Lesson 1.3.3: Solving Problems Involving Factors of Polynomials

Zero Product Property: If the product of two factors is zero, then one or both factors must be zero.
In symbols, for all real numbers a and b, if $ab = 0$, then $a = 0$ or $b = 0$ or both a and $b = 0$.

How to Solve Word Problems Involving Factors of Polynomials:

1. Write an equation that represents the given information.
2. Follow the rules of polynomial equation by factoring.
3. Check the reasonableness of answers. Discard solutions that do not make sense.
4. Interpret the results.

Practice Exercises 1.3.3

Solve the following problems completely.

1. The length of a rectangular frame is 4 cm more than the width. If the area of the frame is 60 square cm, how long is the frame?
2. The square of a number is 20 more than 8 times the number. Find the number.
3. The area of a square is numerically equal to fifty times its perimeter. Find the length of a side of the square.
4. The square of a number is 20 more than 8 times the number. Find the number.
5. The product of two consecutive integers is 110. Find the value of the integers.

Activity 1.3.3

Solve the following problems completely.

1. Six times the square of a number equals eighteen times that number. What is the number?
2. The product of two consecutive integers is 306. Find the integers.
3. The area of a rug is 108 square centimeters. The length of the rug is 6 cm less than twice its width. What is the width of the rug?
4. The area of the floor of a rectangular room is 84 square feet. The length of the room is 5 feet more than its width. Find the width and length of the room.
5. Four times the square of a number is 45 more than eight times the number. What is the number?

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