

# Numbers and Shapes

Have some fun with numbers and shapes.

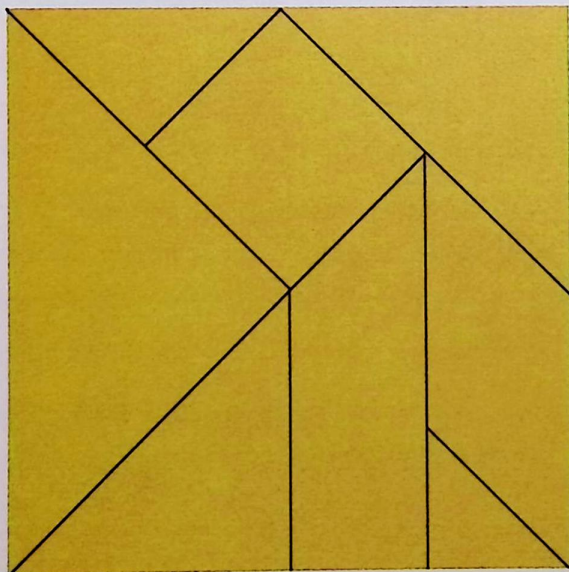
## 1. Math Shapes

Try to make different patterns from the same shapes.

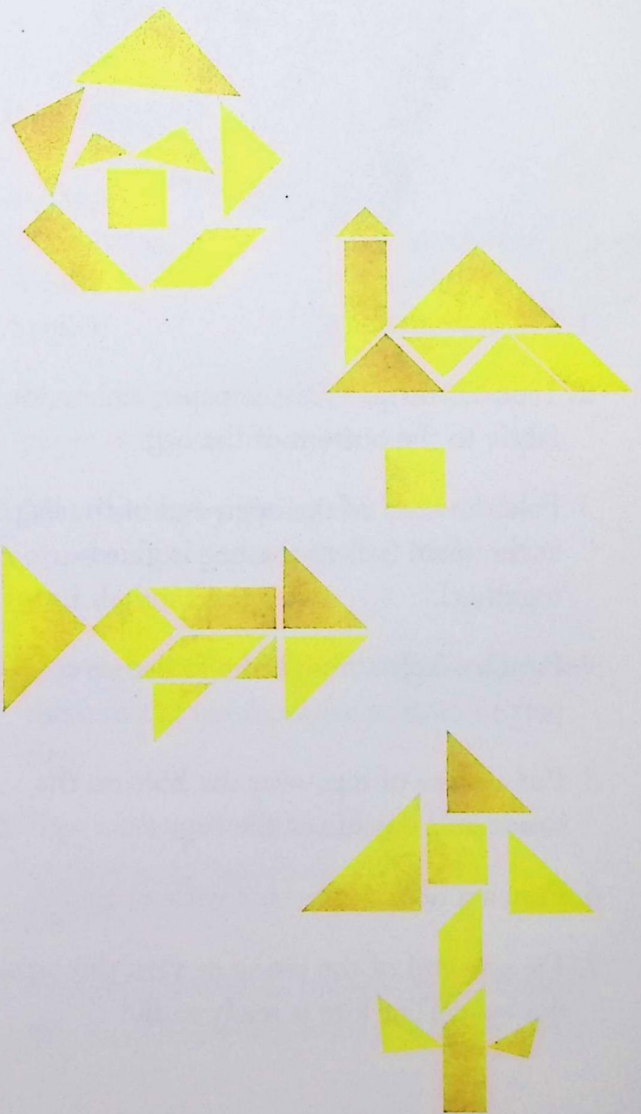
You will need:

- Paper.
- Scissors.
- A ruler.
- A pencil.

1. Have someone help you trace or draw the different shapes inside the square shown here.



2. Cut the paper on the lines.
3. Try to remake the square by putting your shapes back together.
4. Try to make other patterns and designs.

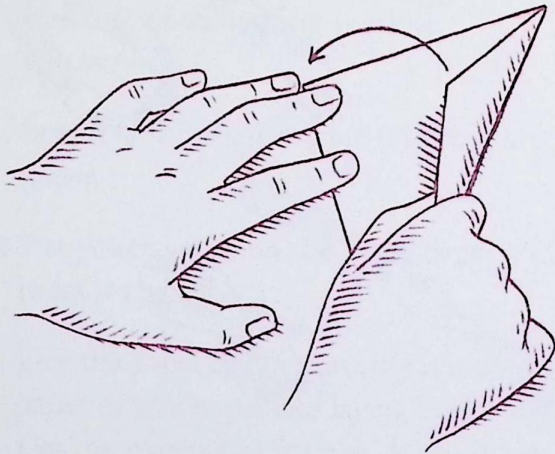


## 2. Origami

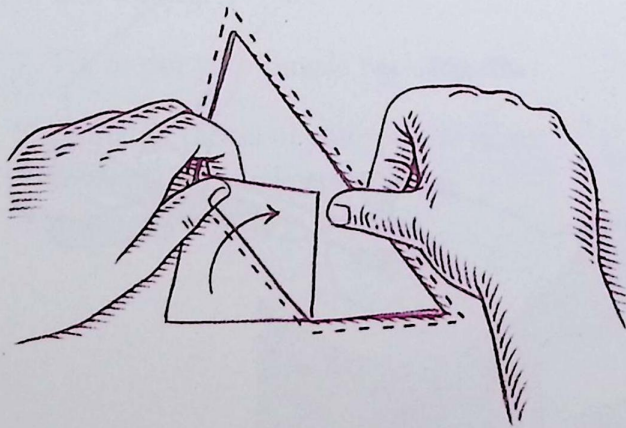
*Origami* is the Japanese art of folding paper. Try making an origami cat.

You will need a square sheet of paper (you can make a paper rectangle into a square by copying these pictures).

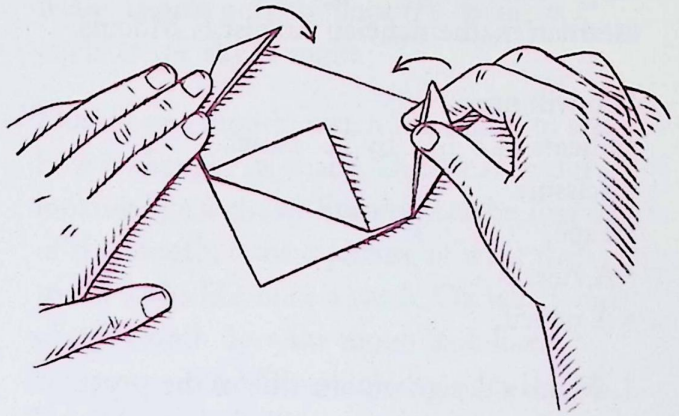
1. Fold the square to make a triangle. See the picture.



2. Fold the bottom part of the triangle up. This is called a trapezoid. See the picture.
3. Fold the right and left points up and to the front. See the picture.



4. What do you have? You can draw a cat's face. What other animals or things can you make by folding paper?



**Try It!**

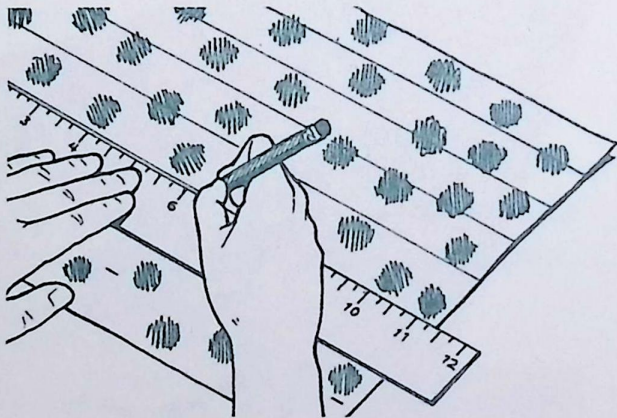
### 3. Möbius Strips

Simple paper magic can happen with Möbius strips. These paper strips are named after the German mathematician August F. Möbius.

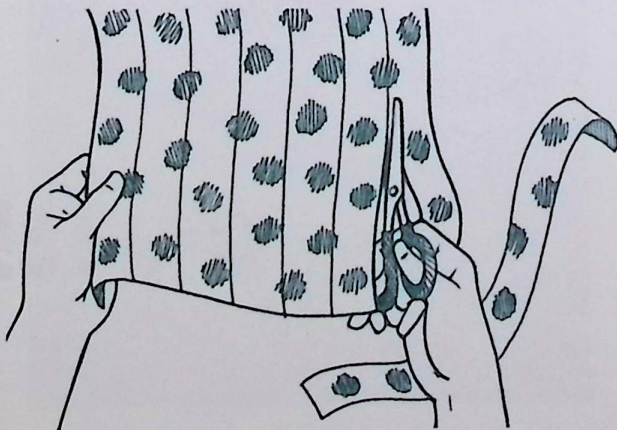
You will need:

- Sheets of 8 1/2" by 11" paper.
- Scissors.
- Tape.
- A rule.
- A pencil.

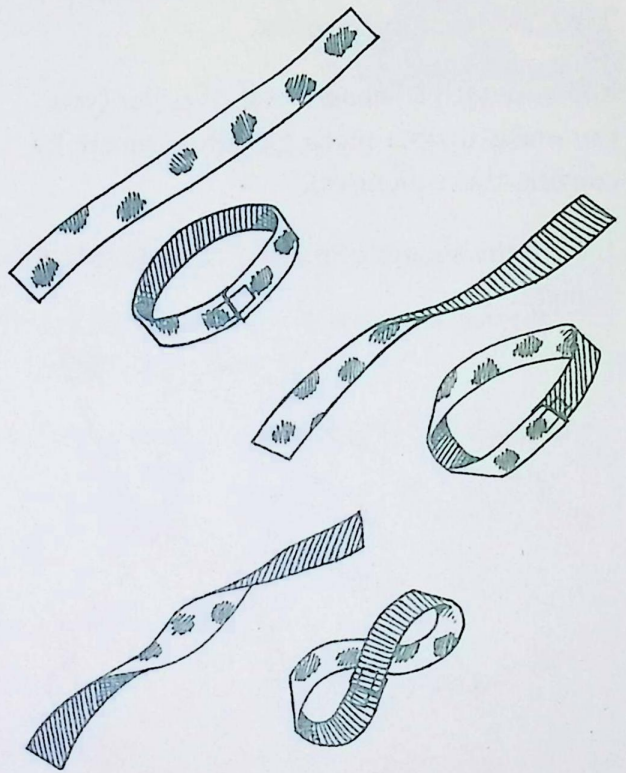
1. Make a design on one side of the paper.
2. Draw long, straight lines 1" apart along the length of the paper. Use the ruler to help you space the lines and draw them straight.



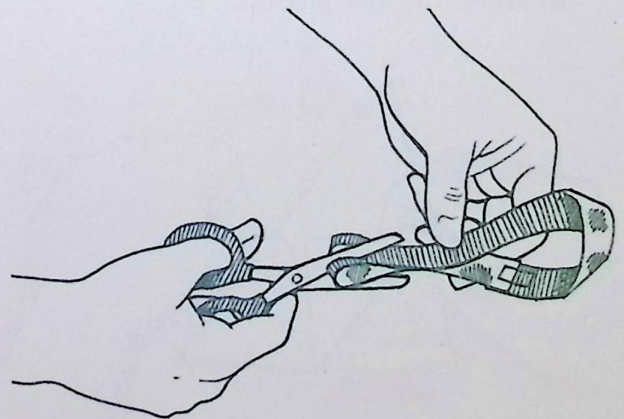
3. Cut the paper into strips along the lines.



4. Make three different kinds of loops, as shown.



5. Tape the ends.
6. Without breaking the chains, cut the loops. Look at the picture to see how it's done.



7. What happens? Feel your way around the edge of the Möbius strip.

## 4. Jigsaw Puzzles

Try to make your own puzzle.

You will need:

- Scissors.
- Heavy paper.
- Glue or paste.
- Newspaper or wax paper.
- Books or other heavy things.
- A pen.
- A picture of something you like.
- An envelope.

1. Spread a thin coat of glue on the heavy paper.
2. Put your picture on the gluey paper and press it smooth.
3. Dry the paper flat by covering it with newspaper or wax paper and laying books on top. Let the papers dry for one day or more.
4. Trim the edges of your paper.
5. Draw several lines over the back of your paper.
6. Cut the paper apart.
7. Try to put your puzzle back together.
8. Store the pieces of your puzzle in an envelope for safekeeping.

## 5. The Shapes of the Moon

Many people only think of the moon as a circle in the sky at night.

During one month, watch the moon to see how it changes its shape. Does it start out looking like a circle? Starting on the first day of the month, draw a picture of what the moon looks like once a week. On which day of the month does the moon look like a complete circle? On which day does it look like it is cut in half?

## 6. Nature Shapes

Take a walk in your neighborhood or a hike in a forest or park. Carry a pad and pencil with you. Look around and try to find different shapes in nature. Do you see any circles, squares, or triangles? Identify any natural things that are in the shape of ovals, diamonds, or straight lines. Draw something in nature that has at least one of these shapes in it.

