LEARNING CHECK

Let's extend Stirling et al.'s (2014) experiment. In addition to measuring the proportions of false alarms and misses as they did, they also could have measured the reaction time that participants took to identify the animal presented. It may well be the case that when asked whether a creature is a snake, people might respond more quickly than when asked whether a creature is a salamander. In this hypothetical extension of Stirling et al.'s work, participants are shown pictures of animals; for half of the animals shown, they are asked, "Is this creature a snake?" For the other half of the animals shown, they are asked, "Is this creature a salamander?" The amount of time, in milliseconds, it takes people to respond is the dependent variable. A lower number indicates a faster response time.

Here are the results of these completely hypothetical data:

The paired samples *t* test revealed that people took longer when asked whether a creature was a salamander (M = 1,500 ms, SD = 447 ms) than when asked whether a creature was a snake (M = 850 ms, SD = 364 ms), $t(14) = 4.73$, $p < .05$, $d = 1.22$, 95% CI [355.29 ms, 944.71 ms].

1. What is the mean difference score (i.e., the numerator of the *t* statistic to be computed)?
2. What is the *t* statistic?
3. What is the standard error of the difference scores?
4. How were the degrees of freedom computed?
5. According to Appendix B, what is the critical value that was used to see whether we reject or do not reject the null hypothesis?
6. What is the probability that the mean difference was due to random variation?
7. Did the researchers reject or fail to reject the null hypothesis?
8. Given your answer to the previous question, what does that mean in plain English?
9. By using Jacob Cohen's (1992) guidelines, interpret the effect size.
10. Interpret the 95% CI.