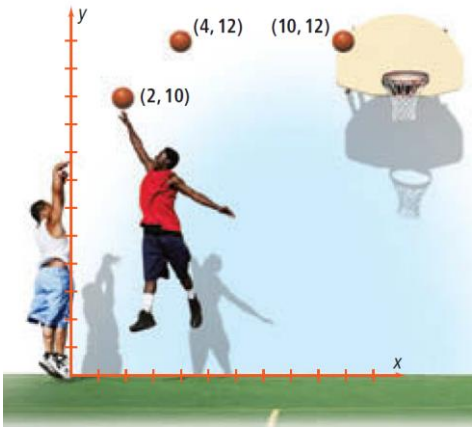
Application of quadratics in the real world

1.

Using a Quadratic Model

Basketball A player throws a basketball toward the hoop. The basketball follows a parabolic path through the points shown. If the center of the hoop is at (12, 10), will the ball pass through the hoop? (You can think of the units as feet.)



2.

Apply Mathematics (1)(A) A man throws a ball off the top of a building and records the height of the ball at different times, as shown in the table.

a. Find a quadratic model for the data.

b. Use the model to estimate the height of the ball at 2.5 seconds.

c. What is the ball's maximum height?

Height of a Ball

Time (s)	Height (ft)
0	46
1	63
2	48
3	1

3.

Apply Mathematics (1)(A) The table shows the height of a column of water as it drains from its container. Use a quadratic model of this data to estimate the water level at 30 seconds.

Water Levels

Elapsed Time (s)	Water Level (mm)
0	120
20	83
40	50

4.

A parabola contains the points $(-1, 8)$, $(0, 4)$, and $(1, 2)$. Name another point also on the parabola.