

## Biology Toolkit: Indicator 1.1.4

Student Handout: Biology: Indicator 1.1.4

### Goal 1.0 Skills And Processes

Expectation 1.1 The student will explain why curiosity, honesty, openness, and skepticism are highly regarded in science.

Indicator 1.1.4 The student will recognize data that are biased.

### Public Release - Selected Response Item - Released in 2009

Biology Indicator 1.1.4

Use the information and the chart below to answer the following item.

Several students are conducting an experiment to test the effect of exercise on heart rate. Students do 20 sit-ups in one minute of exercise. The data chart below shows the heart rate at one-minute intervals for each student.

**HEART RATE DURING EXERCISE**

Student	Heart Rate (bpm*)				
	1 min. of exercise	2 min. of exercise	3 min. of exercise	4 min. of exercise	5 min. of exercise
1	88	98	102	110	110
2	92	96	103	115	118
3	87	100	112	112	130
4	93	109	115	120	122
5	90	93	101	112	112
Average	90	99	107	114	118

\*bpm = beats per minute

The students decide to ignore any results that were too far above or below their prediction. They repeat these trials until a value closer to their prediction is obtained. The students' decision to ignore data and repeat trials affects the experiment by

- A. introducing bias
- B. decreasing controls
- C. increasing accuracy
- D. eliminating variables

Correct Answer

- A. introducing bias

## Item

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