Physical Science Skills

Name _____ Date _____ Class _____

Use after Chapter 1.

Methods of Science
Analyzing Experimental Results: Using Graphs to Interpret Data

Anne was looking for a project for the school science fair. She had read an article in a science magazine about feeding antibiotics to chickens. The chickens that were fed antibiotics grew at a faster rate than those that were fed none. Anne thought about the chicken experiment for a long time. After more reading in the library, she decided to design an experiment using red crayfish. Crayfish grow to a maximum size of about 10 cm and mature in 6–8 weeks. Female crayfish produce 100–400 eggs that hatch in 2–3 weeks. Anne's teacher helped her order 144 crayfish from a science supply house. Anne obtained Aureomycin®, an antibiotic, from her doctor.

When the crayfish arrived, Anne divided them into 6 groups. Each group contained 12 males and 12 females. She placed the groups in identical glass containers, fed them the same food, and changed the water in each container every seven days. All six groups were treated the same way except that Aureomycin® was added to five of the containers after each water change according to the following schedule.

Group #	mg Aureomycin® added after each change of water
1	0
2	25
3	50
4	100
5	200
6	300

Each week, before the water was changed, the sizes of the crayfish were recorded and an average size was obtained for each group. The following data were obtained.

Group #	Average size in cm for red crayfish after indicated weeks					
	week 1	week 2	week 3	week 4	week 5	week 6
1	1.51	3.12	4.05	4.63	6.05	6.94
2	4.05	6.15	7.23	7.37	7.43	7.45
3	2.55	5.05	6.55	7.55	7.63	7.70
4	4.50	6.50	8.00	9.05	9.55	10.00
5	1.55	3.10	4.20	4.55	4.70	4.75
6	1.55	1.95	2.55	2.85	2.91	2.95

1. What was Anne's hypothesis?

2. Upon what basis id Anne form this hypothesis?

3. Does Anne's experiment have a control? If so, describe it.

4. Why did Anne use so many crayfish?

5. Graph Anne's data and use your graph to answer the following questions.

6. What conclusions can be drawn from Anne's experiment?

7. Of what practical value could an experiment like this be?