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Lesson: Patterns

**Minnesota State Academic Standards:**

**Strand:** Algebra

**Standard:** Use single-operation input-output rules to represent patterns and relationships and to solve real-world and mathematical problems.

**Number and Benchmark:**

|  |  |
| --- | --- |
| 3.2.1.1 | Create, describe, and apply single-operation input-output rules involving addition, subtraction and multiplication to solve problems in various contexts. *For example*: Describe the relationship between number of chairs and number of legs by the rule that the number of legs is four times the number of chairs. |

**NTCM Standards:**

**Standard 10: Knowledge of Different Perspective on Algebra**

Candidates emphasize relationships among quantities including functions, ways of representing mathematical relationships and the analysis of change.

**Indicators:**

10.1 Analyze patterns, relations and functions of one and two variables.

**Objectives:**

* Students will be able to identify that numbers can create patterns
* Students will be able to use the patterns that numbers create and apply them to real life situations and problems.

Materials:

* Paper
* Pencil
* Worksheets

Procedure:

Launch: Do some clapping patterns. Have the students repeat them after you have clapped them. “Did you guys hear the pattern while we were clapping? Like music, Math can have patterns. We hear patterns and we see patterns. Today I’m going to show you some patterns with numbers. Let’s see if you can figure them out!”

* Write some number patterns on the board. Have the students figure out the pattern for each one.
* 1, 3, 5, 7, 9, 2, 4, 6, 8, 10, 24, 34, 44, 54, 3, 6, 9, 12, 15, 35, 40, 45, 50, 11, 22, 33, 44, 9, 19, 29, 39,
* On a piece of scratch paper have the students figure out the table and the rule that goes with it.
* Explain the rule and the table.
* Pass out the worksheet and work on it as a class.
* Write the word problem and chart on the board and see if the students can use the chart to figure out the problem.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Kris’ Age |  4 |  7 |  |  15 |  |  23 |
| Pat’s Age |  7 |   |  15 |  |  22 |  26 |

* Kris’ age and Pats age are shown here. Some of the ages are missing. Can you figure out the missing ages and how many years they are apart from each other?
* When Kris was 15, how old was Pat?
* When Pat was 22, how old was Kris?
* When Pat was 30, how old was Kris?
* Which sounds best to explain the rule for this table?
1. Add three to Kris’ age to find Pat’s age.
2. Add three to Pat’s age to find Kris’ age.
3. Subtract three from Kris’ age to find Pat’s age.
4. Subtract three from the sum of Pat and Kris’ age to find Pat’s age.

Assessment:

* Students will be assessed on their worksheets.