1. The people of Schilda build a city hall
(Introduction)

Read the story (card Nr. 8/9)
Discussion: Can you catch light?

Experiment: Catching light in cans

One child opens the can in the darkroom and another child looks inside through a small opening. Can you see something or what can you see?

Rule 1:
Light cannot be caught. Without light there is darkness.
2. Darkroom

Imagine a completely dark room. If you open the blinds a little bit what can you see?

Experiment: We bring light into the dark
We let a little bit of light into the darkroom.
“What can you see?”

Now we let a little bit more light into the darkroom.
“What can you see now?”

Rule 2:
At first you can only see outlines and shadows.
With more light you can see colours.
3. Making light visible

Everybody stands in a semi-circle; every student looks from a dark room into a bright room or the hallway. The teacher stands in front of the students with a flashlight. A cardboard tube was put in front of the light source of the flashlight. The teacher shines the light into dark room, turns the flashlight off and asks the students: “Is the flashlight switched on or off?”

After the water is sprayed into the light beam, you can tell if the flashlight is on or off.

Transfer:
The teacher shines the flashlight onto a wall and onto the students. and into the bright room repeatedly.

**Rule 3:**
*You can see light only if it hits something, e.g. water drops, dust particles, objects....*
4a. Straight dispersal of light

The students stand in a circle, the teacher in the middle. The teacher holds a flashlight. A flexible hose (approx. 1m long) is attached to the light source. The teacher walks around the circle and asks the students: “Is the flashlight on?” The teacher lets the students look into the hose. Sometimes the hose is straight and sometimes bent. The students then say whether they can see the light or not.

Rule 4:
*Light can only shine in a straight line.*
4b. Straight dispersal of light

In the darkroom a candle is lit. A wind screen with a hole pattern is positioned around the candle.

„What do you notice?“
After this the beams from the candle are drawn on paper. The candle and the wind screen can be removed.

„Who can formulate a rule about this?“
(compare to rule no. 4)
4c. Rectilinear propagation of light

Building of a pinhole camera
There is a worksheet for this with exact steps of how to build it and another worksheet explaining how a pinhole camera works and what it has to do with the eye.
Build your own pinhole camera!

You need:
- a stable cardboard tube, about 30 cm long
- aluminium foil
- scissors, rubber band
- transparent paper

This is what you have to do:

1. Cut into the cardboard tube with a knife at about one-third from the end. Don’t cut it through completely the tube still needs to stay connected at one point. Be careful, it’s dangerous. Ask for help!

2. Place the transparent paper into the cut that you just made.

3. Put the aluminium foil over the shorter end of the tube and fasten it with the rubber band. Carefully make a small hole into the middle of the aluminium foil.

Have fun trying it!
The people of Schilda build a town hall
(story)

In the middle ages there was a little town in the middle of Germany called “Schilda”. Their people were called the people of Schilda. They were strange people. I want to tell you a story about them.

“How the people of Schilda built their town hall.”

They planned to build a triangular town hall. In high spirits they started to work on it. After six weeks the three walls were built and only the roof was missing.

When the roof was done they held a celebration dedicated to the newly built town hall. All the people went into the triangular building. But then there was great confusion. The people that were already inside wanted to get out. The people that were outside wanted to get in. There was a terrible panic and scramble of people.

Finally, everybody was outside. They all looked at each other and asked “What just happened?”

The shoemaker thought for a second and then said, “It is dark in our city hall”. Everybody agreed.

**But why?**

For a long time, they didn’t know the answer.

→ Ask the students this question. Let them think about it and discuss it...

For a long time nobody had an answer. In the evening they met in the tavern.

They talked about how you could get light into the city hall. Only after the fifth beer the blacksmith thoughtfully: “We should carry the light inside like water!”

„Yes! That’s how we are going to do it! „, they all cheered excitedly.

The next day the people of Schilda shovelled sunlight into buckets, cans, mugs and pots. Others held potato sacks into the sunlight, closed them quickly and carried them into the city hall. Inside they opened them and shook the sunlight into the dark, ran back outside onto the marketplace to get more sunlight. That’s what they did until the evening came and the sun started to set.

*A brilliant idea! Let’s try it.*
The townhall of Schilda