PLANT GROWTH AND LIGHT LAB

NAME

CLASS / DATE

01 QUESTION

How are three daily light environments associated with bean seedling growth over two weeks?

02 PREDICT BEFORE YOU MEASURE

ACROSS TWO WEEKS, HOW MIGHT DAILY LIGHT RELATE TO SEEDLING GROWTH?

○ grow taller and show more leaves ○ show a different height and appearance pattern ○ not show a clear difference yet

Treat this as a question to investigate. Height and overall appearance can tell different stories.

03 VARIABLES

I CHANGE (INDEPENDENT)	I MEASURE (DEPENDENT)

I KEEP THE SAME (CONTROLLED) · CHANGED: ASSIGNED DAILY LIGHT CONDITION. MEASURED: HEIGHT AT EACH DATE AND LEAVES AT DAY 14. KEEP SEED BATCH, POTS, SOIL AND WATERING MATCHED.

04 MATERIALS

- ☐ 9 matched bean seedlings, 9 pots, equal soil
- ☐ Three plants per dark, partial, brighter location
- ☐ Ruler, labels, water measure
- ☐ Calendar and individual observation log
- ☐ Thermometer if available

05 PROCEDURE

SAFETY If using a lamp, have an adult place it securely and keep water, damp soil, and hands away from plugs and electrical connections. Use a cool-running light and allow it to cool before moving. Wash hands after handling potting mix or seedlings, and do not eat experimental plants.

1 **LABEL AND MATCH** Choose nine similar seedlings from one seed batch. Label three individual pots for each dark, partial and brighter environment. ☐

2 **RECORD THE SETUP** Log actual light hours, how brightness was judged and temperature for each location. The settings combine more than one light property. ☐

3 **CHECK EVERY TWO DAYS** On Days 0, 2, 4, 6, 8, 10, 12 and 14, measure all nine plants from soil line to tip at the same time of day. ☐

4 **OBSERVE APPEARANCE** At each check, note color and leaning for every plant. Count leaves on Day 14; height alone is not plant health. ☐

5 **GRAPH AND SUMMARIZE** Keep individual lines visible and calculate each environment's Day-14 mean and range. The plants share one location per condition, so they are not independent treatment replications. ☐

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DATA AND EXPLANATION

06 RECORD YOUR OBSERVATIONS

ENVIRONMENT / PLANT	DAY 0 (CM)	DAY 2 (CM)	DAY 4 (CM)	DAY 6 (CM)	DAY 8 (CM)	DAY 10 (CM)	DAY 12 (CM)	DAY 14 (CM)	LEAVES D14	COLOR / POSTURE
Dark A										
Dark B										
Dark C										
Partial A										
Partial B										
Partial C										
Brighter A										
Brighter B										
Brighter C										

Treatment summary

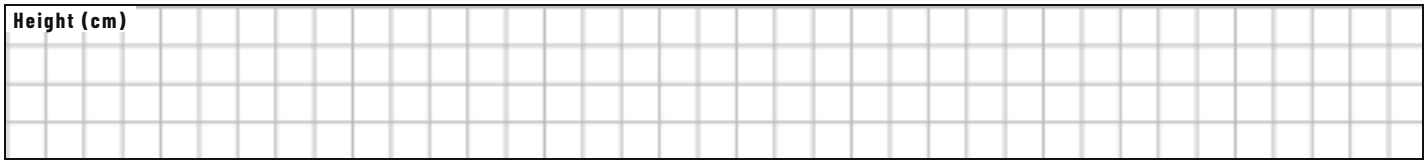
ENVIRONMENT	MEAN D14 HEIGHT	D14 RANGE	MEAN LEAVES	APPEARANCE NOTES
Dark				
Partial				
Brighter				

Calculate the mean and range from the three individual plants in that environment; keep height in cm and leaf count separate.

Measure height in cm from soil line to tip. For each environment, mean = sum of three Day-14 heights ÷ 3; range = highest − lowest. Count leaves on Day 14 only.

SHOW ONE CALCULATION

07 HEIGHT OVER TIME



Plot individual plant lines or show them beside an environment mean; preserve the spread across all eight dates.

08 EXPLAIN IT WITH EVIDENCE

CLAIM

EVIDENCE

REASONING

Reasoning must use: light condition · height · leaves · trend · local conditions

09 THINK FURTHER

What additional environmental measurement would help distinguish light from another local condition, such as temperature?