Year 13 Science: Biology investigation: temperature and Daphnia heart rate

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. A Daphnia's heart beats 58 times in 15 s. What is its heart rate in beats per minute?

2. Five Daphnia at 15 °C gave 210, 224, 198, 215 and 203 beats per minute. Find the mean.

3. Using the class's means, calculate Q10 between 15 °C and 25 °C.

4. Why did the class leave each Daphnia at the test temperature for 5 minutes before counting?

5. Why is counting five different Daphnia better than counting one Daphnia five times?

6. The 30 °C group had the largest standard deviation. Give a biological reason.

7. Name one source of error that would make every reading too high, and how to reduce it.

8. Another class found Q10 = 2.1 between 10 and 20 °C. Give one reason the two classes could differ.

Fix the mistake

9. Correct this statement: "I counted the same Daphnia five times, so I have five repeats."

10. Correct this statement: "The error bars overlap, so temperature had no effect."

11. Correct this statement: "Higher temperature denatures the enzymes, so heart rate falls at 25 °C."

12. Correct this statement: "My results prove the hypothesis."