

I Can Explain the Difference between and identify the Independent and Dependent Variable in a Real-World Situation.

Independent vs. Dependent Variables

The growth of a plant *depends on* how much water it receives.

Independent Variable: how much water the plant receives

Dependent Variable: the growth of the plant

The weight a person loses *depends on* how much exercise a person does.

Independent Variable: how much exercise a person does

Dependent Variable: the weight a person loses

Independent Variable: the variable that is controllable

Dependent Variable: changes in response to the independent variable

Example

🔊 Classify each highlighted quantity as an *independent* or *dependent* variable. Underline the independent variable and then circle the dependent variable.

- a. You biked m miles to the store and burned c Calories.

- b. The category of a hurricane is related to the wind speed of the hurricane.

- c. The population of a state determines the number of representatives from that state in the U.S. Congress.

Got It?

🔊 The number of flowers in a bouquet determines the cost.

Identify the dependent variable.

Let's Consider the Following Real-World Situations

1. Bethany bought p posters for \$3.50 each. The total cost, C is the amount that Bethany owed.

a. Write an equation to represent the total cost of the posters Bethany buys.

$$= C$$

b. Write an equation to represent the number of posters Bethany Buys.

$$= p$$

2. Brothers Cameron and John went Trick-or-Treating and came home with a total of T pieces of candy. Cameron got 24 pieces of candy and John got j pieces of candy.

a. Write an equation to represent the total pieces of candy to boys got.

$$= T$$

b. Write an equation to represent the amount of candy John got.

$$= j$$

c. Use the appropriate equation to determine how many pieces of candy John got if the total candy the boys got was 51 pieces.

d. After the boys had eaten a few pieces of candy they had P pieces of candy left over. They decided to equally share the remaining pieces with their 3 sisters. If each sister received n pieces of candy, write 3 different equations to represent the situation.

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Independent vs. Dependent Variables

The growth of a plant *depends on* how much water it receives.

Independent Variable: how much water the plant receives

Dependent Variable: the growth of the plant

The weight a person loses *depends on* how much exercise a person does.

Independent Variable: how much exercise a person does

Dependent Variable: the weight a person loses

Input Cause
Independent Variable: the variable that is controllable

X

Output Effect
Dependent Variable: changes in response to the independent variable

Y

Example

Classify each highlighted quantity as an *independent* or *dependent* variable. Underline the independent variable and then circle the dependent variable.

a. You biked m miles to the store and burned c Calories.

IV

DV

b. The category of a hurricane is related to the wind speed of the hurricane.

DV

IV

c. The population of a state determines the number of representatives from that state in the U.S. Congress.

IV

DV

Got It?

The number of flowers in a bouquet determines the cost.

IV

DV

Identify the dependent variable.

Let's Consider the Following Real-World Situations

1. Bethany bought p posters for $\$3.50$ each. The total cost, C is the amount that Bethany owed.

a. Write an equation to represent the total cost of the posters Bethany buys.

$$p \cdot \$3.50 = C$$

b. Write an equation to represent the number of posters Bethany Buys.

$$C \div \$3.50 = p$$

2. Brothers Cameron and John went Trick-or-Treating and came home with a total of T pieces of candy. Cameron got 24 pieces of candy and John got j pieces of candy.

a. Write an equation to represent the total pieces of candy to boys got.

$$24 + j = T$$

b. Write an equation to represent the amount of candy John got.

$$T - 24 = j$$

c. Use the appropriate equation to determine how many pieces of candy John got if the total candy the boys got was 51 pieces.

$$\begin{array}{r} T - 24 = j \\ 51 - 24 = j \\ \hline 27 = j \end{array}$$

$$\begin{array}{|l} 27 \text{ pieces of} \\ \text{Candy for} \\ \text{John} \end{array}$$

d. After the boys had eaten a few pieces of candy they had P pieces of candy left over. They decided to equally share the remaining pieces with their 3 sisters. If each sister received n pieces of candy, write 3 different equations to represent the situation.

$$P \div 3 = n$$

$$3 \cdot n = P$$

$$P \div n = 3$$