperature is 250°F, find the temperature in degree Celsius.

   A. $121\frac{1}{9}^\circ$C B. $156\frac{2}{3}^\circ$C C. $392\frac{2}{5}^\circ$C D. 483°C

6. In the figure, the 1st pattern is formed by 4 dots. For any positive integer n, the $(n+1)$th pattern is formed by adding $(2n+4)$ dots to the nth pattern. Find the number of dots in the 6th pattern.



   A. 28 B. 40 C. 54 D. 70

1.	2.	3.	4.	5.	6.

Conventional Questions (15 marks)

1. It is given that $a_{n+1} = 2a_n - 13$, where n is a positive integer. If $a_4 = -131$, find the value of a_1.

(3 marks)

2. Sandra is going to buy some movie tickets. If she buys 5 tickets, \$175 will be left. If she buys 10 tickets, she is \$150 short. What is the maximum number of movie tickets that she can buy?

(5 marks)

3. The general term a_n of a sequence is $37 - 7n$.

   (a) If $a_k = -47$, find the value of k.
   (b) Is -132 a term of the sequence? Explain your answer.
   (c) Write down the first four terms of the sequence. Hence write down the general term of the sequence $\frac{1}{15}, \frac{4}{23}, \frac{3}{8}, \frac{8}{9}, \cdots$.

(7 marks)

END OF PAPER