**4.1 – Writing Equations to Describe Patterns**



Ex. 1: Look at the following pattern made with toothpicks:

We can record the number of toothpicks in each figure in a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or in a graph:

|  |  |
| --- | --- |
| Figure number (*f*) | Number of toothpicks (*t*) |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |

1. Describe the patterns in the table.

Since a steady increase in the figure number (\_\_\_\_\_\_\_) produces a steady change in the number of toothpicks (\_\_\_\_\_\_\_\_\_\_), the points fall on a straight line when graphed. So, this is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

1. Write an equation that relates *t* to *f*.
2. If the pattern continued, how many toothpicks would be in the 24th figure?
3. What figure number has 100 toothpicks?

Ex. 2: Write an equation that relates distance from home to driving time given the following data:

|  |  |
| --- | --- |
| Driving time (*t*)  | Distance from home (*d*) |
| 1 min | 11 km |
| 2 min | 8 km |
| 3 min | 5 km |

Ex. 3: A large pizza with tomato sauce and cheese costs $13.95. Each additional topping costs $1.50.

|  |  |
| --- | --- |
| Number of extra toppings (*t*) | Cost (*C*) |
| 1 | 15.45 |
| 2 | 16.95 |
| 3 | 18.45 |

1. Write an equation that relates cost (*C*) to the number of additional toppings (*t*).
2. A pizza costs $30.45. How many toppings does it have?