1 TAKS PREPARATION

TAKS Obj. 10
TEKS 8.14.A–C

REVIEWING PROBLEM SOLVING

Many math problems require that you do more than perform calculations to find a solution. In order to solve these problems successfully, you need to be able to:

- develop strategies for reaching a conclusion
- determine what information is needed to solve a problem
- decide what conclusions can be drawn from given information
- recognize and extend patterns

EXAMPLE

Two friends are walking on a path that is 400 feet long. Ivan starts at the east end and walks westward at a steady pace. At the same time, Luisa starts at the west end and walks eastward at a steady pace. The table shows the distance (in feet) between the friends 0, 1, 2, 3, 4, and 5 seconds after they start. Find the distance (in feet) between Ivan and Luisa 20 seconds after they start.

Number of seconds	0	1	2	3	4	5
Distance between (ft)	400	388	376	364	352	340

Solution

STEP 1 **Develop** a strategy for solving the problem. You need to determine how the distance between the friends is related to the time (in seconds) since they began walking. Look for a pattern in the table.

STEP 2 **Compare** the entries in the second row of the table. Notice that the distance decreases by 12 feet every second.

STEP 3 **Write** an expression. When the friends start walking, the distance between them is 400 feet. The distance decreases by 12 feet each second. The distance (in feet) between the friends n seconds after they start is given by the expression $400 - 12n$.

STEP 4 **Evaluate** the expression for $n = 20$.

$$400 - 12\boldsymbol{n} = 400 - 12(\mathbf{20})$$
$$= 400 - 240$$
$$= 160$$

▶ The distance between Ivan and Luisa 20 seconds after they start is 160 feet.