

**LESSON**  
**6.2****Interdisciplinary Application***For use with the lesson "Solve Linear Systems by Substitution"***Brass Instruments**

**Music** There are two chief types of instruments. They are woodwind instruments and brass instruments.

Wind instruments are played by blowing into or through a tube. All woodwind instruments except the saxophone at one time were made of wood. Today, many are made of metal or other materials. In woodwinds such as recorders, the player blows through a mouthpiece into the instrument. In some other woodwinds, such as flutes and piccolos, the player blows across a hole in the instrument. Still other woodwinds, called reed instruments, have one or two reeds attached to the mouthpiece. The reeds vibrate when the musician blows on them. The player controls the pitch by placing the fingers on holes in the instrument or on keys that cover holes. In this way, the player lengthens or shortens the column of air that vibrates inside the instrument.

Brass instruments are played differently from woodwind instruments. The player presses the lips against the instrument's mouthpiece so that the lips vibrate like reeds when the player blows. By either tensing or relaxing the lips, the player produces different pitches. With most brass instruments, the player can further control the pitch with valves that lengthen or shorten the tube through which the air is blown.

**In Exercises 1–5, use the following information.**

You are in the band room when a shipment of new trumpets and trombones arrives. Your music teacher asks you to make sure the order is right. All the boxes are about the same size, so you find the number of boxes in the shipment. There are 27 total boxes. The bill shows the school paid \$10,950. In the catalogue, the price of a new trumpet is \$350 and the price of a new trombone is \$475.

1. Write an equation representing the total number of instruments.
2. Write an equation representing the total cost.
3. Using your equations from Exercises 1 and 2, write and solve the linear system using substitution.
4. How many trumpets did your school receive? How many trombones?
5. Check your results by graphing your linear system.