

Lesson 11.1.3

- 11-27. a. Each input (pushing a button) relates to an output (a can of soda).
b. Input: possible buttons to push and money; output: possible types of soda
c. No, it is not. You cannot predict the output when *Lemon Twister* is selected.
d. Yes; Based on this information, you can predict that every time the *Blast* is selected, the output will be a can of *Blast*.
e. Yes; Based on this information, you can predict that every time *Slurp* is selected, the output will be a *Lemon Twister*.
f. Relations that are functions have a predictable (and unique) output value for each input value. Relations that are not functions have more than one output for at least one input, which makes them unpredictable.
- 11-28. Typical response. "A function is a relation in which each input has only one output."
- 11-29. a. No; Button 2 gave two different types of candy
b. Yes; each input has only one output
c. No; $x = 2$ has two different outputs
d. No; at least one x -value has more than one y -value
e. Yes; each x -value has only one y -value
f. Yes; each x -value has only one $h(x)$ -value
g. Yes; each input has only one output
- 11-30. No; vertical lines are not functions.
- 11-31. Some possible machines are an ATM machine, a calculator, a radio, etc.
- 11-32. 1, 5, ≈ 8.54
- 11-33. $u = 4, v = -3$
- 11-34. a. -7 b. -1 c. 9 d. 34
- 11-35. a. $x = 8$ or $x = -2$ b. $x = \pm 7$ c. $x = 1$ or $x = -3$ d. $x = -5$ or $x = -1$
- 11-36. a. $25a^{-22}b^{36} = \frac{25b^{36}}{a^{22}}$ b. $5 \cdot 3^{-1}x^{-9}y^5 = \frac{5y^5}{3x^9}$
- 11-37. B