LED Foldies

Origami LED Lampions

Electric circuits don't necessarily need to be soldered – they can also be folded!
The small lanterns mix electrical engineering with the ancient art of paper folding.

Want to invent a circuit yourself?

Would you like to try alternative origami forms? Or do you have other ideas how the origami foldings could work with LEDs?

Just try it out:
– fold your origami shape
– mark on the folded shape with a pencil where the LED legs and the battery are going
– open the shape
– on the open sheet, draw the connections from battery trough the LED back to the other side of the battery.
  Pay attention to how many creases you cross - the less the better.
  Prevent short circuits: the connections should not touch each other and themselves when folded again!

Paper-Circuitry

You can find many projects with electric circuits on paper under the term „paper circuitry" online. It's also interesting to experiment with other materials, i.e. copper bands or even conductive ink, which allows to draw circuits directly on paper.
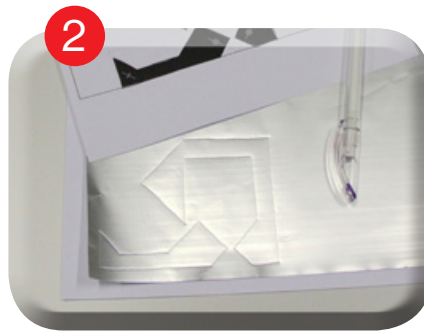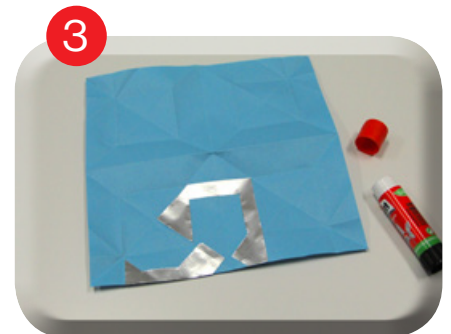
Step by step

1

Fold the paper like indicated and open it again.

2

Transfer the shape of the circuit on tinfoil and cut it out.

3

Glue the tinfoil circuit on the paper.

Ironing the circuit!

If you have access to a laser printer, you can use it to print the circuit shape directly on your origami paper.

You can then iron the cut tinfoil directly onto the paper. No gluing necessary.
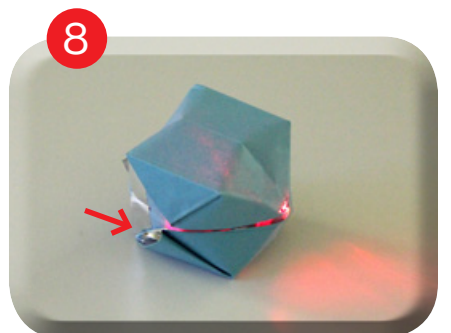
4

Fold the paper again, insert the LED*.

5

Fix the legs of the LED with adhesive tape for stability.

6

Finish the folding.

7

Inflate the balloon.

8

Insert the battery. Maybe flip the battery to match the polarity of the LED.
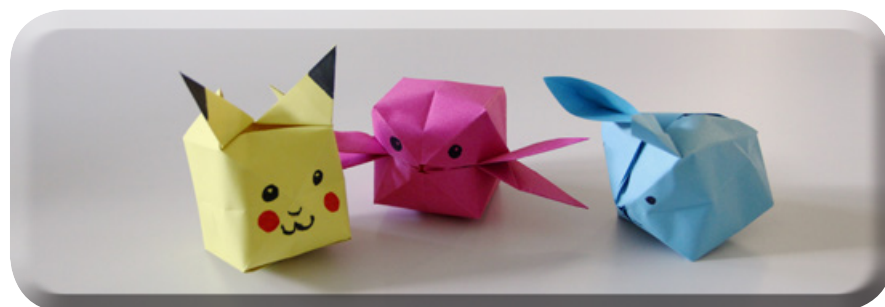
Try other shapes: Pikachu, bird, rabbit – or invent another shape?

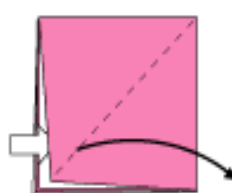* the LED can be turned inwards (like shown), but can point outwards as well (works fine with the rabbit).
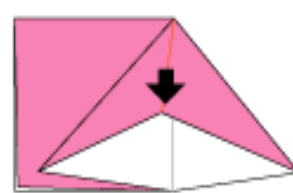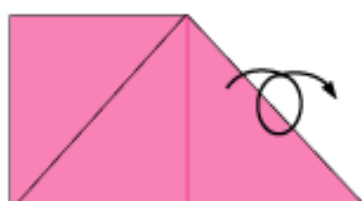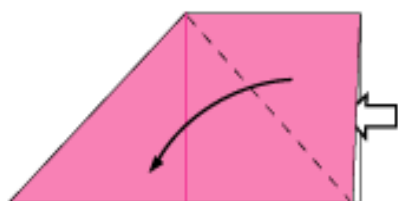
Folding instructions
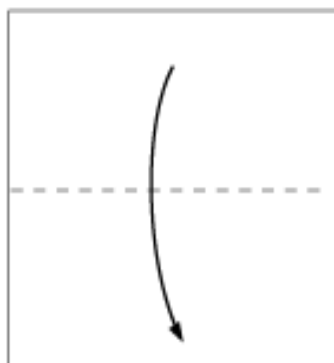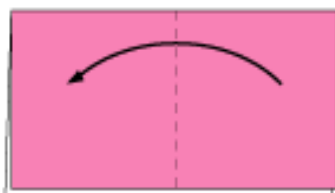
1 fold in half

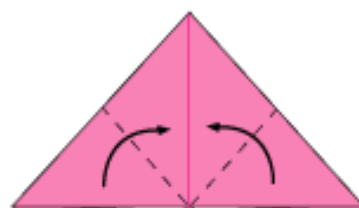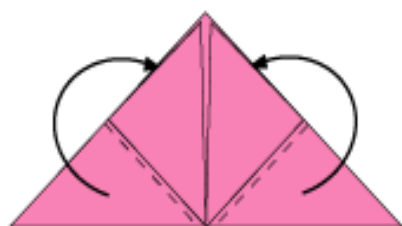**2** fold in half

3 open from arrow
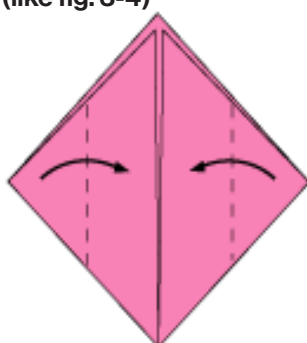
4 flatten out

5 turn over

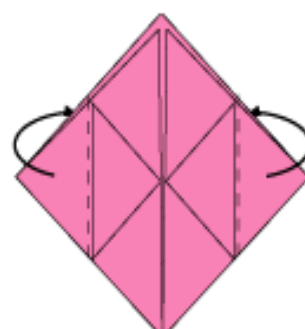**6** open from arrow and flatten out (like fig. 3-4)

7 fold to the middle

8 fold backwards to the middle (like fig. 7)

9 fold to the middle

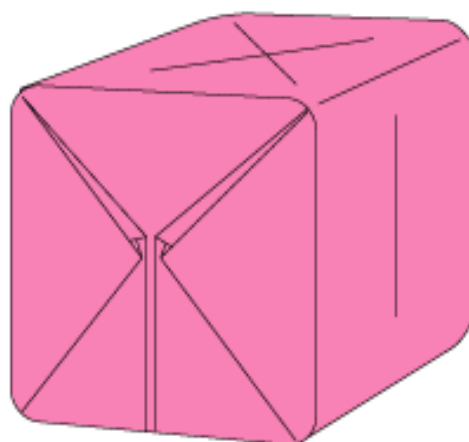**10** fold backwards to the middle (like fig. 9)

11 insert the upper tips into the pockets (front and rear)

12 inflate

13 done!

Balloon

Traditional diagrams by Fumiaki Shingu

Folding instructions

1 fold in half

2 fold in half

3 open from arrow

4 flatten out

5 turn over

6 open from arrow and flatten out (like fig. 3-4)

7 fold to the middle

8 fold backwards to the middle (like fig. 7)

9 fold to the middle, then reopen

10 open

11 fold along the dotted line

12 open from arrow and fold forwards

13 fold along the dotted line
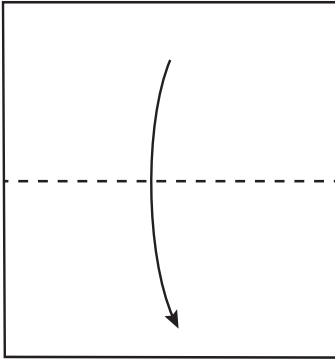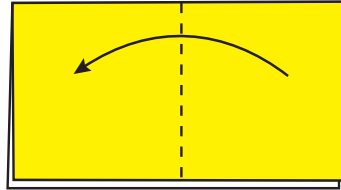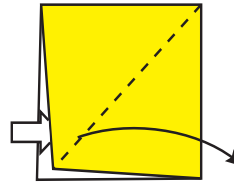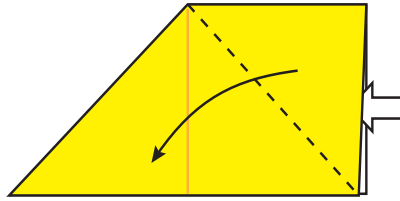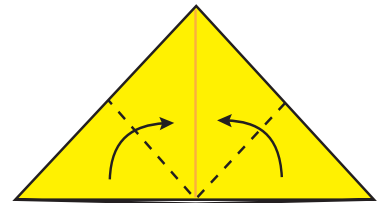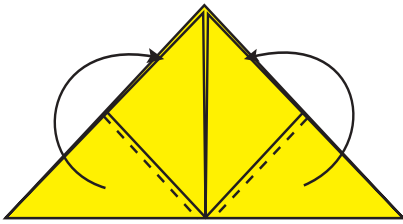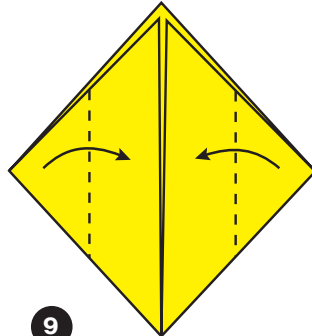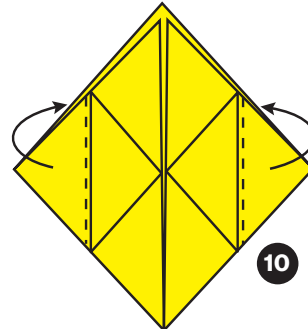
14 repeat steps 11 to 13 for all sides

15 fold and reopen

16 inflate

17 done!

Bird

Folding instructions
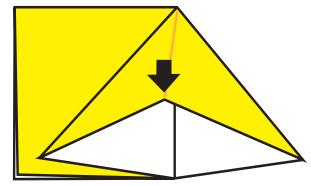
1 fold in half

2 fold in half

3 open from arrow
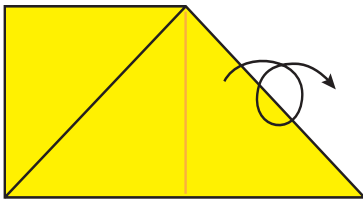
4 flatten out

5 turn over

6 open from arrow and flatten out (like fig. 3-4)
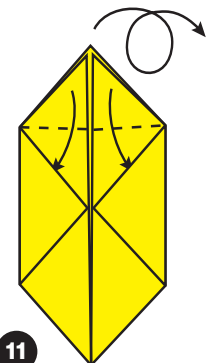
7 fold to the middle

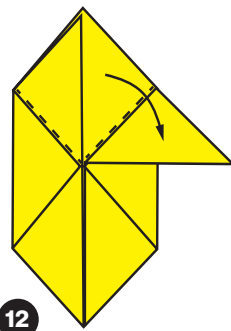**8** fold backwards to the middle (like fig. 7)
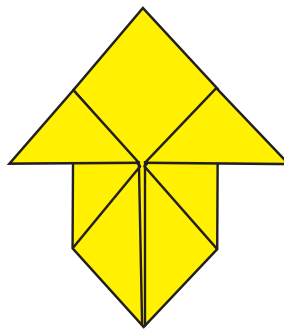
9 fold to the middle

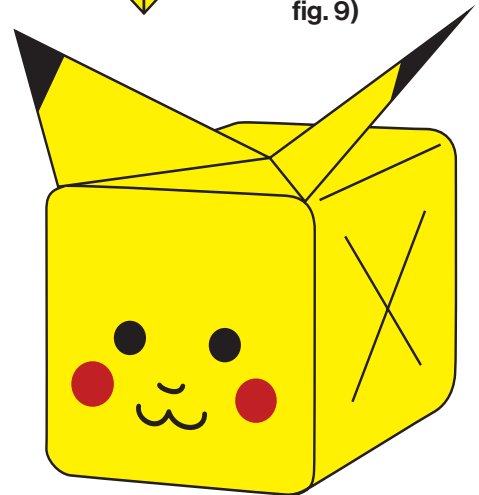**10** fold backwards to the middle (like fig. 9)

11 insert the upper tips into the pockets, turn over

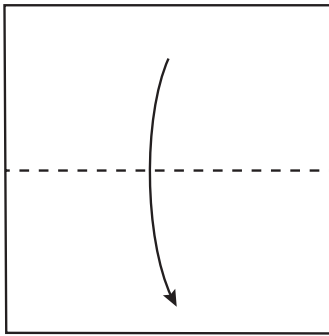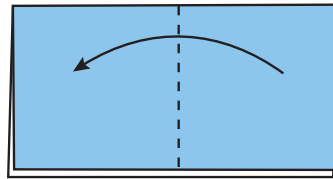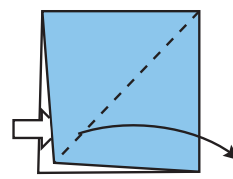**12** fold outside over the dotted line (both sides)

13 inflate

14 done!
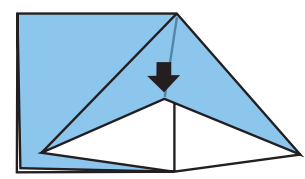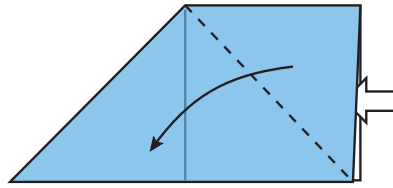
Pikachu

Folding instructions

1 fold in half

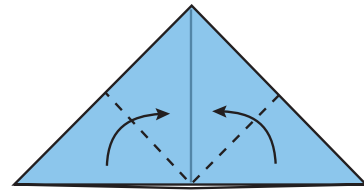**2** fold in half

3 open from arrow
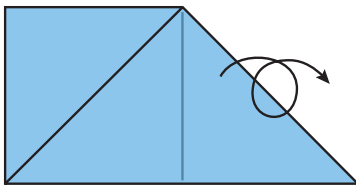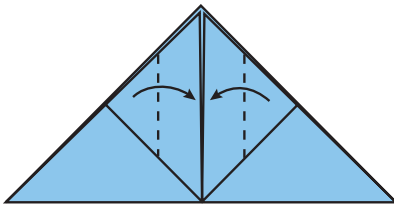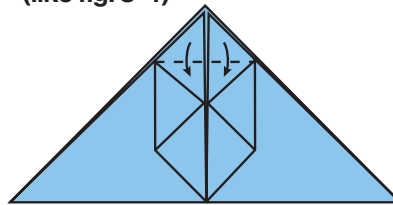
4 flatten out

5 turn over

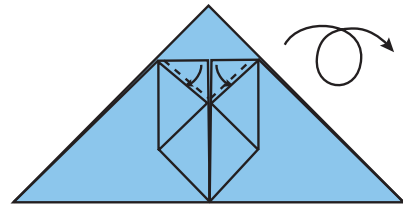**6** open from arrow and flatten out (like fig. 3-4)
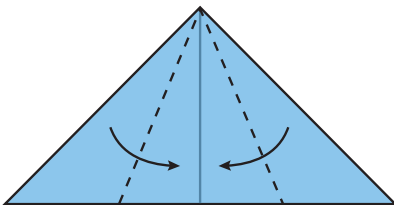
7 fold to the middle
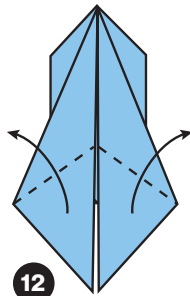
8 fold to the middle

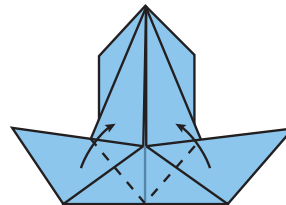**9** fold down over the dotted lines

10 insert tips into pockets, turn over
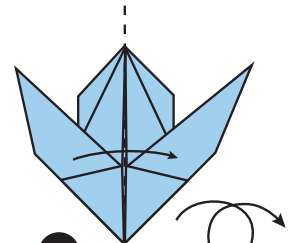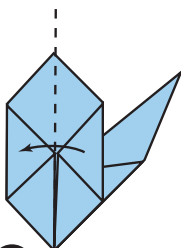
11 fold to the middle

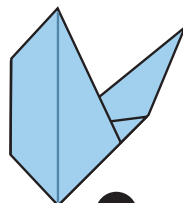**12** fold outwards along the dotted lines

13 fold upwards along the dotted lines

14 flip the left side to the right, turn over
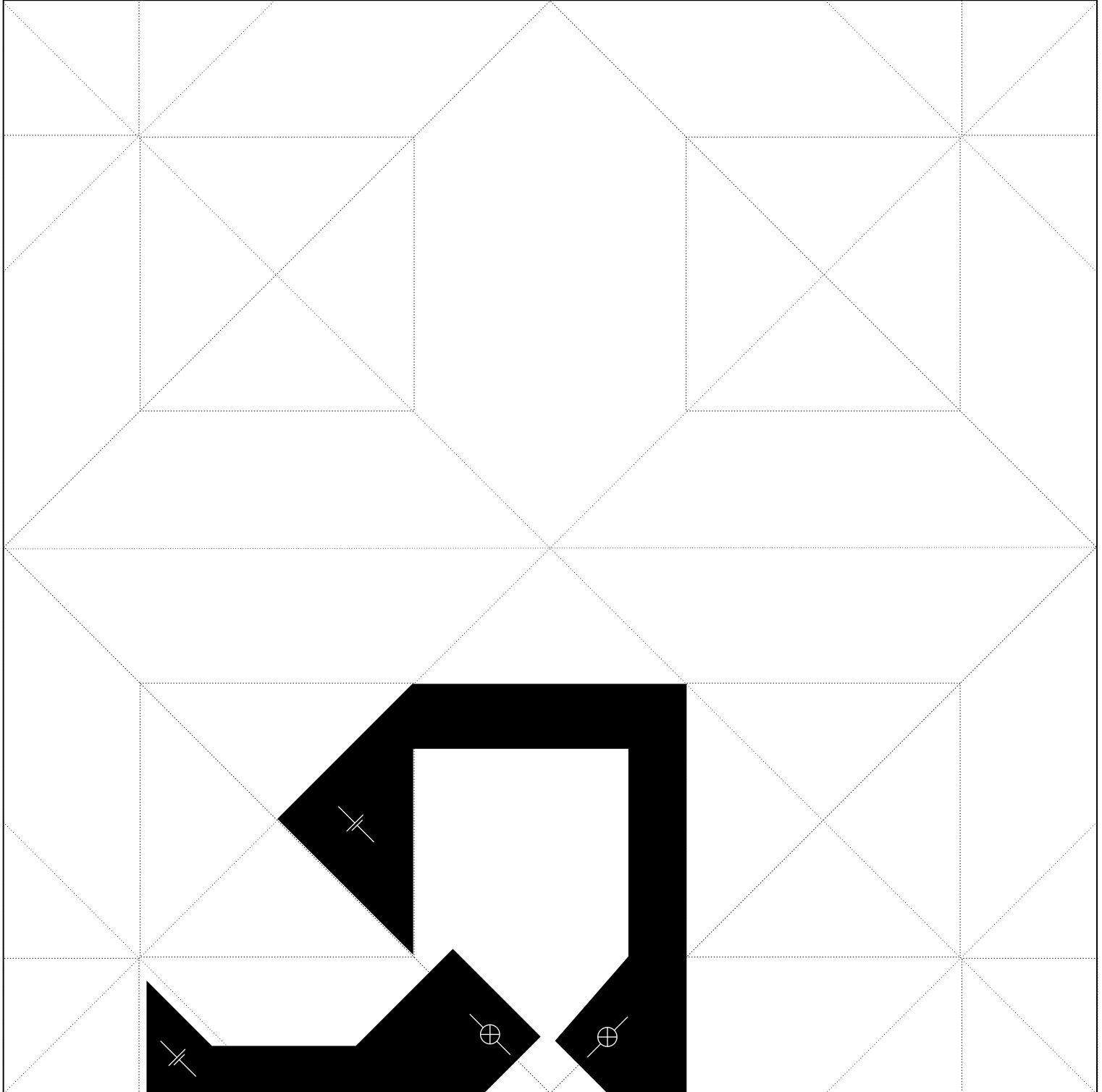
15 flip the right upper side to the left

16 inflate
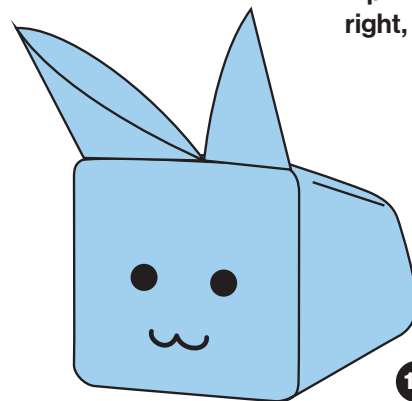
17 done!

Rabbit

LED-foldie circuit

Template for transfer
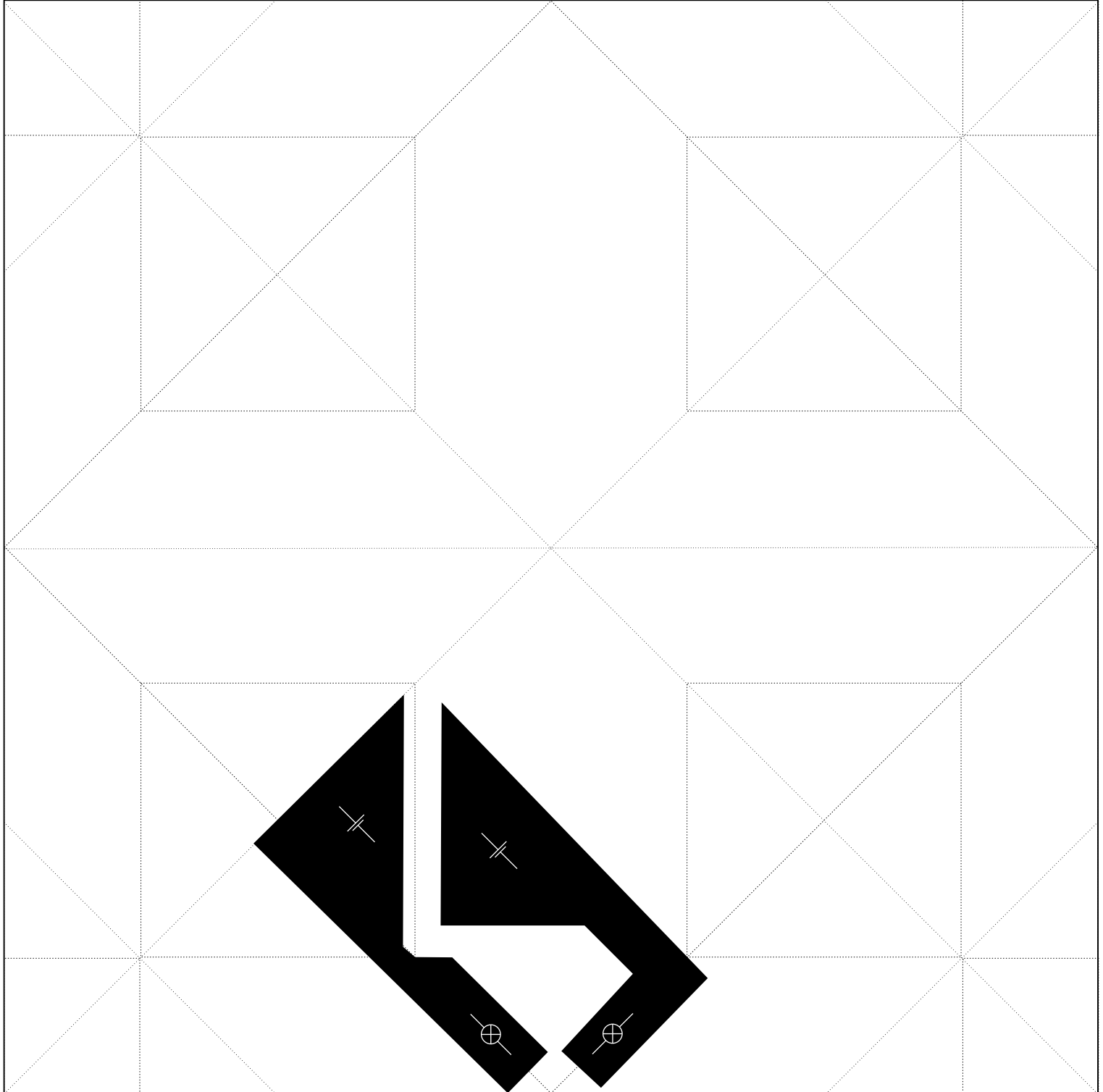**Size 20 x 20 cm**

For balloon, Pikachu and rabbit

LED-foldie circuit

Template for transfer
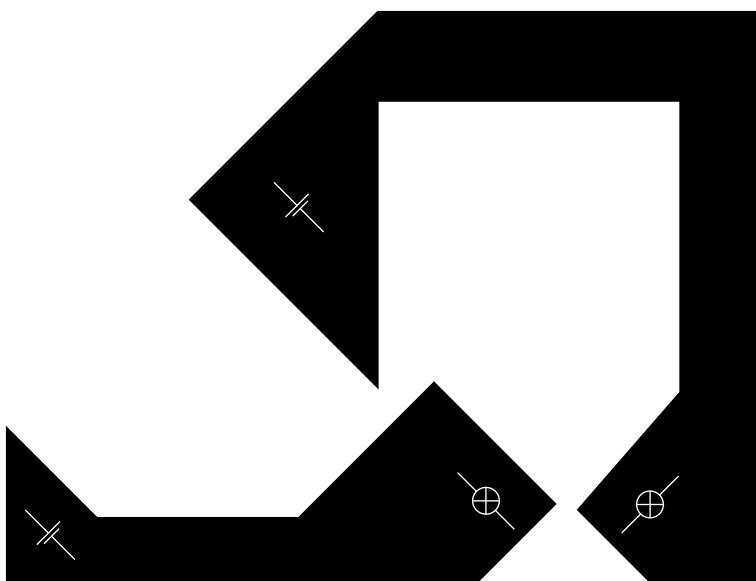**Size 20 x 20 cm**

For bird

LED-foldie circuit

For printing on folding paper (and ironing tinfoil on it)
Size 20 x 20 cm

For balloon, Pikachu and bird

For laserprinter only, does not work with inkjet printer!