

# Build & Learn



## Shapes

If you ask a child and an adult to describe a sign they will do it very differently. An adult would start by telling you what it says on the sign, while children would describe the colors, pictures and shapes on theirs. This shows how even very young children are able to recognize shapes - long before they know letters and numbers. At the same time shape knowledge is an important foundation for children's later skills in both art and math.

In this material we have created four activities specifically with the purpose of improving young children's shape knowledge. The activities are easy to start with a small group of children and can be adjusted for the age and skills of the children. Most importantly, the activities are fun and feed children's natural curiosity about shapes.

## Early shape skills and how they tie into math

Usually when you think of young children's math skills you think of the ability to count and add numbers. However, shapes are an equally important aspect of math. The ability to learn geometry is directly related to a child's early shape skills but improving shape knowledge in young children also improves their artistic skills.

This material focuses on the areas of math that revolve around shapes and patterns. In our Build & Learn Numbers and Measurements material we have created activities that focus on the other math areas. The math skills children need to learn in regard to shapes is:

### 1) Spatial sense

This is the most basic level of shape knowledge that children need in order to later learn geometry. It is the introduction of different shapes, directions, size and positions. Within this area children will learn to recognize the basic shapes, their names and how to recognize them from other shapes. This is also the ability to describe whether an object is next to, above or behind something else.

### 2) Representation

This is where children learn to connect shapes and reality. It is an important aspect of shape knowledge that children can recognize shapes in their surroundings. This will set them up for later skills in arts as they will discover that most things can be created with basic

shapes.

### 3) Problem-solving

Children will meet problems for the rest of their lives and practicing how to solve mathematical tasks will directly improve their ability to solve any problem. While working on their shape knowledge children will use and expand their logical thinking which is one of the most important skills they can learn.

### 4) Patterns

A pattern is something that repeats in a logical way and can be practiced with shapes. Children will, however, already understand certain patterns from their day to day life: Before we go to bed we brush our teeth, when we come inside we take off our shoes, before we eat we wash our hands. Those are all patterns. In shape and pattern activities we improve children's ability to understand, recognize and use patterns.

It is the combination of these skills as well as numbers and measurement that set children up with a solid math foundation. Because of this those are the areas that the included activities focus on. This product is meant as an easy tool that you as an educational staff member can use in your everyday work with children's early math skills.

## Zpiiel and Shapes

### Play and Learn

Children learn better when playing. They are naturally curious about as well as interested in shapes, and meeting them in their interest and reacting to it as an adult goes a long way. The Zpiiel elements can be used both in child-initiated play and in planned educational activities.

### Play with all senses

When you play with Zpiiel Build & Learn a lot of senses come into play: Children can touch, look at and manipulate the shapes. Furthermore, they will make use of their tactile sense and be able to physically touch and feel the shapes. Building shapes and manipulating them by twisting them lets the children learn about the different types of shapes on a deeper level.

### Your imagination is the only limitation

With this product you build all shapes yourself using the building set, and you can easily involve the children in this. The elements have ball joints which means that it is easy to change the shapes. Find inspiration for activities that improve early math skills in the following pages. However, the elements can also be used for free play where the children build houses, animals, monsters or anything else they want.

## Activities

### 1. Make the shapes larger

A good beginner exercise that helps children learn the names of different shapes while using their logical thinking to increase the size of different shapes. Improves children's problem-solving and spatial sense.

### 2. Find the shape

Helps children bridge their knowledge of basic or more complex shapes with their reality. Improves spatial sense and representation.

### 3. How many shapes can you make

A problem-solving activity where children through trial learn about different shapes and how to transform from one shape to another. This activity helps children build skills within spatial sense and problem-solving.

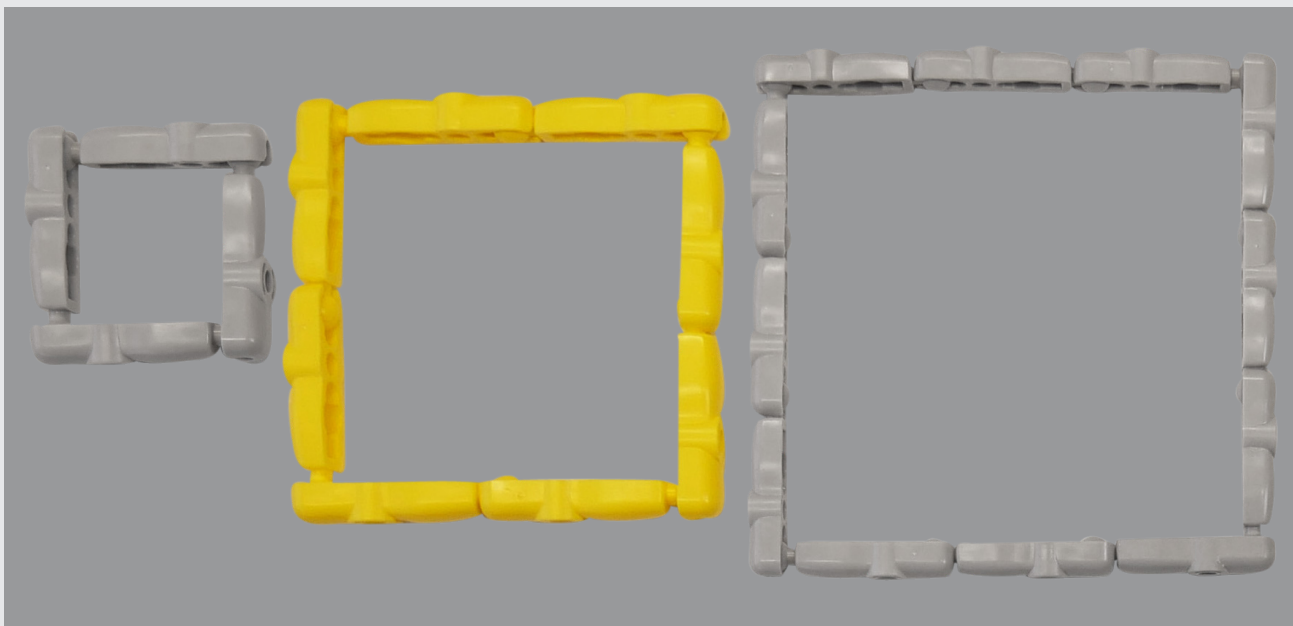
### 4. Make art with shapes

An activity that combines shape knowledge with art. In this activity the children will have a higher level of free play to challenge their creativity. This activity will also help children raise their skills within spatial sense but more importantly teach them how shapes are combined to create something else and therefore help their imagination and skills within representation.

# Make the shapes larger

1.

Activity



**Competency:** Spatial sense, problem-solving

**Materials:** Zpiiel elements

**Age group:** 3-6 years. It is a good beginner activity for young children

**Number of children:** 1-10

## Preparation

1. Find the Zpiiel elements and place them on the table.
2. Build a square, triangle and circle as small as possible or draw the shapes on a piece of paper.

## How to play

1. Show the children a square. Ask them what shape it is and have them describe. You can talk about how many sides it has, how many corners etc.
2. Ask the children to build as small a square as possible with the Zpiiel elements.
3. Now, ask the children to make the same shape only larger. The children will find that they need 8 elements in order to get the exact same square shape.
4. Repeat for as long as the children are interested or try different shapes.

## Tips

When you have made larger squares you can move on to triangles and circles. With older or more skilled children, try more complex shapes such as rectangles, stars, parallelograms, trapezes etc. While the children are working on making the shapes larger you can talk about how they do it: How many elements do they need and what do they need to do be aware of.

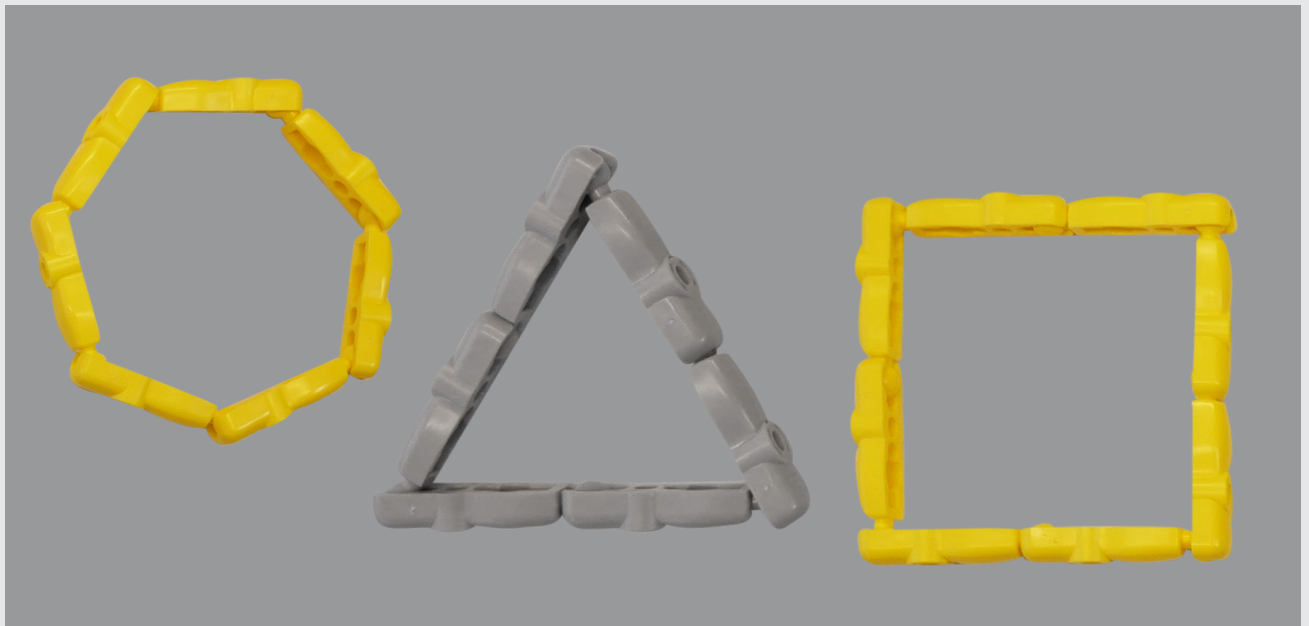
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# Find the shape

2.

Activity



**Competency:** Spatial sense, representation

**Materials:** Zpiiel elements

**Age group:** 3-7 years

**Number of children:** 1-10

## Preparation

1. Put the Zpiiel elements in front of the children.

## How to play

1. Ask the children to build a shape, e.g. a square.
2. When all children have built the correct shape, ask them to find an object in the room that is the same shape. If for example you asked them to build a square, they might bring back a book.

## Tips

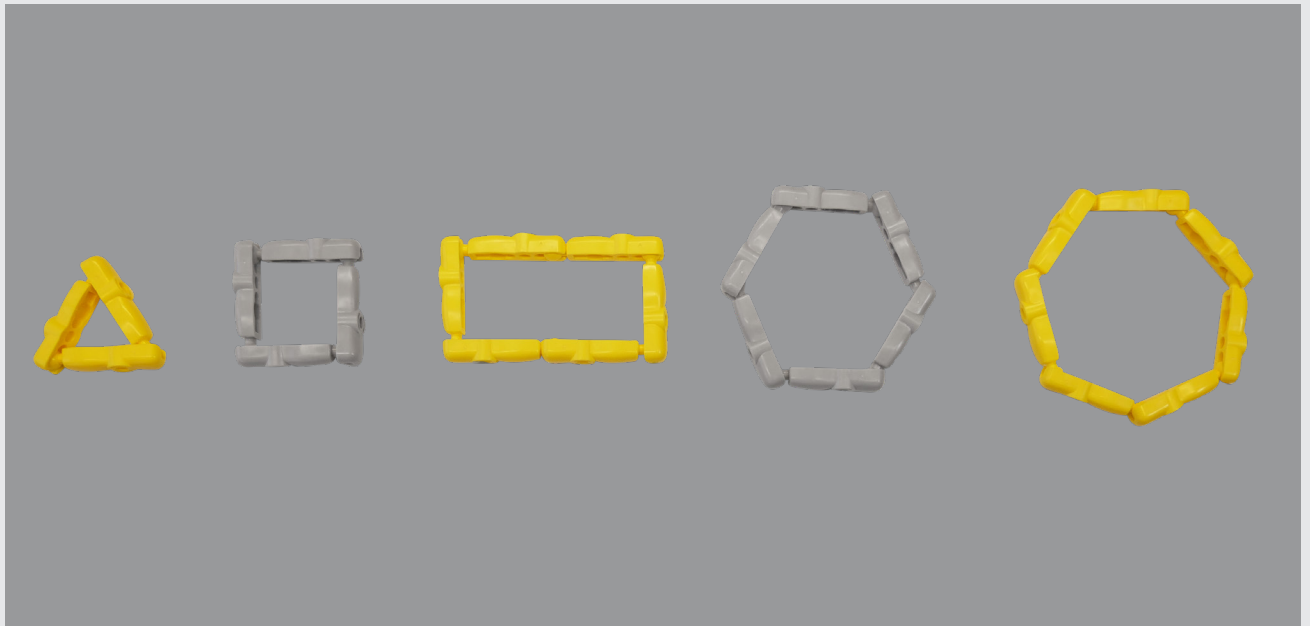
Start out with simpler shapes like squares, triangles and circles and increase the difficulty with more difficult shapes. For older children you can try and have them find an object that has both a triangle and a circle (this could be an ice-cream).



# How many shapes

3.

Activity



**Competency:** Spatial sense, problem-solving

**Materials:** Zpiiel elements

**Age group:** 3-6

**Number of children:** 1-5

## Preparation

1. Put the elements on a table.

## How to play

1. Ask the children to each get 7 elements (younger children might need help counting).
2. When all children have 7 elements each ask them to build as many different shapes as they can with just the 7 elements.
3. Ask the children to show you and the others everytime they have built a new shape and count as you go how many you can make.

## Tips

7 elements is a good place to start as that is the minimum amount to successfully build a circle. You can improve the difficulty by giving the children more elements. Make sure to talk about the shapes the children have built and ask them to both name the shape they have built as well as describing it (e.g. it is a triangle, it has three sides and three corners.) The children do not have to use all elements they can build a triangle with 3 elements, a square with four etc. They can also manipulate the shapes and turn a square into a diamond simply by pulling on the shape.

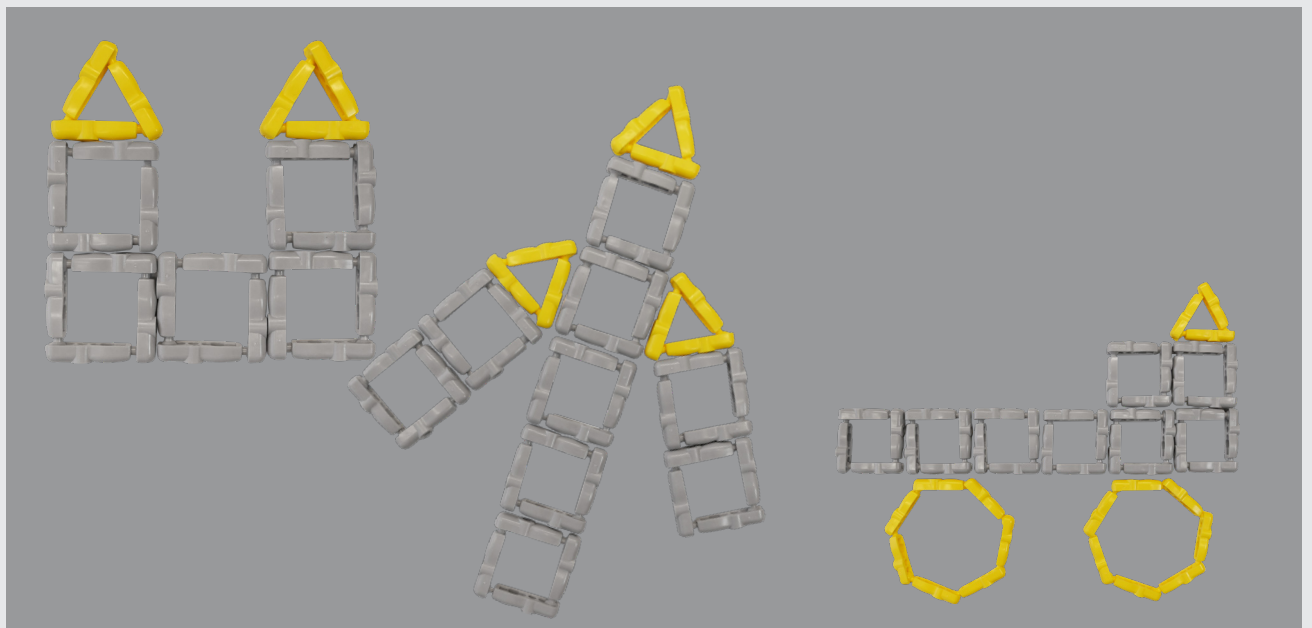
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# Make art with shapes

4.

Activity



**Competency:** Spatial sense, representation

**Materials:** Zpiiel elements

**Age group:** 4-6 years

**Number of children:** 1-5

## Preparation

1. Bring out all the Zpiiel elements
2. For young children you can prebuild one small square, one small triangle and a circle.



## How to play

1. Start by asking the children to build a lot of small squares, triangles and circles. If you are working with very young children show them how to do it first.
2. Show the children a few examples of how two shapes can be combined e.g. a triangle on top of a square becomes a house.
3. When you have turned all elements into small squares, triangles and circles, ask the children to combine the shapes. You can give them different assignments such as build a castle, a truck or a rocket (see picture), or have the children build something from their imagination.

## Tips

Do this activity with different themes e.g. Christmas figures, things you can see outside, or animals. You can even ask them to build numbers or letters using the basic shapes they have created.

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