Name: _____ Date: _____

Why Your Shadow Is Long at Breakfast Time

Circle group

Your shadow changes size during the day. Early in the morning, it is long and thin. At lunchtime, it is short. It is near your feet. Late in the day, it is long again.

A shadow forms when your body blocks sunlight. It falls on the ground away from the Sun. So its length depends on where the Sun is.

In the morning, the Sun is low. It is near the horizon. Its light comes in at a slant. The shadow stretches far. Later the Sun climbs high. At midday the light comes down steeply. Your shadow is short.

Then the Sun sinks low again. The shadow gets long. The Sun does not really move. The Earth turns. That makes the Sun seem to rise and set.

Try it with a friend. Stand in one spot in the morning and at noon. Your friend can trace your shadow with chalk.

Questions

1. When is your shadow short?

_____

_____

2. What forms a shadow?

_____

_____

3. Where is the Sun in the early morning?

_____

_____

4. How does the light come in when the Sun is low?

_____

_____

5. What really makes the Sun seem to rise and set?

_____

_____

6. What can a friend use to trace a shadow?

_____

_____

Words to know

shadow: a dark shape made when something blocks light
horizon: the line where the sky seems to meet the ground
slant: a slope, not straight up or flat
steeply: almost straight down
trace: to draw along the edge of something

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Your Shadow Is Long at Breakfast Time

Triangle group

Watch your own dark shape on the ground as the hours pass. At breakfast, it stretches out long and thin across the grass. At lunchtime, it shrinks to a short puddle near your feet. By late afternoon, it grows long once more.

Sunlight cannot pass through your body. Where it is blocked, a dark patch lands on the ground, away from the Sun. How long that patch is depends on where the Sun sits in the sky.

When the day begins, the Sun is low near the horizon. Its light comes in at a slant, so the patch is stretched far across the ground. Then the Sun climbs higher. Near the middle of the day it is high above you, and the light comes down steeply. Now the patch is short.

When the Sun sinks lower again, the patch lengthens. Of course, the Sun is not really moving across the sky. The Earth is turning, and that makes the Sun appear to rise and set.

A friend can help you test this. Stand in one spot in the morning and again at noon, and ask your friend to draw around your shadow with chalk.

Questions

1. When is your shadow short?

_____

_____

2. What forms a shadow?

_____

_____

3. Where is the Sun in the early morning?

_____

_____

4. How does the light come in when the Sun is low?

_____

_____

5. What really makes the Sun appear to rise and set?

_____

_____

6. What could you use to trace a shadow?

_____

_____

Words to know

shadow: a dark shape made when something blocks light
horizon: the line where the sky seems to meet the ground
slant: a slope, not straight up or flat
steeply: almost straight down

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

Name: _____ Date: _____

Why Your Shadow Is Long at Breakfast Time

Square group

Have you ever noticed how dramatically your shadow changes size over the course of a day? Early in the morning, it stretches out long and thin across the grass. At lunchtime, it shrinks into a short puddle close to your feet. By late afternoon, it has grown long once again.

A shadow forms whenever your body blocks the sunlight, and it falls on the ground on the side away from the Sun. Consequently, its shape and length depend entirely on where the Sun sits in the sky.

In the morning, the Sun hangs low near the horizon, and its light arrives at a slant, which stretches the shadow far across the ground. As the day continues, the Sun climbs higher. Around the middle of the day it is almost overhead, and the light comes down steeply, leaving your shadow short.

When the Sun sinks lower again, the shadow lengthens. Of course, the Sun is not actually traveling across the sky. The Earth is turning, and that turning makes the Sun appear to rise and set.

You can test this idea with a friend. Stand in the same spot in the morning and again at noon, and ask your friend to trace the outline of your shadow with chalk.

Questions

1. When is your shadow short?

_____

_____

2. What causes a shadow to form?

_____

_____

3. Where does the Sun sit in the early morning?

_____

_____

4. How does the light arrive when the Sun is low?

_____

_____

5. What really makes the Sun appear to rise and set?

_____

_____

6. What could you use to trace the outline of a shadow?

_____

_____

Words to know

shadow: a dark shape made when something blocks light
horizon: the line where the sky seems to meet the ground
slant: a slope, not straight up or flat
steeply: almost straight down
trace: to draw along the edge of something

Talk together (every group has these)

1. Find one fact that every group read. How did your sheet say it?
2. What did your sheet tell you that you think another group's did not? Ask them.
3. What is one question about this topic that none of the sheets answered?

For the teacher: Why Your Shadow Is Long at Breakfast Time

Each student sheet carries a shape, not a level. The same topic and facts, written three ways.

Circle: Why Your Shadow Is Long at Breakfast Time

Easier · 150 words · Flesch-Kincaid grade 0.8

1. At lunchtime, in the middle of the day.
2. Your body blocks the sunlight.
3. Low, near the horizon.
4. At a slant.
5. The Earth turns.
6. Chalk.

Triangle: Why Your Shadow Is Long at Breakfast Time

This passage · 194 words · Flesch-Kincaid grade 2.6

1. Around lunchtime, in the middle of the day.
2. Your body blocks the sunlight.
3. Low near the horizon.
4. At a slant.
5. The Earth is turning.
6. Chalk.

Square: Why Your Shadow Is Long at Breakfast Time

Harder · 208 words · Flesch-Kincaid grade 5.9

1. Around lunchtime, in the middle of the day.
2. Your body blocks the sunlight.
3. Low, near the horizon.
4. At a slant.
5. The Earth is turning.
6. Chalk.