SCIENCE

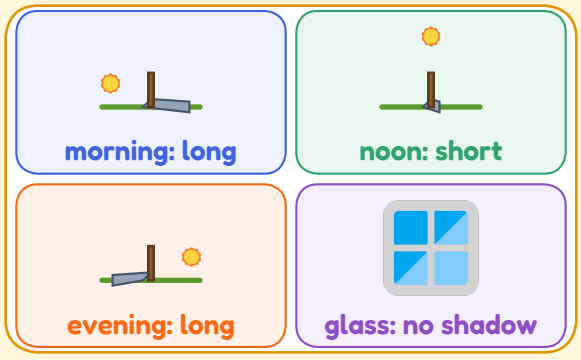
# Light and shadows

Name _____ Date _____

🎯 **I can explain how shadows are made.**

## 1 How it works

A shadow is a dark shape made when something blocks light. Light travels in straight lines, so it cannot bend around you. Your shadow is always on the side away from the light. In the morning and evening, when the sun is low, shadows are long. At noon, when the sun is high, they are short. Clear glass makes almost no shadow.




## 2 Does it make a dark shadow?

Circle yes or no.

| | | | |
|---|---|---|---|
| apple<br>yes no | glass jar<br>yes no | chair<br>yes no | tree<br>yes no |
| window<br>yes no | hand<br>yes no | umbrella<br>yes no | books<br>yes no |

**How did I do?** ☆ ☆ ☆

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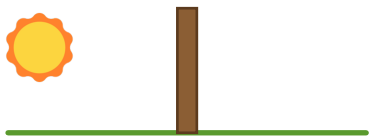
# Shadows change

Name _____ Date _____

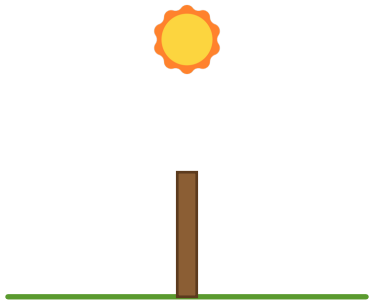
I can show how shadows change during the day.

## 1 Draw the shadow of each stick

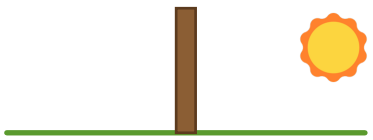
Look where the sun is.



morning



noon



evening

## 2 Long or short? Circle it.

1. Your shadow at noon — long / short
2. Your shadow early in the morning — long / short
3. A tree's shadow at sunset — long / short
4. A flagpole's shadow at midday — long / short

How did I do?

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# Think like a scientist



Name _____ Date _____

🎯 **I can explain how shadows are made and why they change.**

## 1 Think about it ❓

1. How is a shadow made? _____
2. Why is your shadow long in the evening? _____
3. Why does a window make almost no shadow? _____
4. Can you make a shadow at night? How? _____

## 2 True or false? Circle it. ✅

| | | |
|---|---|---|
| 1. Shadows change during the day. | true | false |
| 2. Your shadow is on the same side as the light. | true | false |
| 3. Shadows are shortest at noon. | true | false |
| 4. A shadow forms when something blocks light. | true | false |
| 5. Clear glass makes a dark shadow. | true | false |

## 3 Draw yourself and your shadow on a sunny morning.

**How did I do?** ☆ ☆ ☆

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# Try it: shadow tracing

Name _____ Date _____

🎯 I can observe how a shadow changes during the day.

## 1 You need 📦

- sidewalk chalk
- a sunny spot
- a toy that stands up
- a clock
- a partner

## 2 What to do

1. Stand the toy on the ground in a sunny spot. Mark where it stands.
2. Trace its shadow with chalk in the morning. Write the time.
3. Trace it again at noon and in the afternoon, without moving the toy.
4. Compare the three shadows. How did they change?

## 3 I predict 💡

When will the shadow be shortest?

## 4 What I see 🔍

| Time | Long or short? | Which way does it point? |
|---|---|---|
| morning | | |
| noon | | |
| afternoon | | |

**How did I do?** ☆ ☆ ☆

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FOR TEACHERS AND PARENTS

# Answer key: light and shadows

## 1 Page 1

Answers: 1) apple: yes; 2) glass jar: no; 3) chair: yes; 4) tree: yes; 5) window: no; 6) hand: yes; 7) umbrella: yes; 8) books: yes.

## 2 Page 2

Shadows: morning, long and pointing away from the sun; noon, very short; evening, long and pointing the other way.

Length: 1) short; 2) long; 3) long; 4) short.

## 3 Page 3

Think: 1) Something blocks the light; 2) The sun is low in the sky; 3) Light passes through clear glass; 4) Yes, with a flashlight or a lamp.

True or false: 1) true; 2) false; 3) true; 4) true; 5) false.

Drawing: a person with a long shadow pointing away from a low sun.

## 4 Page 4: Try it!

The morning shadow is long and points away from the sun, toward the west. At noon the shadow is shortest, because the sun is high in the sky. In the afternoon the shadow grows long again and points the other way, toward the east. Shadows move because Earth spins.

## 5 Teaching tip 💡

Play shadow tag outside on a sunny morning, then again at noon. Children notice right away that long morning shadows are much easier to step on.

**Safety: never look straight at the sun. Work outside with a grown-up and wear a hat.**



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