

PROBLEM SOLVING

EXAMPLE 4
on p. 595
for Exs. 58, 60

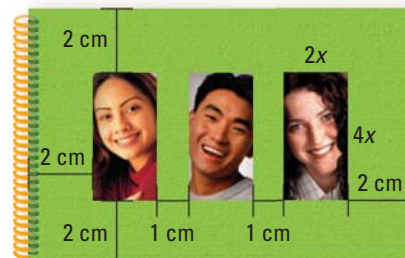
EXAMPLE 5
on p. 596
for Exs. 59, 61

58. **DIVING** You dive from a platform when your center of gravity is 32 feet above the surface of a swimming pool. Your initial vertical velocity leaving the platform is 28 feet per second. After how many seconds does your center of gravity enter the water?

TEXAS @HomeTutor for problem solving help at classzone.com

59. **SCRAPBOOK DESIGN** You plan to make a scrapbook. On the cover, you want to show three pictures with space between them, as shown. Each of the pictures is twice as long as it is wide.

- Write a polynomial that represents the area of the scrapbook cover.
- The area of the cover will be 96 square centimeters. Find the length and width of the pictures you will use.



TEXAS @HomeTutor for problem solving help at classzone.com

60. **TAKS REASONING** You throw a ball into the air with an initial vertical velocity of 31 feet per second. The ball leaves your hand when it is 6 feet above the ground. You catch the ball when it reaches a height of 4 feet. After how many seconds do you catch the ball? *Explain* how you can use the solutions of an equation to find your answer.

61. **PARTHENON** The Parthenon in Athens, Greece, is an ancient structure that has a rectangular base. The length of the Parthenon's base is 8 meters more than twice its width. The area of the base is about 2170 square meters. Find the length and width of the Parthenon's base.

62. **MULTIPLE REPRESENTATIONS** An African cat called a serval leaps from the ground in an attempt to catch a bird. The serval's initial vertical velocity is 24 feet per second.

- Writing an Equation** Write an equation that gives the serval's height (in feet) as a function of the time (in seconds) since it left the ground.
- Making a Table** Use the equation from part (a) to make a table that shows the height of the serval for $t = 0, 0.3, 0.6, 0.9, 1.2,$ and 1.5 seconds.
- Drawing a Graph** Plot the ordered pairs in the table as points in a coordinate plane. Connect the points with a smooth curve. After how many seconds does the serval reach a height of 9 feet? *Justify* your answer using the equation from part (a).



Animated Algebra at classzone.com