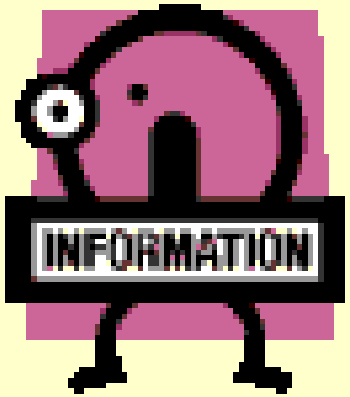
Observasi dan Tafsir

Bagaimana kita “melihat” sesuatu dalam ilmu pengetahuan

Science skills

- Used to gather information



Observing

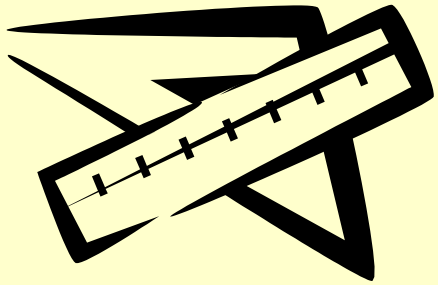
- Using your senses to describe what it is your looking at.

Predicting

- Stating ahead of time what will happen based on what you already know.

Measuring

- When you compare an unknown value to a known value.

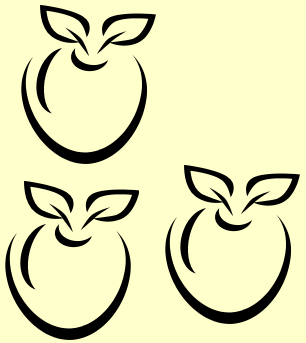


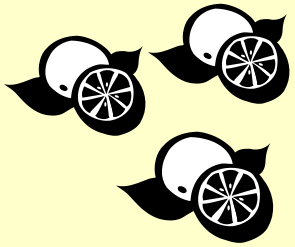
Inferring

- Form a conclusion based upon facts without making complete observations.Using prior knowledge

Classifying

- When you group things based on how they are alike.





Organizing

- Working in an orderly way.

Modeling

- When you use or make a copy of what you are studying

Analyzing

- When you study information carefully.

Observing

- Using your senses to describe something

Inferring

- Form a conclusion based upon facts without making complete observations. Prediction

Apakah observasi itu?

- Observasi dilakukan di dalam ilmu pengetahuan.

- Observasi dibuat menggunakan:
  1. Perasaan
  2. Peralatan
     - Meningkatkan ketelitian dan ketepatan

- Fakta, bukan pendapat/penafsiran.


Anna Pagnacco


Gitch



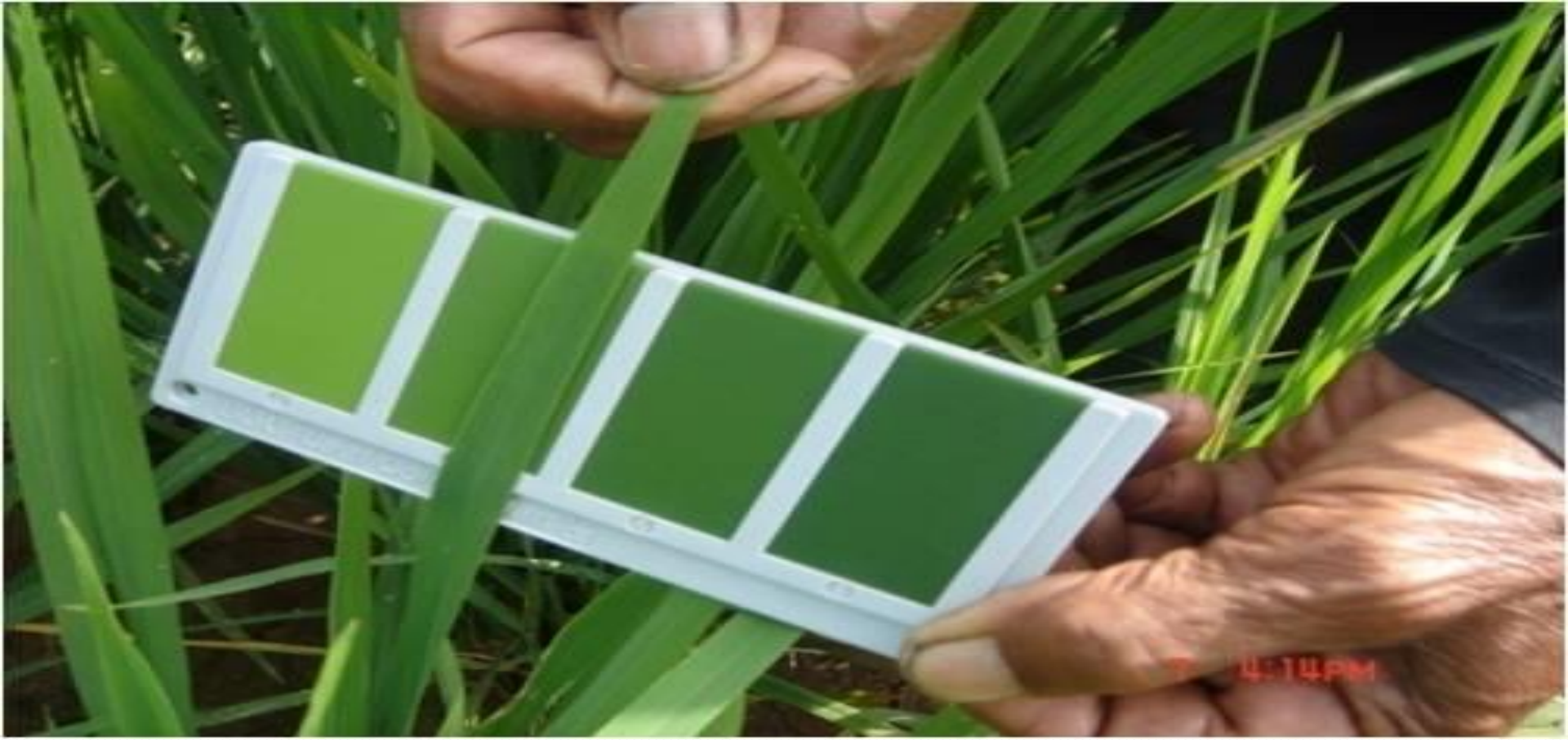
Low to high fertilizer rates

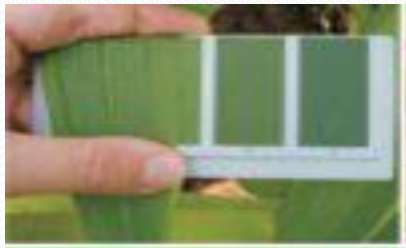
Dua jenis observasi

- Kualitatif
- Kuantitatif

Qualitative Observations

- Hard to measure
- Describes the qualities of something
  - Color
  - Taste
  - Sound



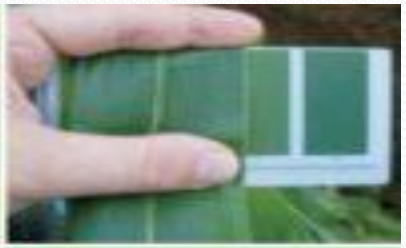


Warna < 4

Urea 150 kg/ha

Warna = 4

Urea 125 kg/ha



Warna > 4

Urea 100 kg/ha

Daun Sehat

Kekurangan Magnesium

Kekurangan Nitrogen

Kekeringan

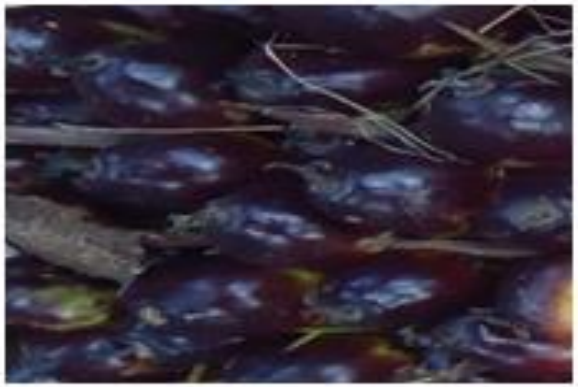
Kekurangan Phosfor

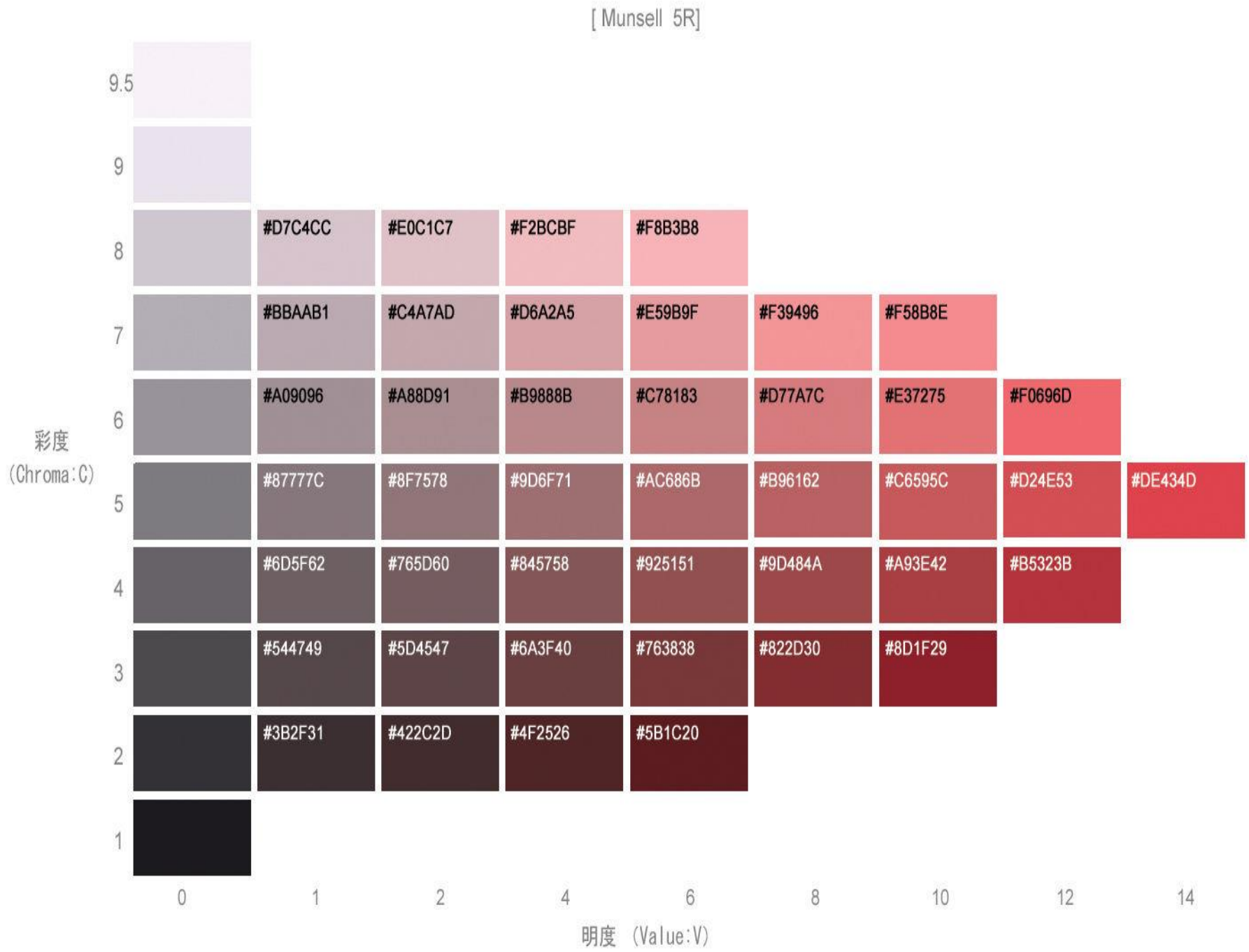
Penyakit Helmithosporium

Kekurangan Kalium

Zat Kimia

— Gambar 10. Foto udara inframerah dengan kenampakan warna merah segar untuk daun yang sehat dan warna abu-abu pucat untuk daun yang sakit

Hari setelah polinasi	Standard warna*	Tampilan
30 45 60 75 90 105	5R DK.1 2.3/4	
120 125 130 135 140	5R DK.2 2.3/6	
145 150	5R S.1 5/11.5	


[Munsell 5R]
9.5
9
8
7
6
5
4
3
2
1
#D7C4CC
#E0C1C7
#F2BCBF
#F8B3B8
#BBAAB1
#C4A7AD
#D6A2A5
#E59B9F
#F39496
#F58B8E
#A09096
#A88D91
#B9888B
#C78183
#D77A7C
#E37275
#F0696D
#87777C
#8F7578
#9D6F71
#AC686B
#B96162
#C6595C
#D24E53
#DE434D
#6D5F62
#765D60
#845758
#925151
#9D484A
#A93E42
#B5323B
#544749
#5D4547
#6A3F40
#763838
#822D30
#8D1F29
#3B2F31
#422C2D
#4F2526
#5B1C20
彩度
(Chroma:C)
0
1
2
4
6
8
10
12
14
明度 (Value:V)

Mana yang cantik ??

Quantitative Observations

- Can be expressed in numbers
- Can be counted or measured
  - Amounts
  - Temperature
  - Mass
  - Length
- Allow us to communicate specifics
- Tools are used to communicate data
- Observations are collected in data tables


LOW
PH
6.5
ON
OFF


LOW
PH
5.5
ON


7.4
mm
OFF
ON
ZERO

Inference

- Drawing a conclusion based on data and observation
- The process of drawing a conclusion from given evidence.

Practice:

- **Observations**:
  - I hear people screaming
  - I smell cotton candy, popcorn, and hamburgers
  - I see a lot of people
- Inference = ?

Observation

- That plant is extremely wilted.
- The car stopped running
- The Diamondbacks are leading their division

Inference

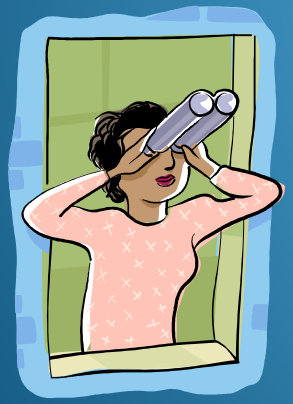
- That plant is extremely wilted due to a lack of water.
- The car stooped running because it was out of gas.
- The Diamondbacks are leading their division because they are playing well right now.

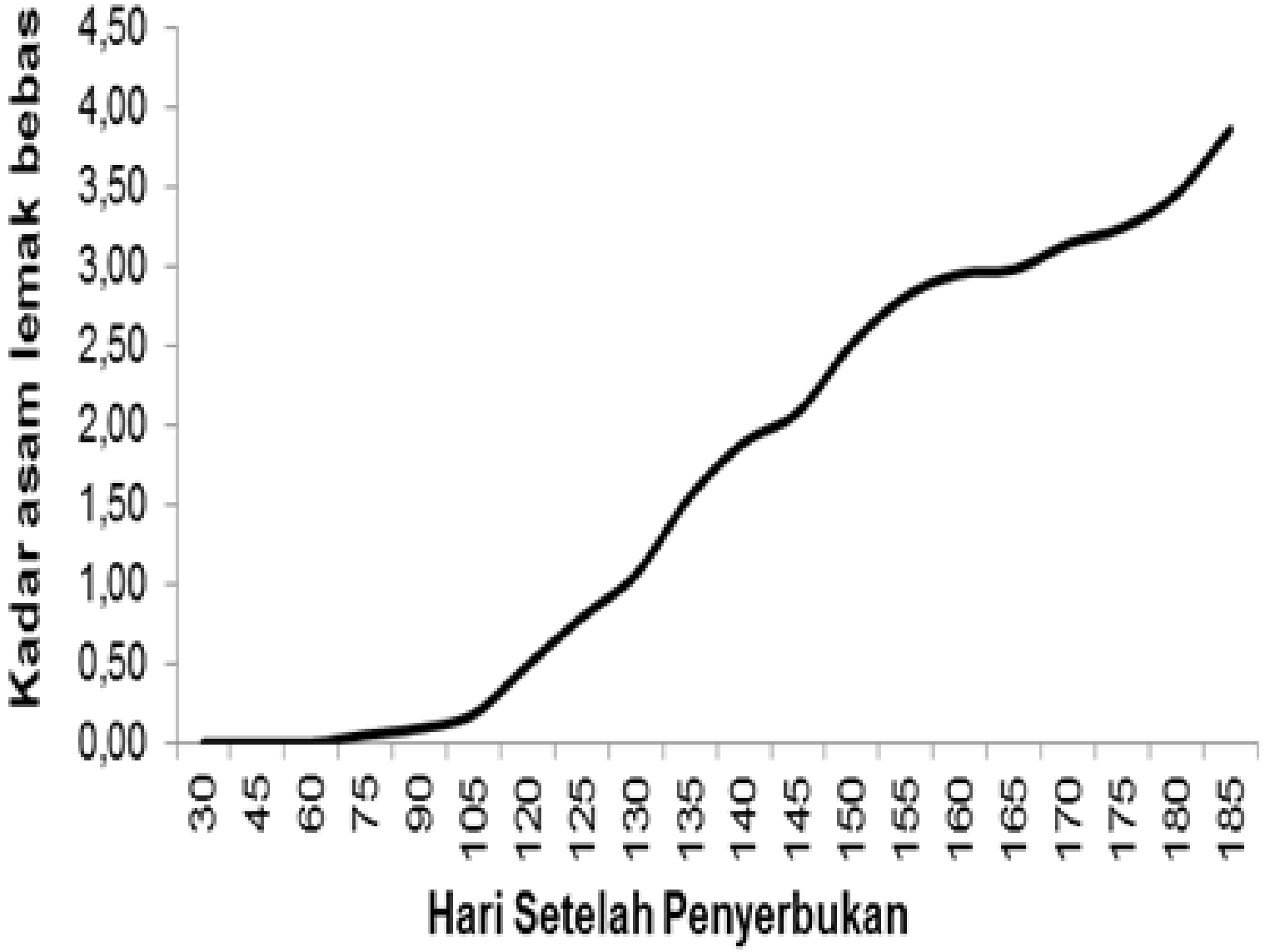
1. There is a representation of a face on one side of the coin.
2. The Latin word "Dei" means "God.“
3. The coin was made by deeply religious people.
4. The date 1722 is printed on one side of the coin.
5. The coin was made in 1722.
6. The face on the coin is a representation of the nation's president.

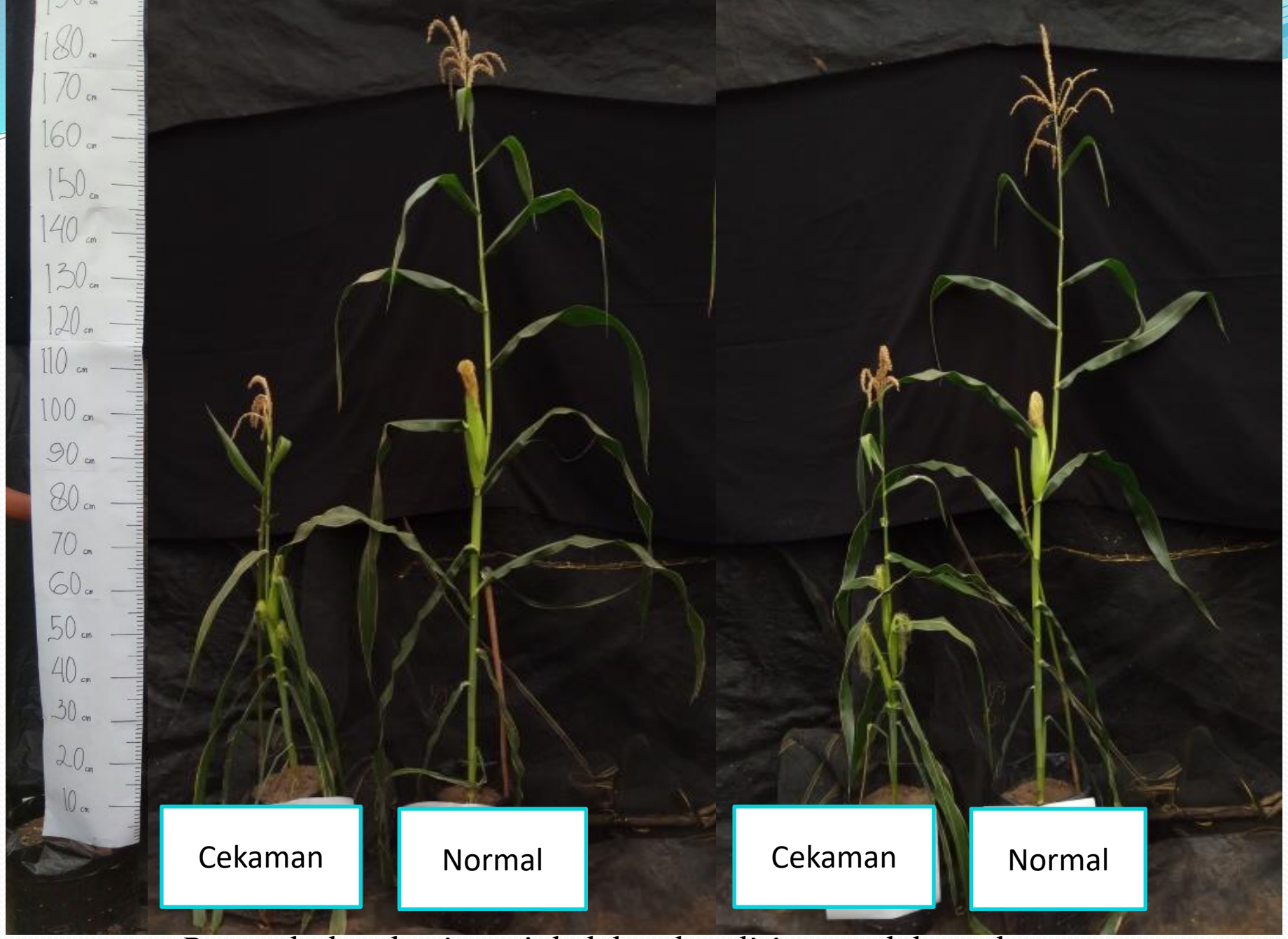
Let's Practice….

Look at the picture & decide if the statement is an

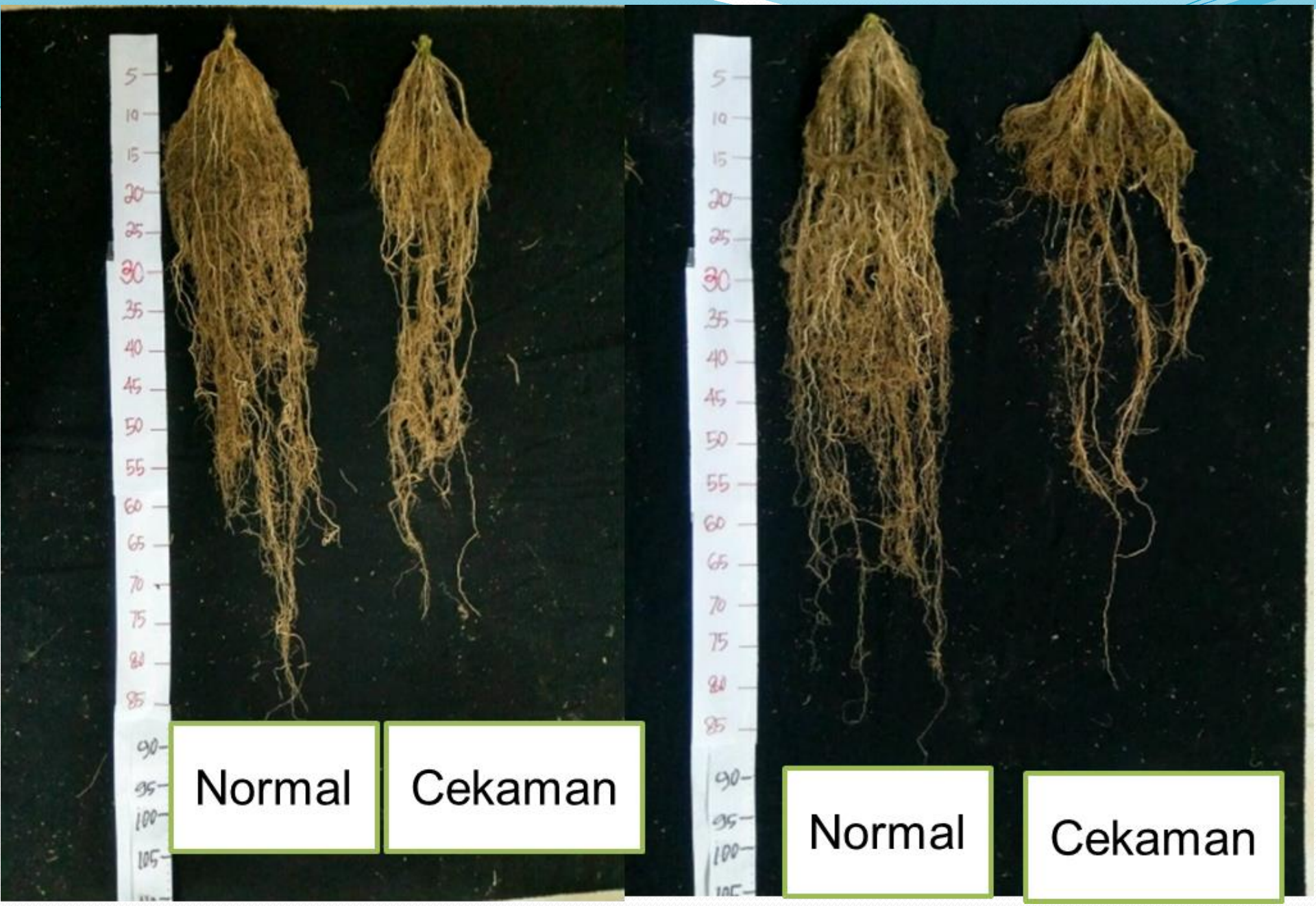
Observation or Inference




Kadar asam lemak bebas
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
30
45
60
75
90
105
120
125
130
135
140
145
150
155
160
165
170
175
180
185
Hari Setelah Penyerbukan



Pertumbuhan bagian tajuk dalam kondisi normal dan cekaman kekeringan


Normal
Cekaman
Normal
Cekaman


A0P1
A1P1
A2P1
A3P1


A0P1
A1P1
A2P1
A3P1


7.4
mm
OFF
ON
ZERO


LOW
PH
5.5
ON

Write one observation.

Write one inference.

Write one observation.

Write one inference.

Write one observation.

Write one inference.

Write one observation.

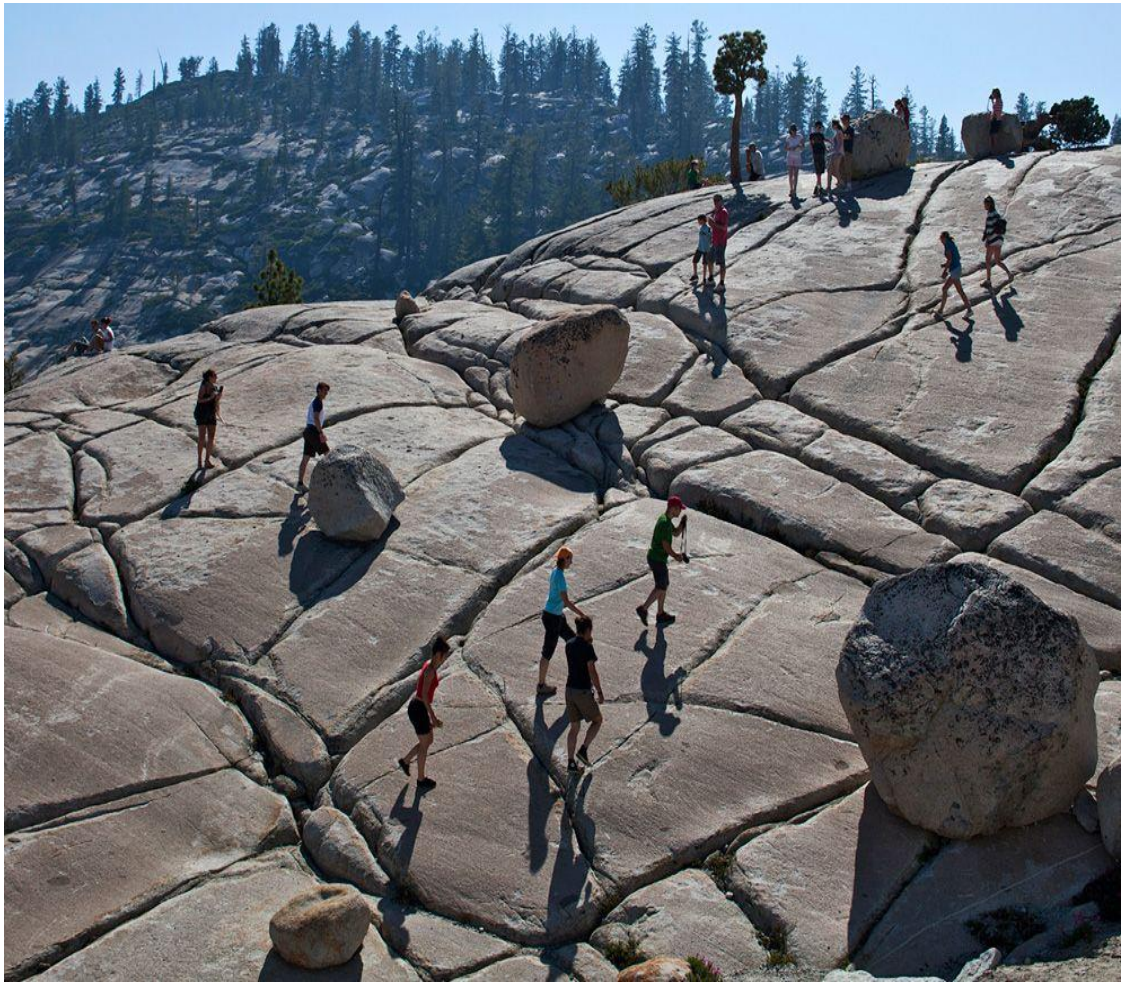
Write one inference.

Write one observation.

Write one inference.

Write one observation.

Write one inference.



Quantitative / Qualitative Observation

Quantitative Observations

- Quantitative observations are ones that are based on a QUANTITY.
- These would be measurements.
  - Weight
  - Height
  - Length

Qualitative Observations

- Qualitative Observations.
- These are based on characteristics.
  - Color
  - Size
  - Texture

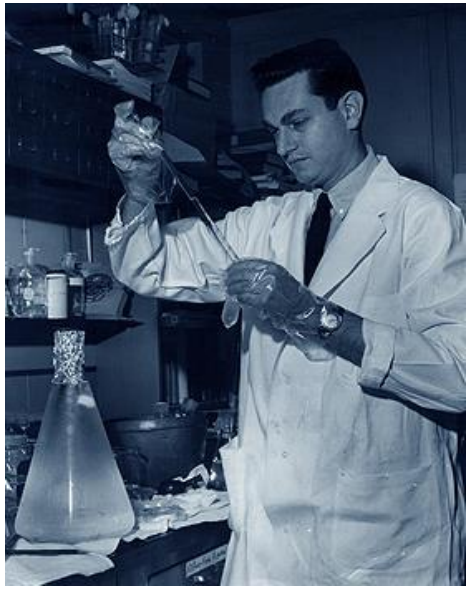
Qualitative vs. Quantitative

- In this classroom make 3 descriptions for:
- 1. Quantitative statement
- 2. Qualitative statement

Scientific Method

- Scientists do two main types of studies.

Experimental



Control, Test

Observational

Study, Observe, analyze

Experimental Study

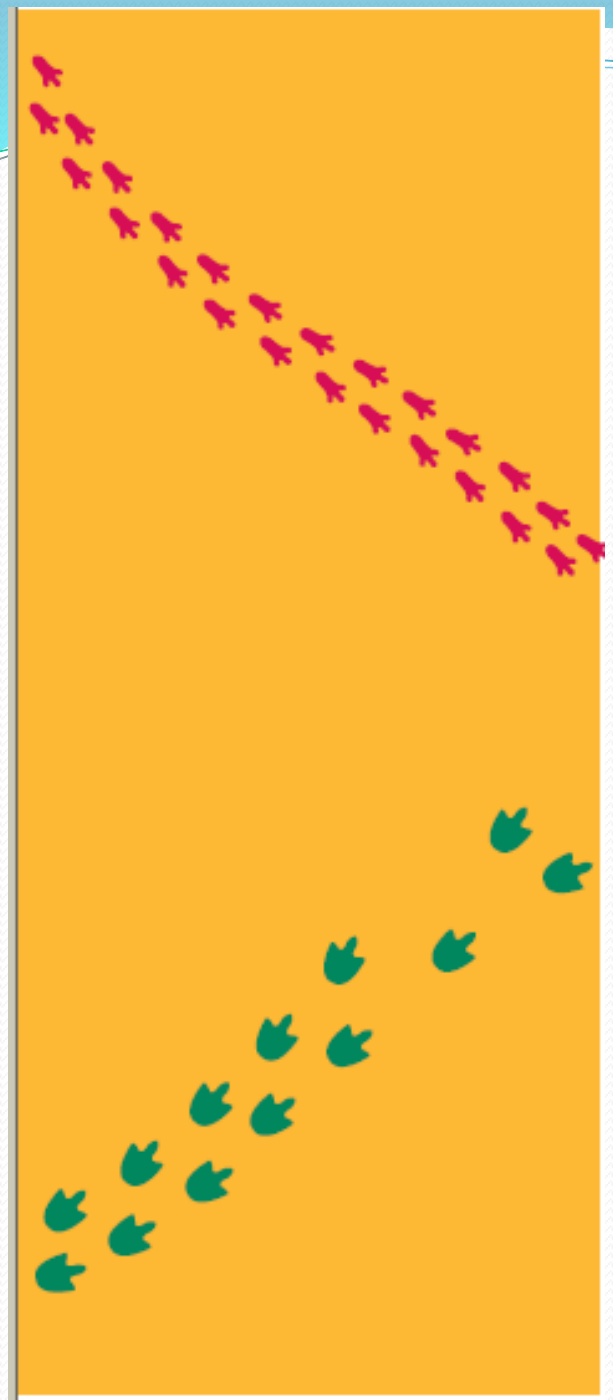
- To answer a question or solve a problem through a test. Probably what you learned in middle school.
- Problem
- Background information
- Hypothesis
- Experiment
- Analyze data
- Conclusion

Observations and Inferences

- Scientific knowledge is developed from a combination of both observations and inferences.
- Observations are made from information gathered with the five senses, often augmented with technology.
- Inferences are logical interpretations derived from a combination of observation and prior knowledge.
- Together, they form the basis of all scientific ideas.

Summary

- What is the difference between an observation and an inference.
- What is the difference between a quantitative observation and a qualitative observation.
- How can people have different inferences about the same observations.
- What is an observational study?

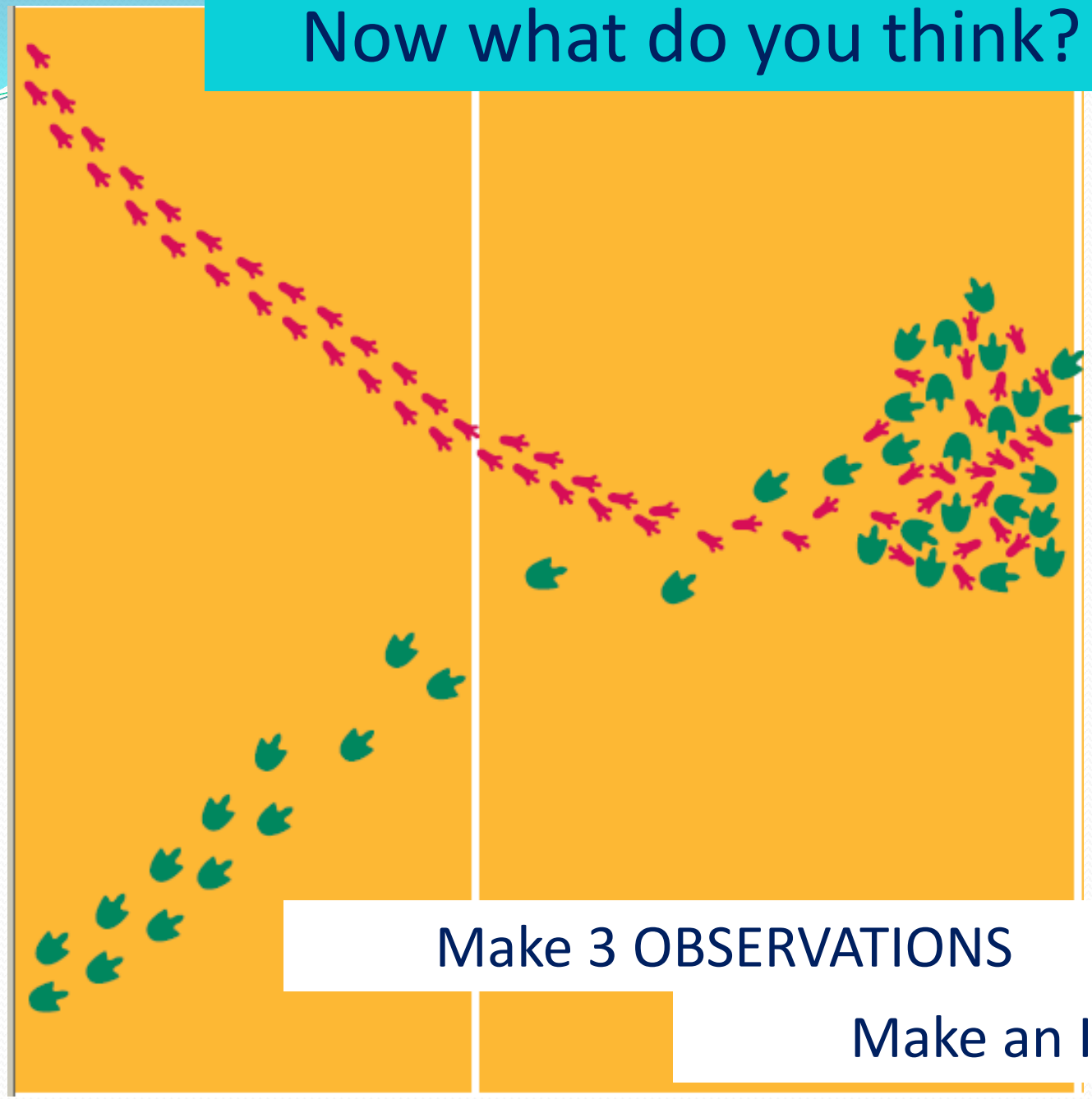


Look at these two sets of animal tracks.

List 3 OBSERVATIONS

Make an INFERENCE

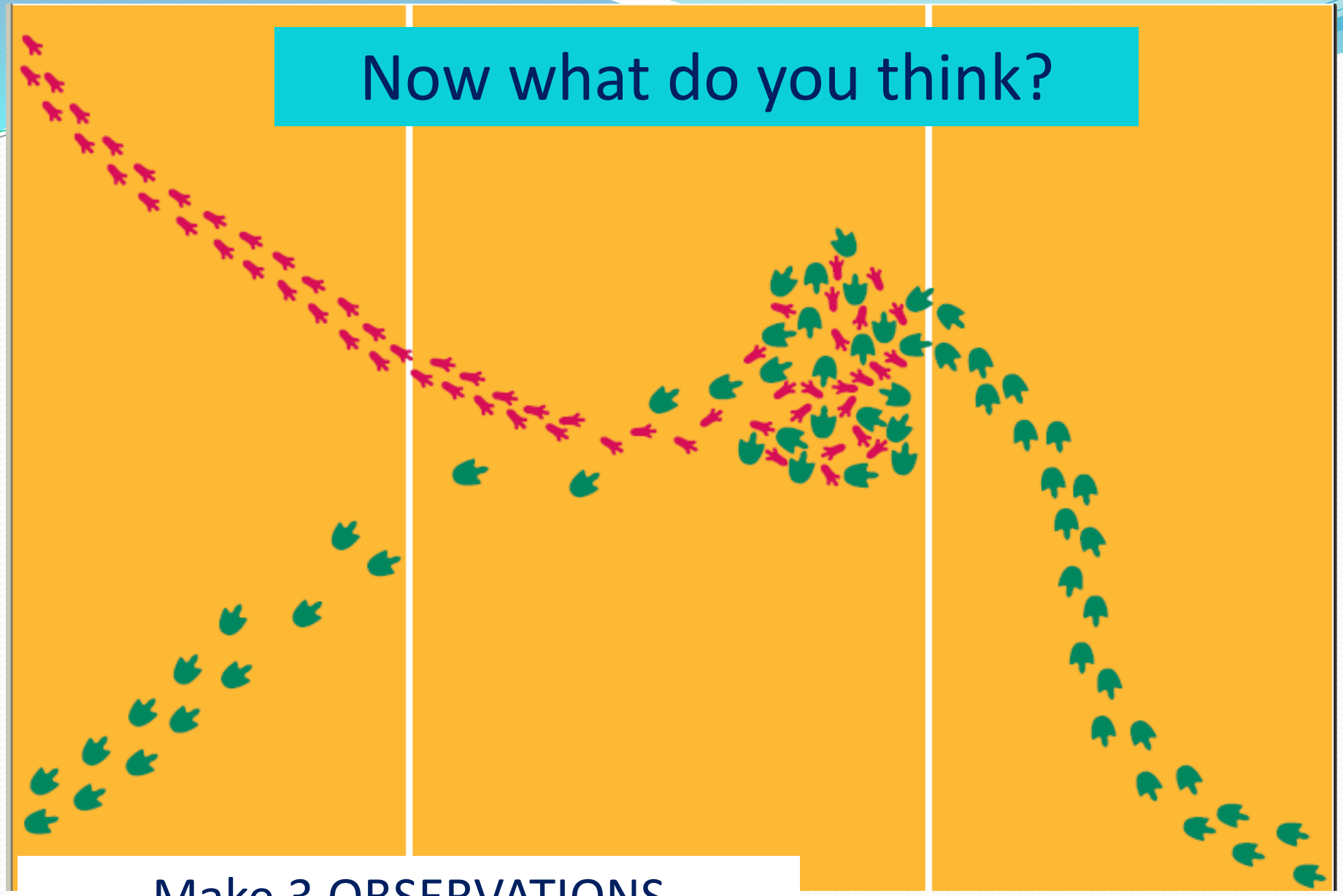
Now what do you think?



Make 3 OBSERVATIONS

Make an INFERENCE

Now what do you think?



Make 3 OBSERVATIONS

Make an INFERENCE

When to use observation & inference…

- During experiments, record observations *NOT inferences*

- Inferences may be used when writing the conclusion in your lab report.