

Answer on Question #61205-Physics-Other

Scientists tested the effect of a fertilizer on the growth of plants. They had 2 sets of plants, Group A which gets fertilizer, water and sun and Group B which gets only water and sun (but in equal amounts to Group A).

1. Explain how this scenario is a controlled experiment and identify the manipulated variable.

Answer

The manipulated variable is the fertilizer since the other factors (water and sunlight) are given in equal amounts.

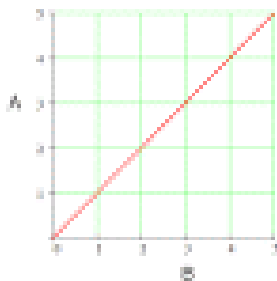
It is a controlled experiment because one group receives fertilizer while the other does not. Any differences in growth should be due to either having fertilizer or not.

2. If the scientists only performed 1 experiment but it supported their hypothesis, why can it not be considered a theory?

Answer

In order for it to be a theory, it has to be tested numerous times by multiple scientists.

3. The graph below was created showing the growth of the plant. How would you know that the y-axis is measuring the growth of the plant?



Answer

Because the derivative of the function is positive:

$$\frac{dy}{dx} = a = \text{const}, a > 0.$$