ANSWER GUIDE 1

For “Identifying the Controls and Variables”
1) Group B
2) Special Juice Consumption
3) Productivity of Workers
4) Special juice does not increase worker productivity.
5) Repeat the experiment with different groups of workers (or switch treatments between Groups A&B) or increase sample size, to account for natural variability between workers.
6) Shower covered in slime
7) Water-treated side of shower
8) Shower Treatment (Water or Coconut)
9) Appearance/Existence of Slime
10) Coconut juice does not have an effect on green slime.
11) Mice not exposed to radio waves
12) Exposure to Radio Waves
13) Ability to Push Wooden Block (away from food)
14) Exposure to radio waves may make mice stronger.
15) Larger sample size! Alternating treatment groups or testing on more than one population of mice would additionally help account for natural variability in the mice.
16) Subject A, sprinkled with original itching powder
17) Itching Powder (Original or Experimental)
18) Duration of Itches
19) Yes, in this case, experimental itching powder did create a longer-lasting itch! However, a sample size of one is far too small. Krusty needs to test more subjects before he draws a conclusion.
20) Control Group - subjects not exposed to Rogooti
   Independent Variable - Exposure to Rogooti
   Dependent Variable - Speed of Hair Growth

Lisa would divide her family (subjects) in half -- two in the control group, and two in the experimental group. She would start by measuring the length of each subject’s hair. She would then have the experimental group apply Rogooti to their scalp every day, while the control group would not receive treatment. Every week during the treatment she would remeasure each subject’s hair. At the end of the experiment, she could plot Hair Growth vs. Time to create a line graph, using separate lines for the Control and Experimental Groups. Looking at the graph, she could easily see whether the use of Rogooti substantially increased the speed of hair growth.

For “Scientific Method in Action”
1) The experiment’s results were affected by a confounding variable (i.e. not a variable that was being controlled for), which was the chickens’ diet.
2) Beriberi was caused by bacteria.
3) By injecting bacteria from the blood of infected humans into the experimental group of chickens.
4) The hypothesis can be neither supported nor rejected based upon the experiment, because the results were strongly affected by a confounding variable. However, it appears that the confounding variable itself may be the cause of beriberi, and this should be tested.
5) A diet of polished rice (or a diet low in thiamine) causes beriberi.
6) Staphylococcus bacteria were growing. (These bacteria cause infections in humans and other animals.)
7) The by-products of Penicillium growth killed Staphylococcus bacteria.
8) Penicillium were grown in a nutrient broth. Penicillium was then removed from the broth, and the broth was applied to a culture of Staphylococcus.
9) The hypothesis was supported; the Staphylococcus bacteria were killed.
10) Penicillin / antibiotics