EXAMPLE: Students are curious about the birth weight of babies that are born premature as opposed to babies who were carried to full term.

RQ: What effect does the month at which a baby is delivered have on the babies' birth weight?
HYP: If a baby is born prematurely then they will weigh less than babies born at full term on average.
Independent Variable: Month at which baby was born
Dependent Variable: Weight of the infant at birth
Constants: Age of the mother, Health and fitness of the mother
Experimental Group: Premature babies
Control Group: Full term babies

Students think that toy cars on an elevated ramp will go faster when released from a spring-loaded ejector than cars on flat ground.

A. RQ: Pick the best research question from the choices below.

1. Cars on ramps go faster than cars on a level surface.
2. Do cars go faster than others on flat ground?
3. What effect does the ground have on speed?
4. What effect does the height from which a car is ejected have on speed?

B. HYP: Pick the best hypothesis from the hypotheses below.

1. If a toy car is on an elevated ramp and ejected from a spring-loaded ejector then they will go faster because of the force of the spring.
2. If a toy car is on an elevated ramp and ejected from a spring-loaded ejector then they will go faster than cars on a level surface because of the force of the spring.
3. If the cars are on elevated surfaces they go faster as opposed to slower.
4. Cars on ramps go faster than cars on flat surfaces if they are ejected by a spring-loaded mechanism.

C. Independent Variable: Which of the following is the Independent Variable?

1. The height of the car before being ejected by the spring-loader.
2. The speed of the car after being ejected by the spring-loader.
3. The force of the spring.
4. The length of the ramp.

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D. Dependent Variable: Which of the following is the Dependent Variable?

1. Height of the car before being ejected by the spring-loader.
2. Speed of the car after being ejected by the spring-loader.
3. The force of the spring.
4. The length of the ramp.

E. Constants: Which of the following is NOT a constant (aka controlled variable)?

1. The spring-loader
2. The toy car
3. The speed of the car
4. The force at which the spring loader has been set.
5. The flat surface on which the toy car is placed.

F. Which is the Experimental Group?

1. The cars on the flat (level) surface.
2. The car on the ramp.

G. Which is the Control Group?

1. The cars on the flat (level) surface.
2. The car on the ramp.

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