Module 4 Lesson 3: Are You Ready? Possible Solutions

1. a. The following is a possible answer.

   A woman adds warm water to a bathtub for 5 min, but she is called away and turns off the water for 15 min. The woman returns to find the water has cooled, so she lets out some of the water; this takes 2 min. Then she continues filling the tub with warm water until the tub is filled; this takes 18 min.

   b. Time is the independent variable. Time is the variable that is being controlled or manipulated and causes a change in the dependent variable.

   c. The value of the independent variable must be a rational number greater than or equal to 0.

   d. The volume of water is the dependent variable. The independent variable causes a change in the dependent variable. In other words, the length of time the taps are turned causes a change in the volume of water in the bathtub.

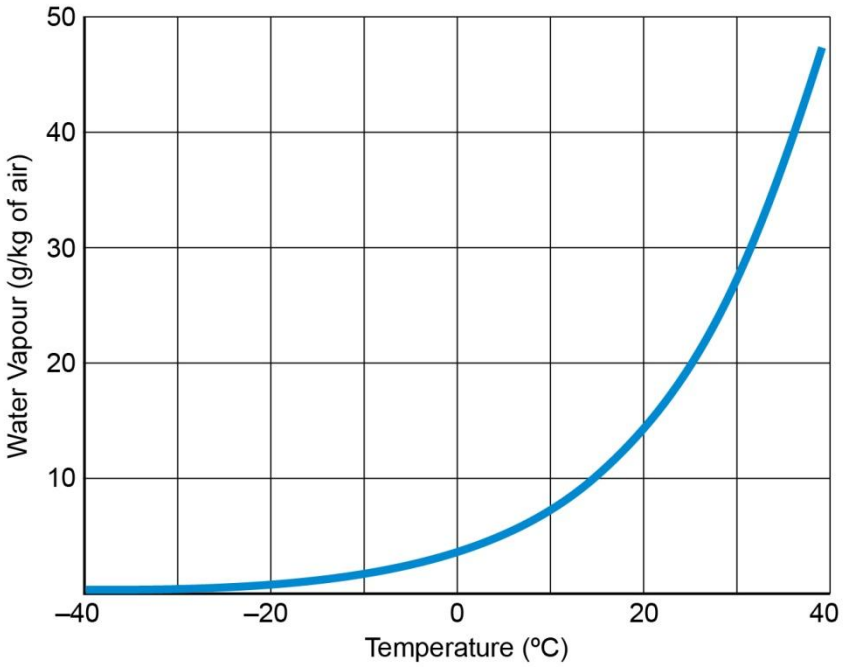
   e. The value of the dependent variable must be a rational number greater than or equal to 0 and less than or equal to 40. **Note:** A standard-sized bathtub holds 40 L of water.

2. a. Domain $\{x \mid -40 \le x \le 40, x \in R\}$
   OR
   [-40, 40]
   OR
   The domain includes all the real numbers between and including –40 and 40.

   b. Range $\{y \mid 0.1 \le y \le 49.8, y \in R\}$
   OR
   [0.1,49.8]
   OR
   The range includes all the real numbers between and including 0.1 and 49.8.

   c. The student's completed graph should look like the following.

Water Vapor versus Temperature



3. a. The domain includes all the natural numbers from 1 to 10.
OR

Domain: $x \mid 1 \leq x \leq 10,\ x \in \mathrm{N}$

OR
[1, 2, 3, 4, 5, 6, 7, 8, 9,10]

b. The range includes all the natural numbers from 5 to 9.
OR

R: $x \mid 5 \leq x \leq 9,\ x \in \mathrm{N}$

OR
[5, 6, 7, 8, 9]
Note: The students will likely make less than $9000 because people may take advantage of the incentive and buy multiple cartons.

c. The finished chart should look like the following.

Number of Cartons Purchased	1	2	3	4	5 or more
Price per Carton ($)	9	8	7	6	5