

Name:

Date:

Section:

Plant Response Activity: Plant Hormones and Tropisms

How Plants See the Light

Phase 1: ENGAGE (8 minutes)

Getting Started:

Open peebedu.com and navigate to Plant Response Simulator

Initial Observations:

1. Start with the Phototropism tab
2. Locate these components:

1. **Quick Test:** Drag the sun to the right side. What happens?

1. **Predict:** Why might plants need to bend toward light?

Essential Question: How do plants detect and respond to light to maximize their survival?

Phase 2: EXPLORE (18 minutes)

Part A: Phototropism Investigation

Experiment 1: Light Direction

Test how light position affects plant growth.

Key Observations:

1. The plant always bends _____ the light

2. More auxin = (faster/slower) growth on that side _____

Part B: Photoperiodism Investigation

Switch to Photoperiodism tab.

Experiment 2: Day Length and Flowering

(Write "Flowers" or "No flowers" in each box)

Pattern Discovery:

- Chrysanthemum flowers when nights are _____ than _____ hours

- Tomato flowers _____ of day length

Phase 3: EXPLAIN (15 minutes)

Understanding the Science

1. Phototropism Explained:

Fill in the process:

Light hits plant → Light sensors detect it → Auxin hormone moves to _____ side →

Cells with more auxin grow _____ → Stem bends _____ light

Why This Matters:

- More light = More _____

- Better growth = More _____

1. How Plants Tell Time:

Plants have internal clocks that measure:

Three Types of Plants:

Draw the flowering pattern:

- -----

Plants

Voluntary?

1. Design Challenge:

Create the perfect growth chamber:

- Light color: _____ because _____

- Day length: _____ hours for _____

Exit Reflection:

Complete one:

- The most surprising thing I learned: _____

- I still wonder: _____

1. Home Experiment:

- Grow beans in a shoe box maze
- Document daily changes
- Test different light colors

- Gravitropism (gravity response)
- Thigmotropism (touch response)
- Carnivorous plant movements

1. Engineering Challenge:

- Design a solar panel that tracks like a sunflower
- Build a model with explanation
- Calculate efficiency improvement

****Key Vocabulary:****

- **Phototropism:** Growth toward light
- **Auxin:** Plant growth hormone
- **Photoperiodism:** Response to day/night length
- **Short-day plant:** Flowers when nights are long
- **Long-day plant:** Flowers when nights are short
- **Day-neutral plant:** Flowers regardless of day length