1.4 Relationships in Patters p. 20

**Definitions**:

**Relation**: when we compare or relate a variable to an expression that contains a variable

**A number pattern may be described by using the term number…**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Term number** | 1 | 2 | 3 | 4 | 5 | 6 |
| **Term** | 3 | 6 | 9 | 12 | 15 | 18 |

In this case, each term increased by 3

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Term number** | 1 | 2 | 3 | 4 | 5 | 6 |
| **Term** | 6 | 12 | 18 | 24 | 30 | 36 |

In this case, each term increased by 6

**We can let “n” represent any term number.**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Term number** | 1 | 2 | 3 | 4 | 5 | 6 | … | n |
| **Term** | 6 x 1 = 6 | 6 x 2=12 | 6 x 3= 18 | 6 x 4= 24  | 6 x 5 = 30 | 6 x 6 = 36 | … | 6 x n =6n |

Then the term is represented by 6 x n or 6n (As seen in the table above)

If we compare or **“relate”** a variable (“n”) to an expression that contains the variable (6n), you have a **relation.**

If we wish to determine the 15th term of this relation we substitute n = 15 in the expression 6n

6n = 6 x 15 = 90

Therefore, the 15th term of this relation is 90. The major advantage of this is we do not have to find the previous 14 numbers in the table.

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Let’s practice!

Mr. Prasad plans to hold a party for a group of his friends. The cost of renting a room is $35. The cost of food is $4 per person.
a. Write a relation for the cost of the party in dollars, for n people.

b. How much will a party cost for 10 people? For 15 people?

c. How does this relation change if the cost of food doubles? How much would a party for 10 people cost? How do we know the answer makes sense?

**Homework:** p. 23 # 1-7 Bonus:8 and 9