



# Light and darkness

## Light

### time

80 minutes.

### learning outcomes

To:

- know that we need light to be able to see
- name a number of light sources, some of which are natural light sources and some manufactured
- discover that without light you cannot see colours
- know that it is very difficult to perform certain tasks in the dark

### materials needed

- photographs of sources of light (Appendix)
- 2 torches
- materials to make a tent in the classroom
- a cube
- 2 books
- blue colouring pencil
- piece of aluminium foil
- book
- bicycle reflector
- tea towel
- a sheet of white A4 paper
- colouring pencils
- 12 blindfolds
- optional: picture book *Can't you sleep, little bear?*

## Preparation

For the activity **It's dark**, you will need a torch and the photographs of the light sources from the Appendix.

For the activity **The light circuit** set up a light corner, a colouring corner and a tent in the classroom. Ensure that it is dark in the tent and place the cube, the book and the blue colouring pencil inside.

Put the aluminium foil, the book, the bicycle reflector and the torch in the light corner. Make sure there are enough colouring pencils in the colouring corner.

For the activity **Out at night** create an obstacle course in the gym or play area.

For example, place something on the ground that the children have to step over, a number of cones they have to walk around, and a hoop they have to crawl through.

### Tip.

Use an assistant to help you teach this lesson.



## It's dark 15 min.

Ask the children if they have ever been somewhere where it was really dark. Ask them: 'What could you see?' and 'What could you see when the light came on?' Can you explain why?' Conclude that we need light to be able to see properly.

### Tip.

To introduce this discussion you can read the book *Can't you sleep, little bear?* by Martin Waddell to the children.

Encourage the children to name things that give off light. Explain that some things are a natural source of light, for example the Sun, fire, a firefly, or a bolt of lightning. Other things that give off light are manufactured. Examples include: the lights in the classroom, a bicycle light, a candle and a torch. Display the photographs of light sources in the classroom, and for each one point out whether it is a natural or a man-made source of light.



The children investigate what objects look like when there is no light and look at objects that give off light.



## The light circuit 45 min.

Organise the children into groups of three. One group goes to the tent and one to the light corner. The other groups go to the colouring corner. As soon as the groups in the tent and the light corner have finished, another group can take their place. Ask the children not to say what they discovered or did in the tent and the light corner. This will allow each group to find things out for itself. The children who have already been colouring can take their picture into the tent. It doesn't matter if they have finished or not. They will find out that they cannot, or can barely, see their picture in the dark..

With your assistant, sit near the tent and the light corner. The light circuit works as follows:

### *The tent*

Tell the group of three that they are going to go in the tent. Inside the tent are three objects.

Explain that the children have to do their best to find and identify each object. After allowing sufficient time for the task, call the children out and ask the following questions: What was the object made from? What shape was it? What colour was it? Was there a picture on it?



Explain to the children that they can now go into the tent again, but this time with a torch. Ask them if they think they will find out more about the objects this time. Do they think they will find out what colour the objects are? Determine clearly what the children think will be different now they can take a light into the tent. Give the children the torch and send them back into the tent.



When they come out, ask whether anything they saw was different from the first time? Were their predictions correct? What have they learned?



### *The light corner*

This corner contains the following objects: a piece of aluminium foil, a book, a bicycle reflector, and a torch.



Ask the children which objects they think give off, or could give off, light. Examine the objects together and discuss their answers. To see if the objects give off light or not, they can look at them under the tea towel.



### *The colouring corner*



The children who are not in the tent or the light corner can colour the picture on the worksheet. Encourage them to colour yellow everything on the worksheet that gives off light. They can colour the rest in any colour they choose. When they have finished colouring the worksheet, they can draw other objects that give off light on a white sheet of A4 paper.



Sit in a circle with the children. Ask a number of children what they discovered in the tent. Why is light important? What happens if you don't have any light? Come to the conclusion that without light you cannot see colours or drawings. It is also much harder to find out what an object is made from. Without light you can feel shapes well, though.

Ask a number of children what they learned in the light corner. Do all the objects that the children thought would give off light actually do so? What is a reflector useful for?

Ask a number of children, to show their coloured-in worksheet. What objects did they colour yellow? Why? The following items on the worksheet give light: the floor light, the ceiling light, the fire, the candles, and the lightening bolt. The Moon reflects light, and the Sun gives light as well, but here it is part of the painting.

Ask a number of children to show what they drew on the blank A4 paper. Is this an object that gives light?



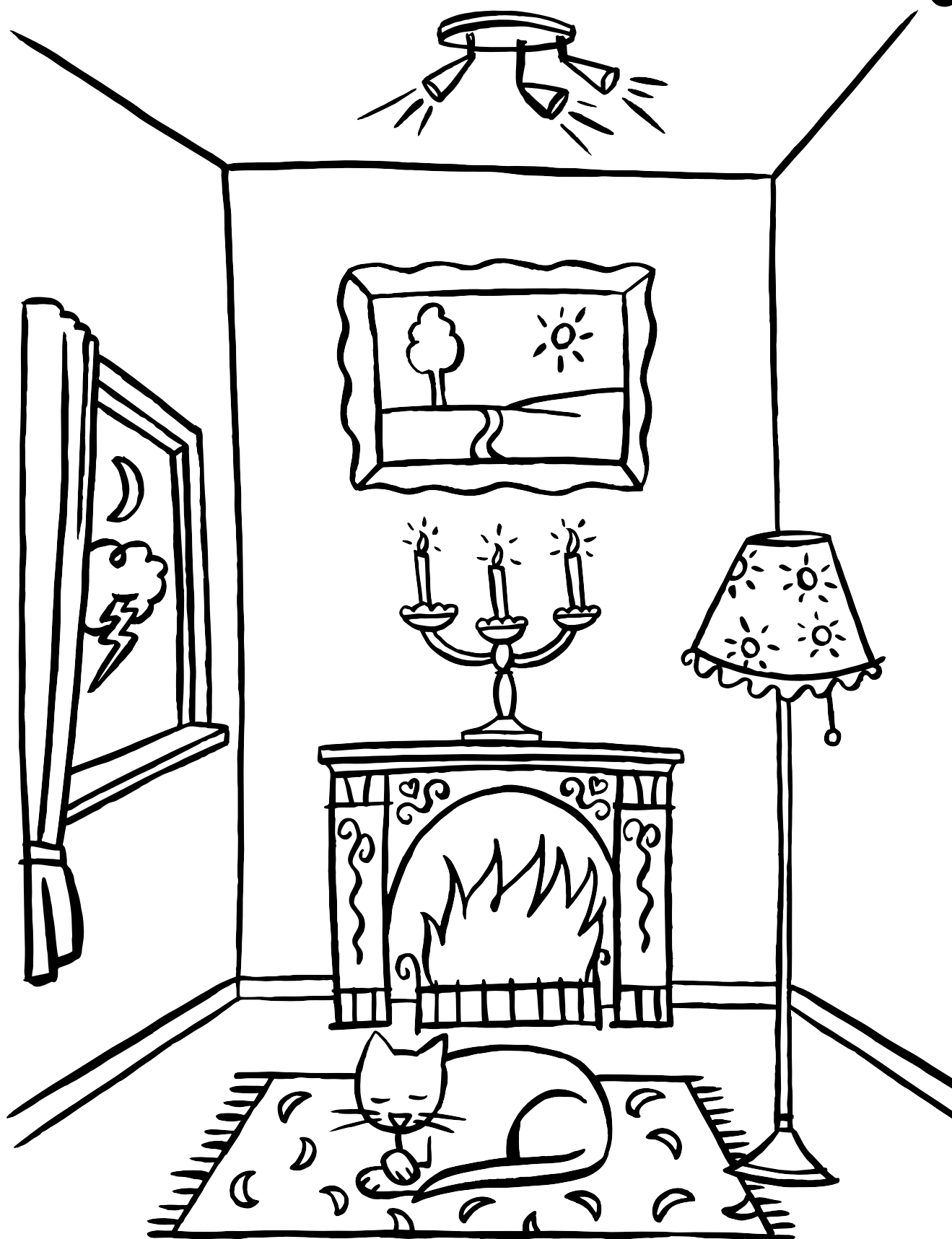
## **Out at night 20 min.**

Discuss why it is that we sleep at night and do things during the day. Explain that long ago people used candles to be able to see when it got dark. They didn't have electric lights like we do now. How dark is it at night if there aren't any lights? Ask all the children to close their eyes. What can they see?

Ask if it would be possible for us to go to school at night and sleep during the day. Why do the children think this would be possible or impossible?

The children are going to role play living in times gone by when there weren't any lights. Take the children to the gym/play area. Divide the children into pairs, giving a blindfold to one from each pair. The other child has to lead the blindfolded child through the obstacle course. When they have completed the course, the children change places.

When everyone has finished, gather the children together. What do they think about what they have just done? Is it easy to do things if you can't see anything? Come to the conclusion that it is very difficult to do things in the dark. During the day we get plenty of light from the Sun, so it is much more convenient to do things during the day and use the night for sleeping.





**Sources of light** [Sun, lightning, camp fire, electric light] • LESSON 9