

**Practice B*****The Quadratic Formula and the Discriminant***

Solve using the quadratic formula.

1.  $x^2 + x = 12$

2.  $4x^2 - 17x - 15 = 0$

3.  $2x^2 - 5x = 3$

4.  $3x^2 + 14x - 5 = 0$

Find the number of real solutions of each equation using the discriminant.

5.  $x^2 + 25 = 0$

6.  $x^2 - 11x + 28 = 0$

7.  $x^2 + 8x + 16 = 0$

Solve using any method.

8.  $x^2 + 8x + 15 = 0$

9.  $x^2 - 49 = 0$

10.  $6x^2 + x - 1 = 0$

11.  $x^2 + 8x - 20 = 0$

12. In the past, professional baseball was played at the Astrodome in Houston, Texas. The Astrodome has a maximum height of 63.4 m. The height of a baseball  $t$  seconds after it is hit straight up in the air with a velocity of 45 ft/s is given by  $h = -9.8t^2 + 45t + 1$ . Will a baseball hit straight up with this velocity hit the roof of the Astrodome? Use the discriminant to explain your answer.



## Problem Solving

### The Quadratic Formula and the Discriminant

Write the correct answer.

1. Theo's flying disc got stuck in a tree 14 feet from the ground. Theo threw his shoe up at the disc to dislodge it. The height in feet  $h$  of the shoe is given by the equation  $h = -16t^2 + 25t + 6$ , where  $t$  is the time in seconds. Determine whether the shoe hit the disc. Use the discriminant to explain your answer.

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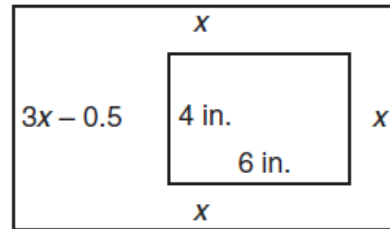


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3. The manager of a park enclosed an area for small dogs to play. He made the length 15 feet longer than the width and enclosed an area covering 1350 square feet. What are the dimensions of the dogs' play area?

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2. A picture frame holds a 4-in. by 6-in. photograph. The frame adds a border  $x$  inches wide around three sides of the photo. On the fourth side the frame forms a border that is  $3x - 0.5$  in. wide.



The combined area of the photograph and the frame is  $80.5 \text{ in}^2$ . Write a quadratic equation for the combined area. Then use the quadratic formula to find  $x$ .

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The equation  $-5x^2 + 72x + 378$  models the number of students enrolled in a school where  $x$  is the number of years since the school first opened in 1990. Select the best answer.

4. How many students did the school have when it opened?  
 A 68  
 B 72  
 C 378  
 D 445
6. In which year were 502 students enrolled?  
 A 1992  
 B 1996  
 C 1998  
 D 2002
5. Which equation can be used to find the year in which 502 students were enrolled?  
 F  $-5x^2 + 72x + 502 = 0$   
 G  $-5x^2 + 72x - 124 = 0$   
 H  $-5x^2 + 72x - 502 = 0$   
 J  $-5x^2 + 72x + 124 = 0$
7. In which year were 598 students enrolled?  
 F 1995  
 G 1998  
 H 2000  
 J 2010
8. Which statement is true?  
 A Enrollment exceeded 650 students at one point.  
 B Enrollment never exceeded 650 students.  
 C The highest enrollment of any year was exactly 650 students.  
 D There were two years where 650 students were enrolled.