**Cornell Notes**

**Topic/Objective:** Factoring

**Trinomials of the form**

\[ ax^2 + bx + c \]

**Essential Question:** How do I use the diamond method to factor a trinomial of the form \( ax^2 + bx + c \), when \( a = 1 \)?

**Questions:**

What is the difference between a coefficient and a constant?

**Notes:**

\[ ax^2 + bx + c \]

- \( a \) = coefficient in front of \( x^2 \)
- \( b \) = coefficient in front of \( x \)
- \( c \) = constant (not attached to variable)

**Diamond method**

Multiply to get \( ac \), where \( a = 1 \)

\[ \frac{ac}{b} \]

We must find two numbers that multiply to get the top and add to get the bottom.

**Summary:**
Ex: 1 \[ x^2 - 4x - 32 \]
\[ a = 1 \]
\[ b = -4 \]
\[ c = -32 \]

Factors -32
\[ 32 \times -1 \]
\[ -32 \times 1 \]
\[ 8 \times -4 \]
\[ -8 \times 4 \]
\[ 16 \times -2 \]
\[ -16 \times 2 \]

2 numbers that multiply to -32
\[ x - 8 \times x + 4 \]
\[ -4 \]

Same two numbers \(\pm 1\) to add to -4.
\[ (x - 8)(x + 4) \]

Ex 2: \[ x^2 + 8x + 12 \]
\[ a = 1 \]
\[ b = 8 \]
\[ c = 12 \]

Factors of 12
\[ 1 \times 12 \]
\[ 2 \times 6 \]
\[ 3 \times 4 \]

\[ 12 \]
\[ x + 2 \times x + 6 \]
\[ 8 \]

\[ (x + 2)(x + 6) \]