

19. Twin brothers Jamal and Micah each received a different toy race car for their birthday. Jamal's car was a big truck, while Micah's car was a smaller police car. They wanted to find out which of their cars would go the farthest. They let each car roll down a ramp and then measured how far the cars rolled. Which of the following is the **dependent variable***?

- A. **mass*** of the cars
- B. color of the cars
- C. length of the ramp
- D. **distance the cars rolled**

*FCAT vocabulary
5th and 8th

Benchmark H135 AA
Student knows that a change in one or more variables may alter the outcome of an investigation.

Explanation:

- A. Because the cars are different sizes, the masses of the cars would be the **independent variable*** of the experiment, that is, the variable that is different in order to study changes in the dependent variable.
- B. The color of the cars would have no affect on the experiment.
- C. The length of the ramp would be considered a controlled variable. A controlled variable is something that is held constant so that only one factor may be tested in an experiment.
- D. The distance the cars roll is the factor that is being tested.

20. While conducting an investigation, Toni is surprised by some of her results. She repeats the experiment several times, always finding the same conclusion.

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*FCAT vocabulary
5th and 8th

List **two** reasons why it is important that Toni record her observations.

Answers may vary:

- ✓ *By keeping accurate notes, it enables other scientists to repeat the experiment to see if the results are the same or similar.*
- ✓ *Careful records and descriptions help others to test a hypothesis.*
- ✓ *Accurate record keeping makes the investigation repeatable and verifies the validity of the scientific information.*
- ✓ *By looking at the results of a previous experiment, scientists may develop other questions or investigations.*

2 points

Benchmark H131 AA
Student knows that scientific knowledge is subject to modification as new information challenges prevailing theories and as a new theory leads to looking at old observations in a new way.

Benchmark H134 AA
Student knows that accurate record keeping, openness, and replication are essential to maintaining an investigator's credibility with other scientists and society. (Also assesses H.1.3.7)

Benchmark H137
The student knows that when similar investigations give different results, the scientific challenge is to verify whether the differences are significant by further study.

Quick Reference Benchmark Chart

Number	Type of Question	Benchmarks Addressed
1	MC	A134
2	MC	B136*, C132
3	GR	C234
4	MC	A131*, A132, A136
5	ER	C232, C233, C235, C236*
6	MC	D131, D135
7	MC	D132, D134*, G131, G134*, G135
8	MC	E133, E231
9	MC	E131*, E132
10	SR	E131*, E132
11	MC	G131, G134*, G135
12	MC	D132, D134*, G131, G134*, G135
13	MC	F131*
14	MC	G131, G134*, G135
15	SR	D133, D232, G232*, G233, G234
16	MC	H134*, H137
17	MC	H135*
18	MC	H131*
19	MC	H135*
20	SR	H131*, H134*, H137 *Annually assessed

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