Assignment: Use the Zero Product Property

Choose any three (3) of the following four problems to solve. Be sure to show all your work.

1. A child launches a toy rocket from the top of a slide at the park. Suppose the equation $-16t^2 + 28t + 8 = 0$ can be used to find how many seconds it will take for the rocket to hit the ground.

    a. Write the equation in factored form.

    b. Use the zero product property to solve the equation. Show all the steps needed to find both answers.

    c. Explain how the solution relates to this situation.

2. A manufacturing company manufactures a cardboard box with a square base and a height of 15 inches. Suppose the equation $x^2 + 60x - 7{,}200 = 0$ can be used to find the length and width of the base of the box, each measuring x inches.

    a. Write the equation in factored form.

    b. Use the zero product property to solve the equation. Show all the steps needed to find both answers.

    c. Explain how the solution relates to this situation.

3. City engineers decide to build a rectangular dog park that has an area of 3,600 square yards, where the length of the park is 10 more yards than twice its width. The equation $x^2 + 5x - 1{,}800 = 0$ can be used to find the width of the dog park.

    a. Write the equation in factored form.

    b. Use the zero product property to solve the equation. Show all the steps needed to find both answers.

    c. Explain how the solution relates to this situation.

4. A graphic designer uses a photo editing program to increase both the height and width of a square image by 3 inches. Suppose the equation $x^2 + 6x - 55 = 0$ can be used to find the height and width of the original image.

    a. Write the equation in factored form.

    b. Use the zero product property to solve the equation. Show all the steps needed to find both answers.

    c. Explain how the solution relates to this situation.