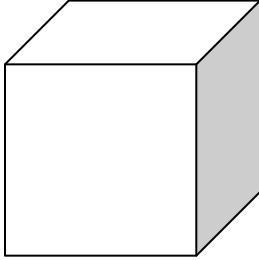


Writing Expressions**Part I: Boxes**

An artist makes custom boxes that are cubes (each edge is the same length). Each face of the box is made from a decorative material that comes in sheets and is sold by the square inch (in^2).

All of the edges are joined by a material that is sold by the inch.



- The edge of the box is 4 inches long. For each of the questions below, record your calculations even if you use a calculator.
 - Calculate the total amount of material needed for all of the faces.
 - Calculate the cost of the material for the faces if the price is \$0.15 per square inch.
 - Calculate the total amount of material needed for all of the edges of the box.
 - Calculate the cost of the material for the edges if the price is \$0.06 per inch.
 - In addition to the materials for the faces and edges, each box has one set of latches and hinges that cost \$1.25. Find the total cost of the box.
- The artist makes boxes of many different sizes. She wants to set up a computer spreadsheet that will automatically calculate the cost of the materials for each box size. Write an algebraic expression for the cost of the materials using s as the length of the edge in inches. Hint: Think about each step in calculating the cost in #1.

3. Your expression in #2 is a polynomial. Identify the following characteristics of this polynomial:

Type (monomial, binomial, etc.)	Leading Term	Leading Coefficient	Degree	Constant

Part II: Other Applications

4. In 1900, the life expectancy for a white male living in the US was approximately 48 years. Through the first half of the 20th century, the life expectancy increased by about 0.37 years per year. (source: InfoPlease, <http://www.infoplease.com/ipa/A0005140.html>.)
- a. Calculate the average life expectancies in the following table. Record your calculation in the third column.

Year	Life Expectancy	Calculation
1901		
1902		
1905		
1920		
1945		

- b. Write an expression for the life expectancy using t for the number of years after 1900.
5. The 1900 life expectancy for non-white males in the US was 35.5 years and has increased by approximately 0.39 years per year.
- a. Calculate the life expectancy for a non-white male in 1945.
- b. How much longer was the life expectancy for white males compared to non-white males in 1945?
- c. Write an expression for the life expectancy of non-white males using t for the number of years after 1900.
- d. Write a simplified expression for the difference in life expectancy for white males compared to non-white males. (Hint: Think about your calculation in part b.)