Scientific Method HW #1

Biology I

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Contents

1 Using Science Skills

1. **Interpreting Graphics:** In Figure 1-1, which rabbit is the control?
    - Rabit 2 is the control, since it doesn't have an ice pack
2. **Interpreting Graphics:** In Figure 1-1, what is the variable in this experiment?
    - The independant variable is the temperature of the shaved patch on the rabbit, and the dependant variable would be the color of fur produced.
3. **Formulating Hypotheses:** Before completing the experiment in Figure 1-1, the scientist made a hypothesis. What is the hypothesis she is testing?
    - She is testing the hypothesis "If the patch of the rabbit is colder, then the produced fur will be darker"
4. **Applying Concepts:** Why is Rabbit B essential to this experiment?
    - Its important to have a control so we the researcher accurately test the value of an independent variable on a dependent variable

5. **Drawing Conclusions:** Based on your observations of Figure 1-1, conclude what effect temperature has on Himalayan rabbits.

    - The Figure confirms our hypothesis, the colder rabbit produced darker skin, so the enviornment does affect the color of rabbit fuduced darker skin, so the enviornment does affect the color of rabbit fur

2 Bacteria Growth and Temperature

1. **Classifying:** What variable did the researcher change during this experiment?

    - The only variable "changed" was the time.

2. **Inferring:** What do the shapes of the curves tell you about the changes in population size?

    - As time increases, the rate of growth decreases

3. **Calculating:** For the bacteria kept at 15°C, how did population size change during the experiment?

    - The population size increased from around 3750 bacteria/ml of broth to 10000 bacteria/ml of broth

4. **Drawing Conclusions:** What effect did the different temperatures have on the growth of the bacterial populations?

    - A higher temperature results in a faster rate of growth

5. **Going Further:** Suppose some bacteria used in this experiment were kept at a temperature of 700°C (the temperature of boiling water). Would you expect the population sizes to increase even faster than at 15°C? Explain your reasoning.

    - The bacteria will likely **NOT** increase faster, as at temperatures over 65° C bacteria is rapidly killed.