



# Geotropism

**Grade:** 8

**GPS:** S8P5. Students will recognize characteristics of gravity, electricity, and magnetism as major kinds of forces acting in nature.

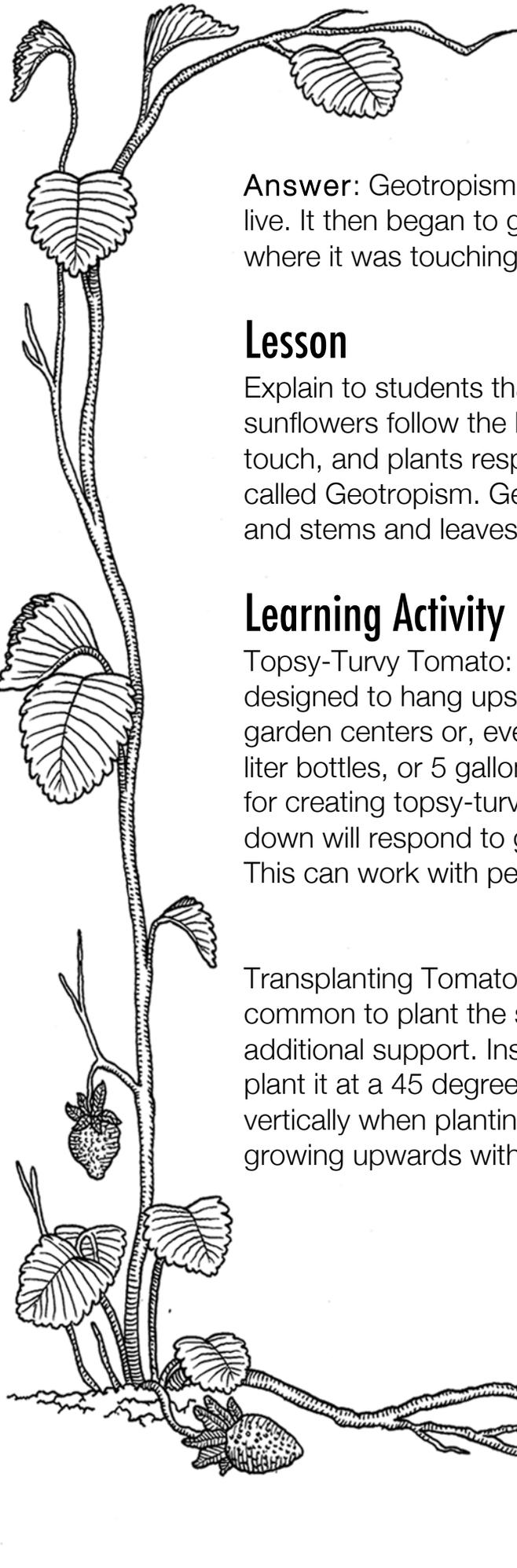
**Essential Question:** How does gravity affect plant growth?

**Teacher Note:** This is a quick garden experiment to add into your gravity unit. Listed are various options for demonstrating geotropism (plants' response to gravity). Use which method best meets your needs.

## Interest Approach



Ask students to spend a moment brainstorming...what is going on with this tree? Ask students to defend/explain their answer.



**Answer:** Geotropism! The tree fell, but still had enough roots to live. It then began to grow upward (and put roots downward where it was touching the ground) in response to gravity.

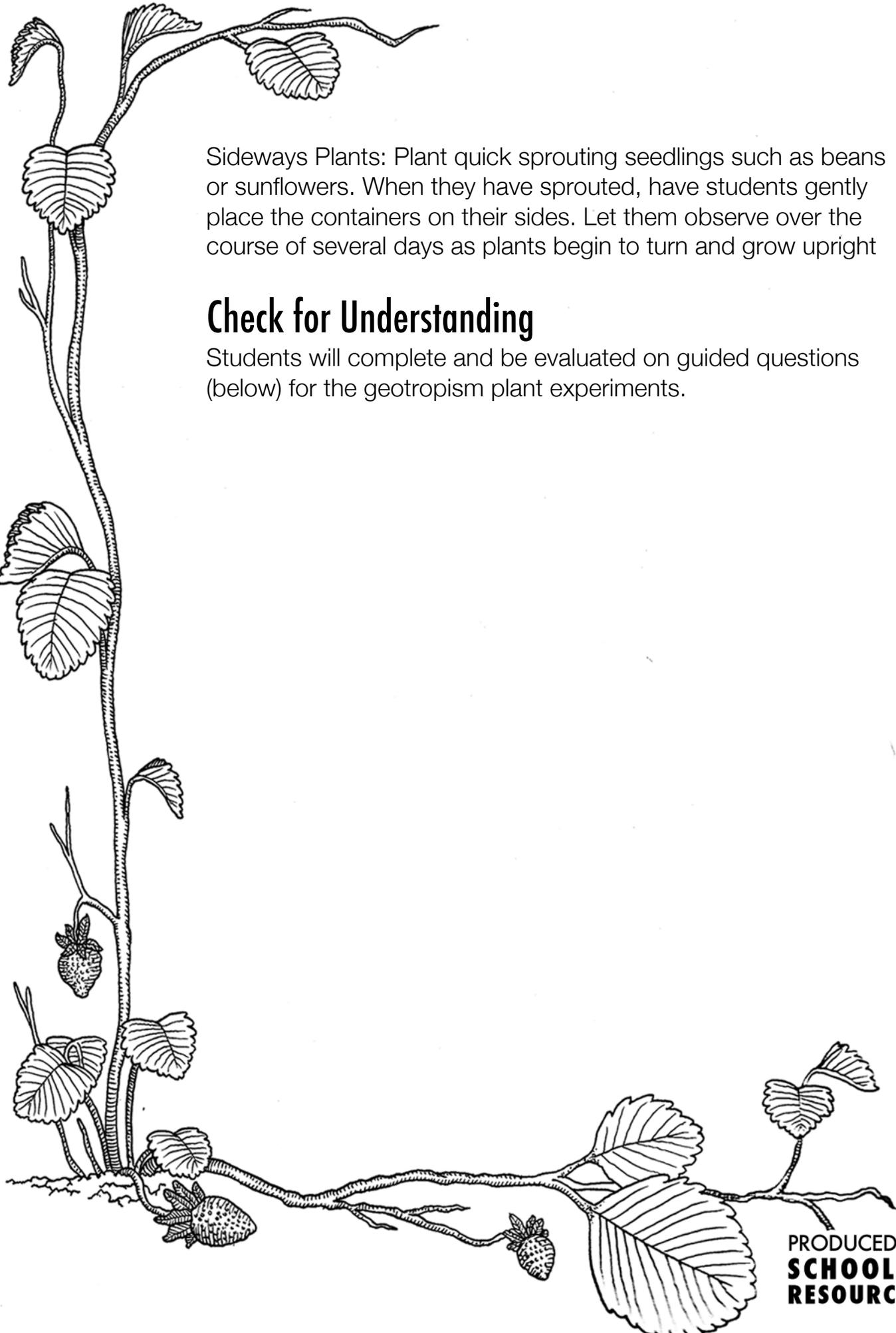
## Lesson

Explain to students that plants respond to different forces; sunflowers follow the light, pea tendrils grasp whatever they touch, and plants respond to gravity. This response to gravity is called Geotropism. Geotropism causes roots to grow downward, and stems and leaves to grow up.

## Learning Activity

**Topsy-Turvy Tomato:** Plant tomatoes in special containers designed to hang upside down. These are available in most retail garden centers or, even better, create your own using milk jugs, 2 liter bottles, or 5 gallon buckets. Multiple resources exist online for creating topsy-turvy planters. The plants once hung upside down will respond to geotropism and begin to grow upwards. This can work with peppers, cucumbers, beans, and eggplants.

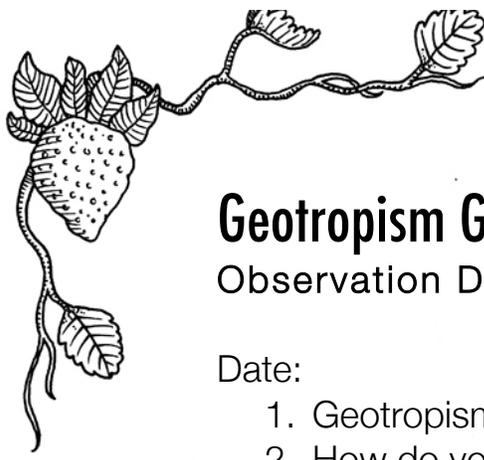
**Transplanting Tomatoes:** When transplanting tomatoes it is common to plant the stem as deep as the first leaves to provide additional support. Instead of planting the stem vertical, you can plant it at a 45 degree angle. This can be easier than planting vertically when planting in a raised bed. The tomatoes will begin growing upwards within a few days.



Sideways Plants: Plant quick sprouting seedlings such as beans or sunflowers. When they have sprouted, have students gently place the containers on their sides. Let them observe over the course of several days as plants begin to turn and grow upright

## Check for Understanding

Students will complete and be evaluated on guided questions (below) for the geotropism plant experiments.



# Geotropism Guided Questions

## Observation Day 1

Date:

1. Geotropism is a plant's response to what force?
2. How do you think geotropism will affect your plant?
3. Draw a picture of the plant. Make sure to label the roots, stem, and any other relevant parts to this experiment.

## Observation Day 2

Date:

1. Has your plant changed any from your last observation? What is different?
2. Draw a picture of the plant. Label any relevant changes.

## Observation Day 3

Date:

1. Has your plant changed any from your last observation? What is different?
2. Draw a picture of the plant. Label any relevant changes.

## Observation Day 4

Date:

1. Has your plant changed any from your last observation? What is different?
2. Draw a picture of the plant. Label any relevant changes.
3. Review your data from previous observations. Was what you observed different from what you expected or the same? Describe the overall change, if any, that took place in the plant.

