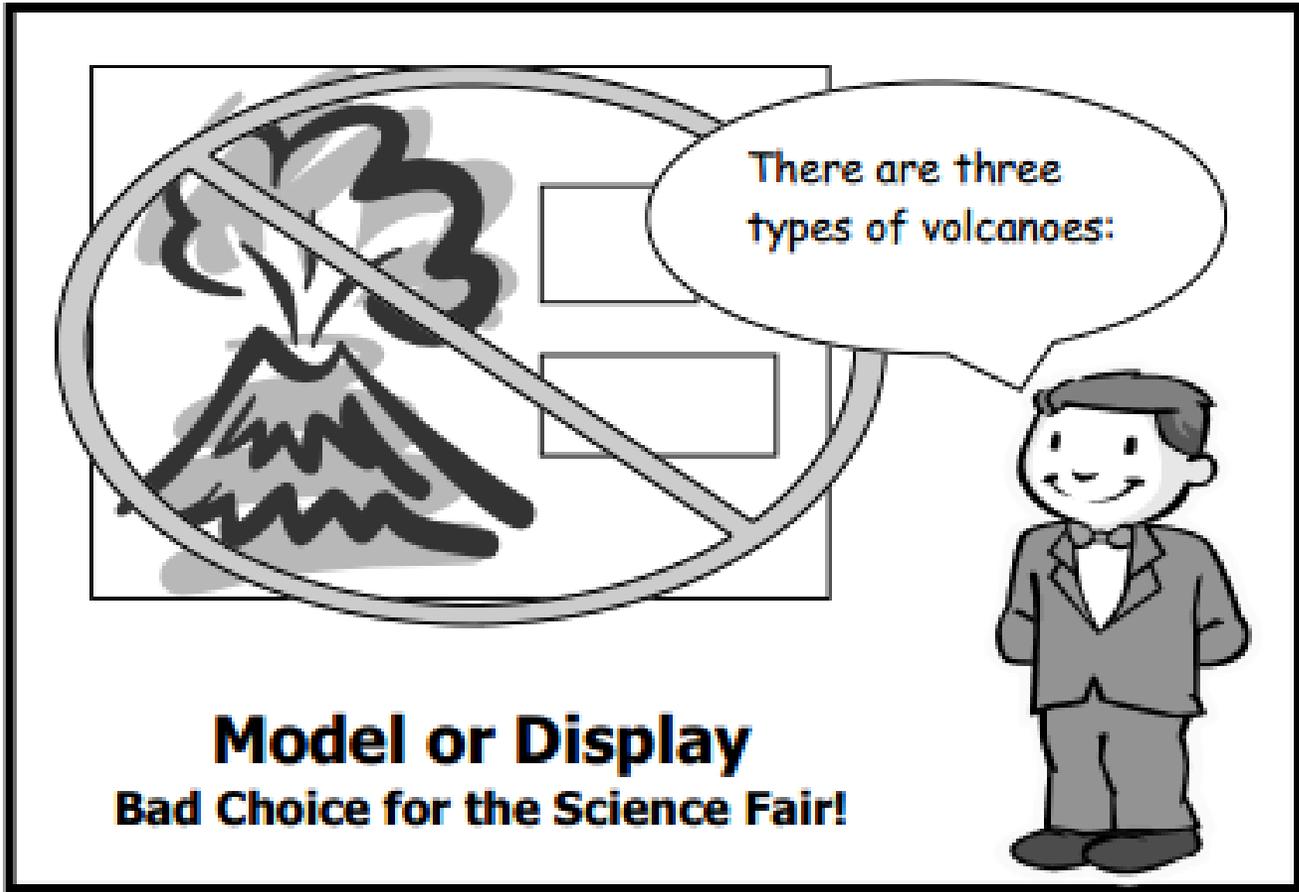




key dates

| | | |
|---------------------------------------|---------------------|---|
| Fri Feb 3 & Fri Feb 17 | 8:30-9:30 AM | Parent/Student Help Session in Library Assistance for 2nd-6th grade students and families. Meet at the Library to get help or support from volunteer science experts. Students will meet Ms. Rose at office and walk over to join parents. |
| Feb TBD | | Pick-up tri-fold cardboard displays from library. |
| Wed Mar 15 | 7:30-8 AM | Project Drop-Off in gym |
| | 1-2 PM | Science Fair: Classroom Viewing |
| | 6-7:30 PM | Science Fair: Open House for students and families |

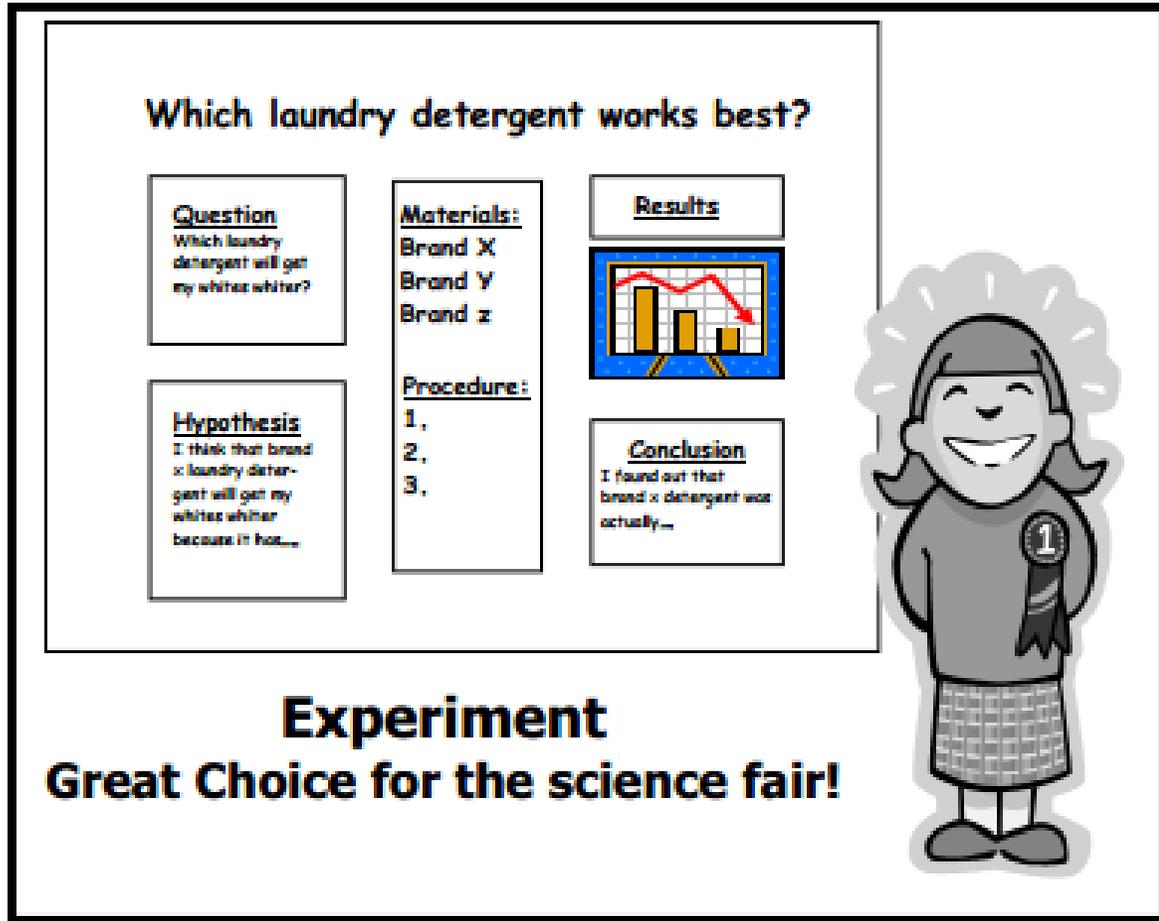
2 TYPES OF SCIENCE PROJECTS



There are three types of volcanoes:

Model or Display
Bad Choice for the Science Fair!

The image shows a science fair display board. On the left, there is a drawing of a volcano with smoke coming out of it. A large, light-colored speech bubble is positioned to the right of the volcano, containing the text 'There are three types of volcanoes:'. Below the volcano drawing, there are two empty rectangular boxes. At the bottom of the board, the text reads 'Model or Display' and 'Bad Choice for the Science Fair!'. To the right of the board, a cartoon boy in a suit and bow tie is standing and speaking.

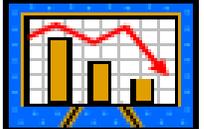


Which laundry detergent works best?

Question
Which laundry detergent will get my whites whiter?

Materials:
Brand X
Brand Y
Brand z

Results



Procedure:
1.
2.
3.

Hypothesis
I think that brand x laundry detergent will get my whites whiter because it has...

Conclusion
I found out that brand x detergent was actually...

Experiment
Great Choice for the science fair!

The image shows a science fair experiment board. At the top, it asks 'Which laundry detergent works best?'. Below this, there are six sections: 'Question' (Which laundry detergent will get my whites whiter?), 'Materials:' (Brand X, Brand Y, Brand z), 'Results' (with a bar chart showing three bars of decreasing height), 'Procedure:' (1., 2., 3.), 'Hypothesis' (I think that brand x laundry detergent will get my whites whiter because it has...), and 'Conclusion' (I found out that brand x detergent was actually...). At the bottom, it says 'Experiment' and 'Great Choice for the science fair!'. To the right of the board, a cartoon girl with a starburst above her head and a ribbon with the number '1' is standing.

Project focus is on SCIENTIFIC METHOD...experimenting!
Theme is LIFE SCIENCES (humans, animals, plants)

End goal: tri-fold cardboard display highlighting scientific method.

Step 1: Question

Step 2: Research

Conduct background research. Write down your sources & references.

Project Title

Step 3: Hypothesis

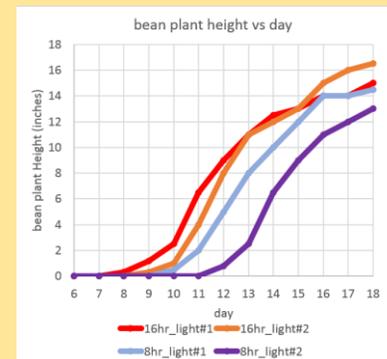
Educated guess about what you expect.

Step 4: Experiment

You change or control the independent variable and record the effect it has on the dependent variable.

Step 5: Data and Analysis

Record observations and prepare a table or graph of the data. Analyze what the data/graph means.



Step 6: Conclusion

Accept or reject your hypothesis? Make recommendations on what you would do for future or repeat experiments.

NAME
GRADE
TEACHER

Step 1: Question

A) HEART-RATE

Does your heartbeat change with different activities?

B) PLANT GROWTH

Does more exposure to light increase plant growth rate?

C) LEFT SIDE VS RIGHT SIDE DOMINANCE

Does my dominant hand have improved accuracy/strength/reaction-time vs my non-dominant hand?

Choose a project/question based on some response that is easy to measure!

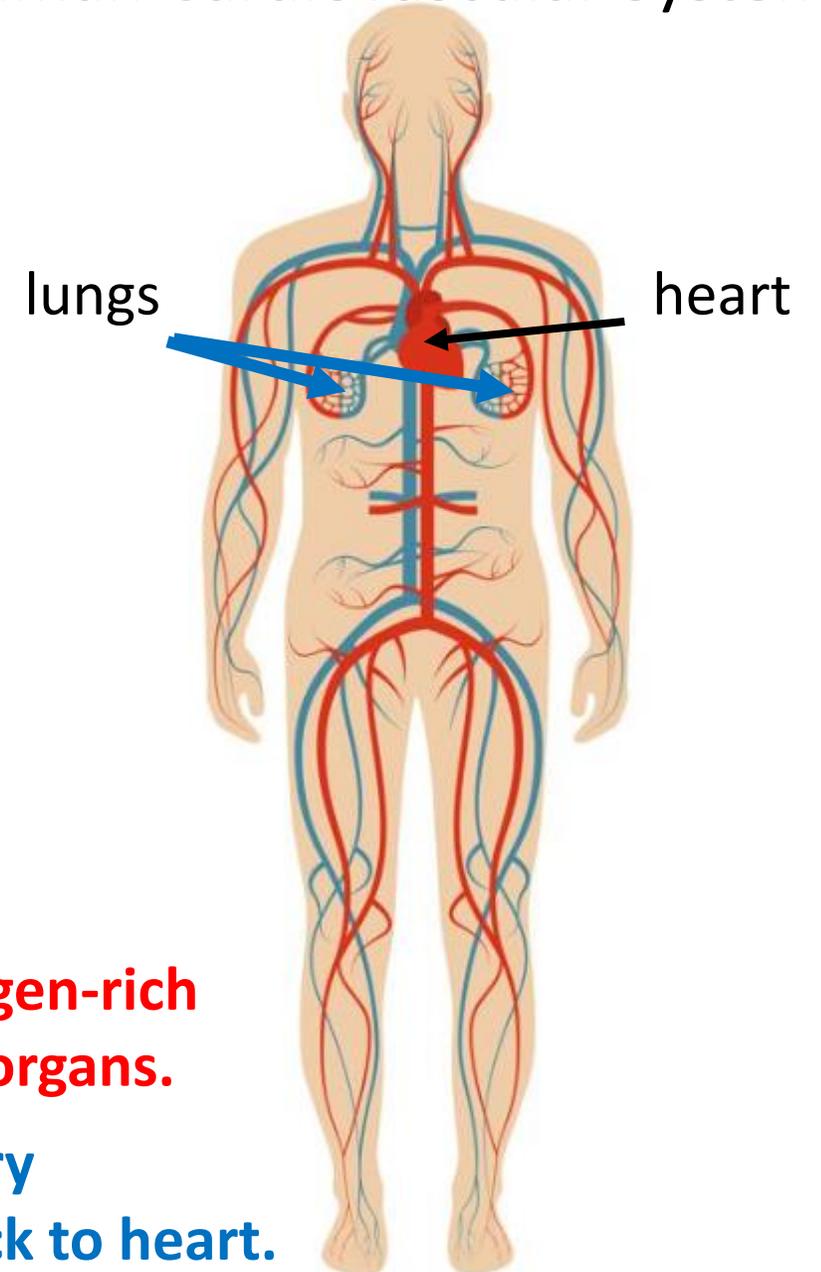
Step 2: Research

A) HEART-RATE

When you exercise, your muscles need more oxygen. You breath faster to bring more oxygen into your lungs, and your heart beats faster to send the oxygen-rich blood to your muscles.

Reference: heart.org

Human Cardiovascular System



Arteries
carry oxygen-rich
blood to organs.

Veins carry
blood back to heart.

Step 3: Hypothesis

A) HEART-RATE

Relaxing activities (reading, laying down) will keep heart rate slow. Sports (playing catch) and physical activities (jumping jacks) will speed up your heart rate because your muscles are working harder to move your body.

B) PLANT GROWTH

Photosynthesis is one of the main functions for plant growth. Since photosynthesis is the process of converting light into energy, doubling the amount of exposure to light everyday will increase the rate of plant growth.

C) LEFT SIDE VS RIGHT SIDE DOMINANCE

If dominance is related to reaction time, then my dominant hand will have a faster reaction time than my non-dominant hand.

Step 4: Experiment

A) HEART-RATE

Supplies -smartphone with heart-rate app downloaded (uses camera+flash to easily&quickly measure heart rate)

- 1) Sit in a chair for 5 minutes to let your body rest and your heart rate return to normal “resting heart rate”. Record resting heart rate.
- 2) Perform different activities for 3 minutes and measure your heart rate. Be sure to rest 5 minutes in-between activities to let your heart return to normal resting heart rate.
Activities= laying down, reading, playing catch, squats, jumping jacks
- 3) Plot heart rate vs different activities to determine how different activities change your heart rate.

INDEPENDENT VARIABLE=activity

RESPONSE/DEPENDENT VARIABLE= heart rate

Step 4: Experiment

B) PLANT GROWTH

Supplies packet of bush bean seeds
 bag of starter soil
 starting tray
 2 desk lamps with same 60W bulb
 2 plug-in timers

- 1) Create 2 identical seed tray and light growing areas.
- 2) Plant seeds according to packet instructions (~ 1" deep).
- 3) Set 1st light timer= 16 hours per day, 2nd light timer= 8 hours per day
- 4) Provide identical amount of water to all seedlings.
- 5) Record height of plants each day.

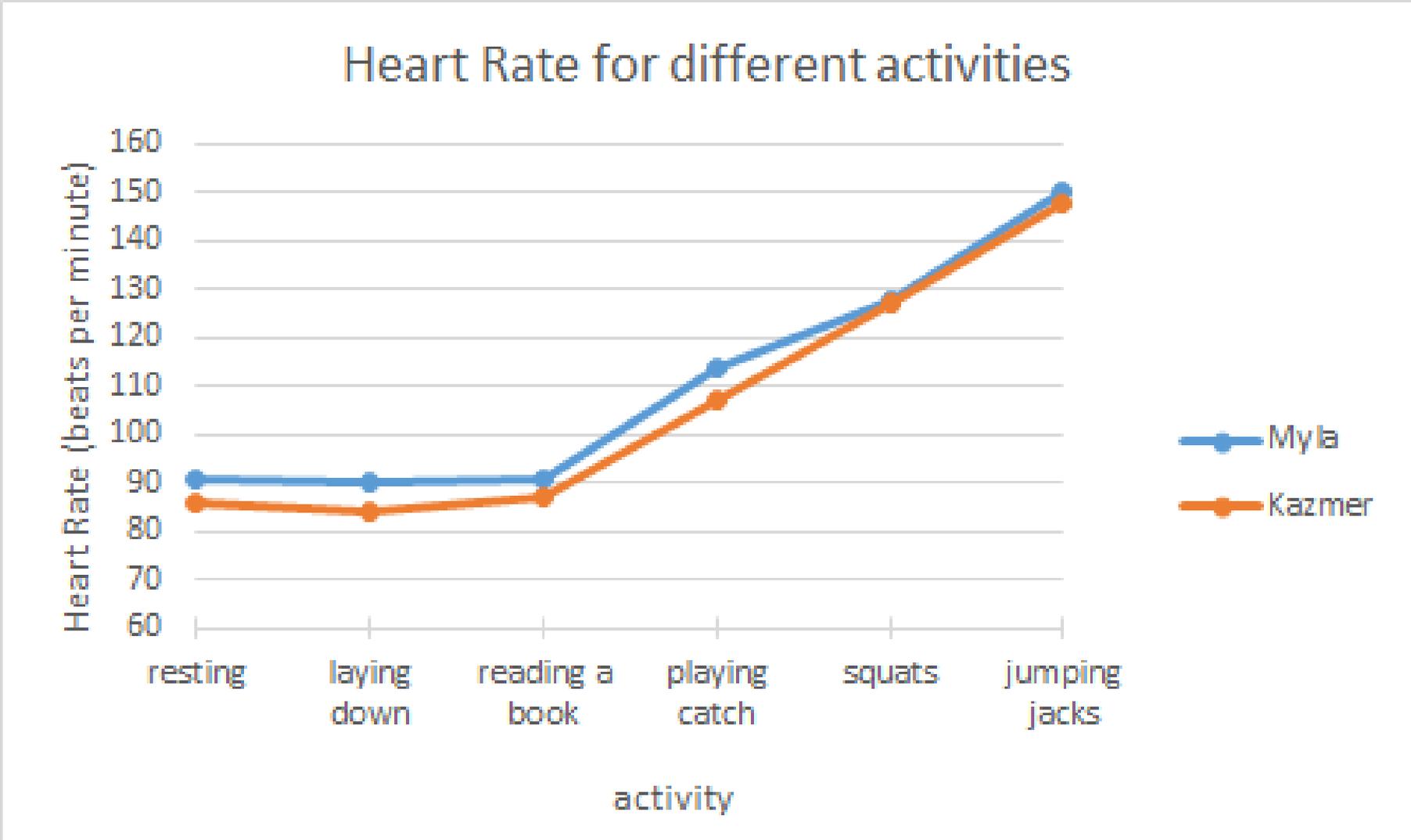
INDEPENDENT VARIABLE=amount of light exposure per day

RESPONSE/DEPENDENT VARIABLE= plant height

Step 5: Data & Analysis

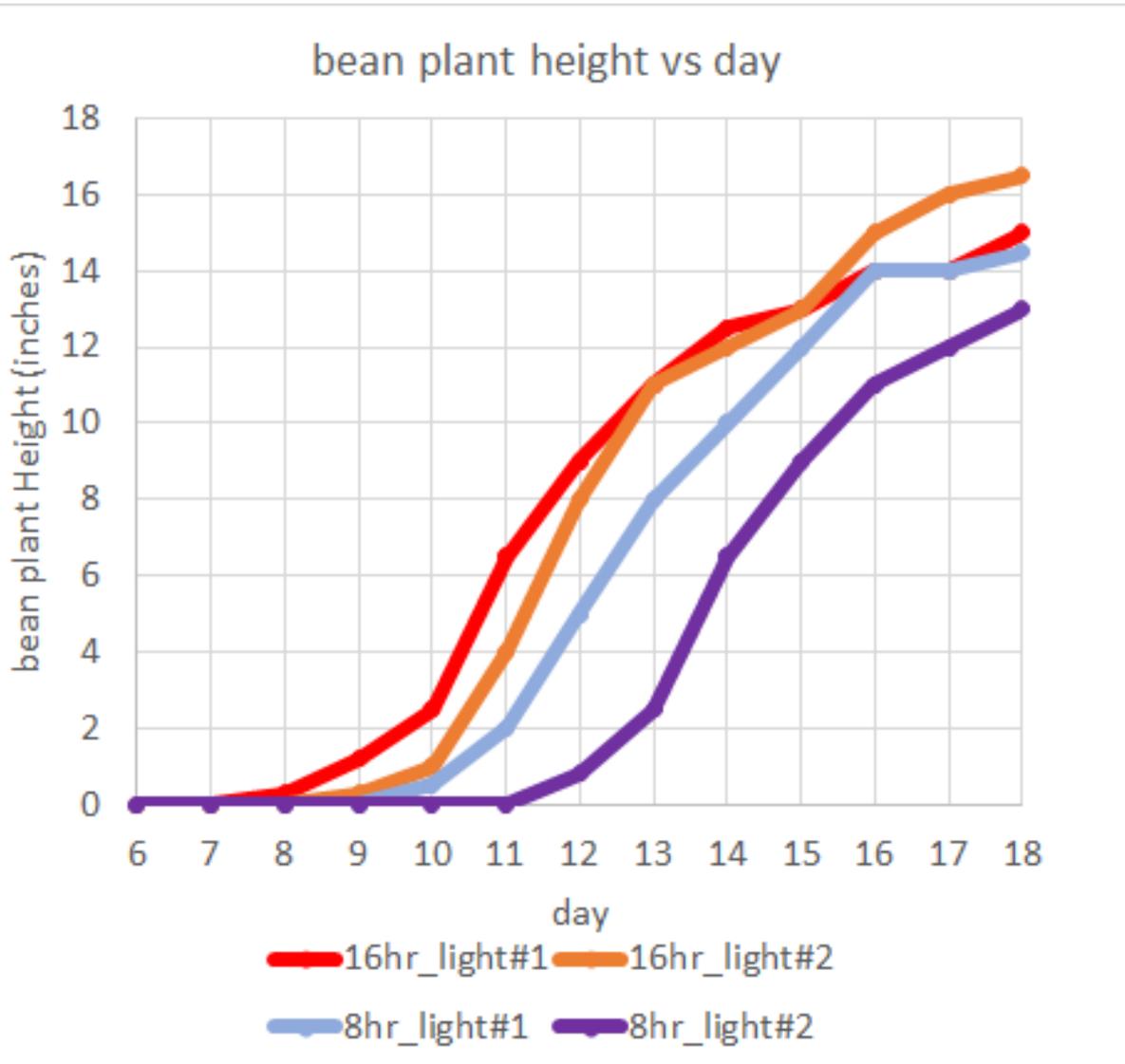
A) HEART-RATE

INDEPENDENT VARIABLE=activity
RESPONSE/DEPENDENT VARIABLE= heart rate



Step 5: Data & Analysis

B) PLANT GROWTH



INDEPENDENT VARIABLE=amount of light exposure per day

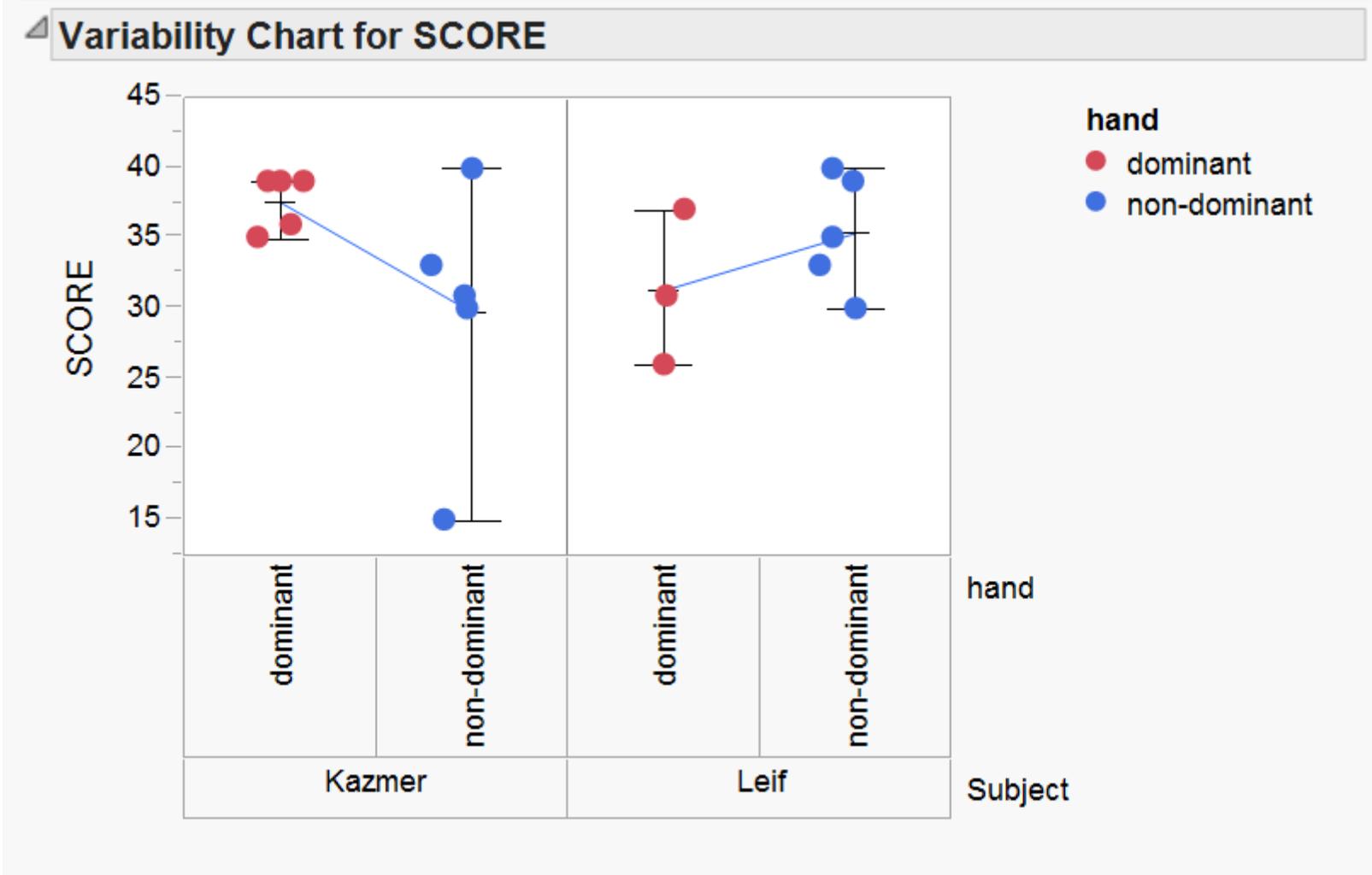
RESPONSE/DEPENDENT VARIABLE= plant height

RESULTS: average # days to grow to 10":
16 hours of light = 12.5 day
8 hour of light = 15 days

The plants with 2X light exposure matured to 10" height quicker by 2.5 days.

Step 5: Data & Analysis

C) LEFT SIDE VS RIGHT SIDE DOMINANCE



Based on 2 subjects, the dominant hand did not consistently score higher/improved vs the non-dominant hand.

Used app = "Eye Hand Trainer".

But recommend- http://www.bbc.co.uk/science/humanbody/sleep/sheep/reaction_version5.swf

Step 6: Conclusion

SCIENCE RULES

Contacts

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www.allsaintsportland.com/sciencefairpacket