c. Plot on your grapher the graph of *B* as a function of *n* from $n = 0$ until the mortgage is paid off. Sketch the graph on your paper.

d. True or false: "After half the payments have been made, half the original balance remains to be paid." Show that your conclusion agrees with your graph from part c.

e. Give the domain and range of this function. Explain why the domain contains only *integers*.

4. *Stopping Distance Problem:* The distance your car takes to stop depends on how fast you are going when you apply the brakes. You may recall from driver's education that it takes more than twice the distance to stop your car if you double your speed.

a. Sketch a reasonable graph showing your stopping distance as a function of speed.

b. What is a reasonable domain for this function?

c. Consult a driver's manual, the Internet, or another reference source to see what the stopping distance is for the maximum speed you stated for the domain in part b.

d. When police investigate an automobile accident, they estimate the speed the car was going by measuring the length of the skid marks. Which are they considering to be the independent variable, the speed or the length of the skid marks? Indicate how this would be done by drawing arrows on your graph from part a.

5. *Stove Heating Element Problem:* When you turn on the heating element of an electric stove, the temperature increases rapidly at first, then levels off. Sketch a reasonable graph showing temperature as a function of time. Show the horizontal asymptote. Indicate on the graph the domain and range.

6. In mathematics you learn things in four ways—algebraically, graphically, numerically, and verbally.

a. In which of the five problems above was the function given algebraically? Graphically? Numerically? Verbally?

b. In which problem or problems of the five above did you go from verbal to graphical? From algebraic to numerical? From numerical to graphical? From graphical to algebraic? From graphical to numerical? From algebraic to graphical?