4.2 Solving by Factoring – Assignment

1. Factor completely.

a) $x^2 - 9x + 18$

c) $3n^2 - 11n - 4$

2. Factor each quadratic equation.

a) $\dfrac{1}{2}x^2 - 2x - 6$

c) $0.1a^2 - 0.1a - 3$

3. Factor, using the difference of squares.

a) $0.81x^2 - 0.25y^2$

4. Factor completely.

a) $(x+1)^2 + 2(x+1) - 15$

5. Solve each equation by factoring. Verify solutions.

c) $3x^2 + 11x - 42 = 0$

f) $\frac{1}{3}x^2 = -5x - 18$

e) $2x^2 + 12x = 0$

Word Problems

6. A rectangular picture frame has dimensions w and $w+3$. The area of the glass in the frame is $154\ in^2$.

a) What quadratic equation could you use to determine the width of the frame?

b) What are the dimensions (length and width) of the frame, in inches?

9. Aaron has built a play area for his children that is $12\ m$ long and $8\ m$ wide. He wants to install a rubberized safety boarder around the area. This border will be the same width all the way around, as shown in the diagram. He has enough of the safety material to construct a border with a total area of $44\ m^2$.
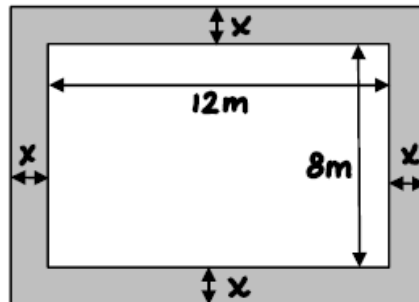
a) What is the total area of the play area plus the border in square metres?

b) Let x be the width of the border. Write a quadratic equation to represent the total area of the play area plus the border. Then, solve your equation to determine the width of the border Aaron can install.

7. Two consecutive integers have a product of 156.

a) Assign a variable to one number. Express the second number in terms of the variable.

Let n represent the first number. The second number is _____.

b) Write a single-variable quadratic equation that represents the product of these numbers.

c) Solve the quadratic equation to determine the two numbers.

8. When a football is kicked, its height can be modelled by the function $h(d) = -0.1d^2 + 4.8d$, where d , is the horizontal distance that the ball has travelled, in metres, and h is the height of the ball, in metres.

a) Write a quadratic equation that can be used to determine the distance that the ball has been kicked. (hint: What is the height of the ball when it lands on the ground?)

b) Solve the quadratic equation to determine the distance the ball travels.