

QPH Help Sheet – Writing Questions, Predictions & Hypothesis

schmied©2014

Name _____

Per _____

General rules for writing scientific questions, predictions & hypothesis.

1. Write Questions, Predictions & Hypothesis about the Experimental trial.
2. Do not create scientific questions that can be answered by a simple 'Yes' or 'No'
3. Do not use the word CHANGE. Be SPECIFIC (instead use terms like Increase, Decrease, Remain the same)
4. Use proper names (nouns). Don't use pronouns!
5. Use correct conventions. (Capitalization, question marks, etc.)

In the QPH examples below, the class wants to conduct an experiment to see if adding fertilizer will cause Western White Pine Trees to grow faster than trees without fertilizer.

A. Question format:

Start with - How will or How can....

How will ...(insert a verb).. *Manipulated Variable* .. *Study Subject*.. (either order).... affect the *Responding Variable*?

(Note: the effect on the Responding Variable is last.)

Example:

How will fertilizing Western White Pine trees affect the height of the pine trees?

B. Prediction format: If – Then – compared to

- ⇒ **If** refers to the *Manipulated Variable and Study Subject* (in either order!),
- ⇒ **Then** refers to the *Experimental Trial*, followed by a specific prediction about the *Responding Variable* and is **Compared to** the *Control* (if a control is used)

Example:

*If Western White Pine trees are fertilized,
then the Western White Pines with fertilizer will grow taller
compared to Western White Pines with no fertilizer.*

Hypothesis format: In a hypothesis the **If - then – compared to** statement is the same as the Prediction.

⇒ Simply add a **Because – Therefore** statement.

Notes

- a. The **Because – Therefore** statement gives a logical, realistic, reason for choosing the predicted outcome.
- b. The **Because – Therefore** statement includes the:
 - ⇒ reason WHY
 - ⇒ Study Subject,
 - ⇒ Manipulated Variable, &
 - ⇒ Responding Variable in the explanation.

Example:

*If Western White Pine trees are fertilized,
then the Western White Pines with fertilizer will grow taller
compared to Western White Pines with no fertilizer
because fertilizer adds valuable nutrients (NPK) to the soil
therefore causing the Western White Pines to grow taller and faster.*