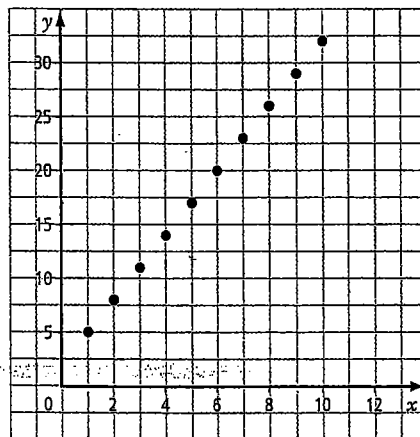


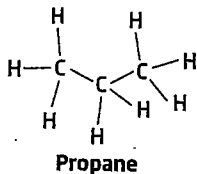
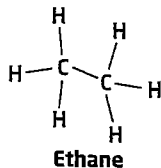
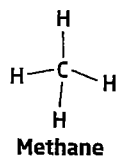
Math 10
Unit 8
Sequences.

Practise

- Decide whether each sequence is arithmetic. For each arithmetic sequence, state the value of t_1 , the value of d , and the next three terms.
 - 16, 32, 48, 64, 80, ...
 - 2, 4, 8, 16, 32, ...
 - 4, -7, -10, -13, -16, ...
 - 3, 0, -3, -6, -9, ...
- Write the first four terms of each arithmetic sequence for the given values of t_1 and d .
 - $t_1 = 5, d = 3$
 - $t_1 = -1, d = -4$
 - $t_1 = 4, d = \frac{1}{5}$
 - $t_1 = 1.25, d = -0.25$
- For the sequence defined by $t_n = 3n + 8$, find each indicated term.
 - t_1
 - t_7
 - t_{14}
- For each arithmetic sequence, determine the values of t_1 and d . State the missing terms of the sequence.
 - , ■, ■, 19, 23
 - , ■, 3, $\frac{3}{2}$
 - , 4, ■, ■, 10
- Determine the position of the given term to complete each statement.
 - 170 is the ■th term of -4, 2, 8, ...
 - 14 is the ■th term of $2\frac{1}{5}, 2, 1\frac{4}{5}, \dots$
 - 97 is the ■th term of -3, 1, 5, ...
 - 10 is the ■th term of 14, 12.5, 11, ...
- Determine the second and third terms of an arithmetic sequence if
 - the first term is 6 and the fourth term is 33
 - the first term is 8 and the fourth term is 41
 - the first term is 42 and the fourth term is 27
- The graph of an arithmetic sequence is shown.
 - What are the first five terms of the sequence?
 - Write the general term of this sequence.
 - What is t_{50} ? t_{200} ?
 - Describe the relationship between the slope of the graph and your formula from part b).
 - Describe the relationship between the y-intercept and your formula from part b).



13. Hydrocarbons are the starting points in the formation of thousands of products, including fuels, plastics, and synthetic fibres. Some hydrocarbon compounds contain only carbon and hydrogen atoms. Alkanes are saturated hydrocarbons that have single carbon-to-carbon bonds. The diagrams below show the first three alkanes.



- a) The number of hydrogen atoms compared to number of carbon atoms produces an arithmetic sequence. Copy and complete the following table to show this sequence.

Carbon Atoms	1	2	3	4
Hydrogen Atoms	4			

- b) Write the general term that relates the number of hydrogen atoms to the number of carbon atoms.
- c) Hectane contains 202 hydrogen atoms. How many carbon atoms are required to support 202 hydrogen atoms?
14. The multiples of 5 between 0 and 50 produce the arithmetic sequence 5, 10, 15, ..., 45. Copy and complete the following table for the multiples of various numbers.

Multiples of	28	7	15
Between	1 and 1000	500 and 600	50 and 500
First Term, t_1			
Common Difference, d			
Last Term			
General Term			
Number of Terms			

Solutions:

5.6 Arithmetic Sequences, pages 274 to 279

- arithmetic sequence: $t_1 = 16$, $d = 16$;
next three terms: 96, 112, 128
 - not arithmetic
 - arithmetic sequence: $t_1 = -4$, $d = -3$;
next three terms: -19, -22, -25
 - arithmetic sequence: $t_1 = 3$, $d = -3$;
next three terms: -12, -15, -18
- 5, 8, 11, 14
 - 1, -5, -9, -13
 - 4, $\frac{21}{5}$, $\frac{22}{5}$, $\frac{23}{5}$
 - 1.25, 1.00, 0.75, 0.50
- $t_1 = 11$
 - $t_7 = 29$
 - $t_{14} = 50$
- $t_1 = 7$, $d = 4$; 7, 11, 15, 19, 23
 - $t_1 = 6$, $d = -\frac{3}{2}$; 6, $\frac{9}{2}$, 3, $\frac{3}{2}$
 - $t_1 = 2$, $d = 2$; 2, 4, 6, 8, 10
- 30
 - 82
 - 26
 - 17
- $t_2 = 15$, $t_3 = 24$
 - $t_2 = 19$, $t_3 = 30$
 - $t_2 = 37$, $t_3 = 32$
- 5, 8, 11, 14, 17
 - $t_n = 3n + 2$
 - $t_{50} = 152$, $t_{200} = 602$
 - The general term is a linear equation of the form $y = mx + b$, where $t_n = y$ and $n = x$. Therefore, $t_n = 3n + 2$ has a slope of 3.
 - The constant value of 2 in the general term is the y-intercept of 2.
- A and C; both sequences have a natural-number value for n .
- 5
- $t_n = 6n + 4$
 - 58
 - 12
- 180 cm²
- | | | | | |
|----------------|---|---|---|----|
| Carbon Atoms | 1 | 2 | 3 | 4 |
| Hydrogen Atoms | 4 | 6 | 8 | 10 |
 - $t_n = 2n + 2$ or $H = 2C + 2$
 - 100 carbon atoms

14.

Multiples of	28	7	15
Between	1 and 1000	500 and 600	50 and 500
First Term, t_1	28	504	60
Common Difference, d	28	7	15
Last Term	980	595	495
General Term	$t_n = 28n$	$t_n = 7n + 497$	$t_n = 15n + 45$
Number of Terms	35	14	30