

Appendix D: Student Interview Scoring Rubric

Skill	Correct reasoning	Question	Correct Answer
1 (3 Qs)	Evaluation of hypothesis with experiment; empirical test; draws conclusion that is based on strong evidence; provides reasoning for evaluating evidence; Evaluates the experimental design, recognizing confounds or need for random selection, or other independent variables	1	B
		8	D
		11	B
2 (5 Qs)	Recognize sources of bias; quoting researcher does not indicate primary source; reviews are not primary; media reports are tertiary; peer review and importance of evaluation by 3rd party experts	10	B
		12	C
		17	B
		22	C
3 (3 Qs)	Recognize bias political or financial influences should not used to pressure findings, conclusions, reporting, or social decisions; decisions should be based on evidence; questionable ethics of publishing work that has not been verified; questionable ethics of distributing materials to bias participants; questionable ethics of rejecting studies based on controversy	5	D
		9	B
		27	B
4 (4 Qs)	No confounding factors (e.g., differences in sample size, sample selection, sample makeup); an explanation of how controls are used to mediate confounding factors; identifying strengths and weaknesses of experimental design (e.g., random assignment to control and treatment groups)	4	C
		13	D
		14	C
		25	B
5 (1Q)	Histogram is the best way to compare means	15	D
6 (4 Qs)	Given data, be able to explain what the general shape of the graph would be (exponential/logarithmic vs linear); explain why the other shapes are not correct; interpret the graph and infer cause (e.g., pesticide killed the beetles which caused more tadpoles to be eaten); extract numerical information from graph and use that to make comparisons or conclusions; interpret shape of a graph to reach a conclusion	2	C
		6	C
		7	A
		18	A
7 (3 Qs)	Solve algebraic calculations accurately	16	B
		20	B
		23	D

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8 (3 Qs)	Give measure of reliability such as use of statistical tests to define probability and certainty; how sample size effects certainty; Recognize that researchers use statistics to make inferences about a population using a sample of that population	3	B
		19	C
		24	D
9 (2 Qs)	Recognize or use reasoning to explain that correlation does not imply causation; using information from a graph to explain why they chose an answer that they did (e.g., the graph showed elevation and mean number of shrimp rather than having fewer predators)	21	C
		28	B