Patterns in Arithmetic: General Math - Booklet 3 Sample pages

Patterns

Purpose

The purpose is to delight the student with the beautiful and playful side of mathematics. To develop awareness and skill in areas of mathematics other than arithmetic. To nourish the pattern lover in all of us.

Concurrent

These activities can be done in any order you choose. They should be done concurrently with other lessons all year long. Students can work independently once they understand general instructions.

Students love mathematical play, which nourishes the fanciful as well as helps them develop a liking of math. Arithmetic calculations are important but can become a psychological grind unless the beautiful and the delightful in mathematics are enjoyed along the way.

Cycles

Activity

Cycles are patterns of regularly occurring events that repeat themselves. What series of things in the world go around and around and around–never stopping–always repeating, over and over again? Nature abounds with such cycles. Together, brainstorm about cycles you have experienced, such as cycles of a day, of a school year, of a tree during a year. Have the student think of a cycle and then draw it on a divided circle. The circle can have as many sections as needed. Draw an arrow to show in which direction the cycle flows. Here is an example of one cycle. It is the yearly cycle of an oak tree.

Number Patterns

Purpose

The purpose is to develop, describe, and extend number patterns involving all operations and to introduce formal number pattern analysis, for example, looking for a rule. Learning to see and enjoy number patterns as well as auditory, tactile, and visual patterns is a critical skill for developing problem-solving methods and algebra. Finding patterns is also a delight to the senses.

Prerequisites

If the student is new to this series, have him begin with the patterns in *Patterns in Arithmetic: Books 1 and 2*. Review sound, visual, and movement patterns.

Worksheets

Patterns: Geometry - page 1; Number Patterns - Worksheets 1 and 2, pages 3 and 4
Number Patterns: Missing Numbers - page 30

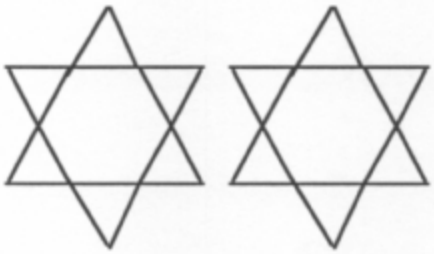
Number Patterns - Worksheet 1 Date_____

Stars

Build with pattern blocks.

One star has 6 points.

Two stars have 12 points.



Three stars have ___ points.

How many points will 10 stars have?_____

Guess first _____

How do you know?

What's the rule?

_____

_____

_____

_____

_____

Stars	Points
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____
9	_____
10	_____

Challenge: How many points will 20 stars have? _____

Number Patterns - Worksheet 2 Date_____

Windows

Build with pattern blocks.

A window one pane wide takes one square.

A window two panes wide takes four squares.

A window three panes wide takes _____ squares.

How many panes in the 10th window?_____

Guess first _____

How do you know?

What's the rule?

_____

_____

_____

_____

_____

_____

_____

_____

_____

Width	Squares
1	_____
2	_____
3	_____
4	_____
5	_____
6	_____
7	_____
8	_____
9	_____
10	_____

Answer Key

Number Patterns - Worksheet 1
Stars

Build with pattern blocks.

One star has 6 points.

Two stars have 12 points.

Three stars have 18 points.

How many points will 10 stars have? 60

Guess first _____

How do you know?

What's the rule?

Six times the number of stars equals the number of points. Star x 6 = points

Stars	Points
1	6
2	12
3	18
4	24
5	30
6	36
7	42
8	48
9	54
10	60

Challenge: How many points will 20 stars have? 120

Number Patterns - Worksheet 2
Windows

Build with pattern blocks.

A window one pane wide takes one square.

A window two panes wide takes four squares.

A window three panes wide takes 9 squares.

How many panes in the 10th window? 100

Guess first _____

How do you know?

What's the rule?

Width x width equals the squares. Multiply each number by itself. Add the width as many times as many times as the width. W x W = squares

Width	Squares
1	1
2	4
3	9
4	16
5	25
6	36
7	49
8	64
9	81
10	100