**Topic:** Independent and dependent variables

**Question:** If a car is traveling at a constant speed of $60$ mph, the distance traveled can be calculated by measuring the time, and using $d = 60t$, where $d$ is distance, and $t$ is time. Which variable is the independent variable?

**Answer choices:**

A $d$

B $t$

C $60$

D There is no independent variable.

**Solution:** B

In this relationship, we are thinking of time, $t$, as the variable we are deliberately changing to see the effect on distance, $d$.

Another way to think of this is to think of distance as the outcome of whatever time the car travels.

No matter how you describe the relationship, it points to $t$ as the independent variable.

**Topic:** Independent and dependent variables

**Question:** The time, $t$, it takes to fill a $27{,}000$ gallon swimming pool with a hose depends on the rate of water flow, $r$. The more we open the faucet, the less time it takes. What is the independent variable?

$$t = \frac{27{,}000}{r}$$

**Answer choices:**

A $r$

B $t$

C $27{,}000$

D There is no independent variable.

**Solution:** A

In this relationship, we are thinking of deliberately changing the rate of flow, $r$ by opening or closing the faucet, to see the effect on time, $t$.

Another way to think of this is to think of time as the outcome of whatever flow rate the hose puts out.

No matter how you describe the relationship, it points to $r$ as the independent variable.