**Module 1 Assessment**

Use your knowledge of functions to model and solve the situations given below.

1. A clothing store advertises that it is having a 25% off sale. For one day only, the store advertises and additional savings of 10%. Use composition of functions to find the total percent discount. What would be the sale price of a $40 sweater?
2. For a mammal, the volume *b* ( in milliliters) of air breathed in and the volume *d* (in milliliters) of dead space (the portion of the lung not filled with air) are related to body weight *w* (in grams) by these formulas:

 *b(w) = 0.007w d(w) = 0.002w*

The relationship for the breathing rate *r* (in breaths per minute) and body weight is:

$$r\left(w\right)= \frac{1.1w^{0.734}}{b\left(w\right)- d\left(w\right)}$$

Simplify *r(w)* and calculate the breathing rate for body weights of 6.5 grams, 12, 300 grams, and 70, 000 grams.

1. The Federal Reserve Bank of New York reports international exchange rates at 12:00 noon each day. On January 20, 1999, the exchange rate for Canada was 1.5226. Therefore, the formula that gives Canadian dollars in terms of United States dollars on that day is

$$D\_{C}=1.5226D\_{US}$$

where *DC* represents Canadian dollars and *DUS* represents United States Dollars. Find the inverse of the function to determine the cvalue of a Unites States dollar in terms of Canadian dollars on January 20, 1999.