Warm Up:
Factor.
\[ d^2 + 2d - 15 \quad t^2 + 7t + 10 \]

Vocabulary:

**Perfect Square trinomial**: the result of squaring a binomial.

Examples (algebra):

- \[ a^2 + 2ab + b^2 = (a + b)(a + b) = (a + b)^2 \]
- \[ a^2 - 2ab + b^2 = (a - b)(a - b) = (a - b)^2 \]

Examples (numbers):

- \[ x^2 + 8x + 16 = (x + 4)(x + 4) = (x + 4)^2 \]
- \[ 4n^2 - 12n + 9 = (2n - 3)(2n - 3) = (2n - 3)^2 \]

**How do I know???

...if it is a perfect-square trinomial:

- The first and last terms are perfect squares.
- The middle term is twice the product of one factor from the first term and one factor from the last term.
Examples 1 and 2:

$\quad x^2 - 12x + 36$

$\quad x^2 + 6x + 9$

Examples 3 and 4:

$\quad 4x^2 + 20x + 25$

$\quad 16m^2 - 72m + 81$

Examples 5 and 6:

The given expression represents the area. Find the side length of the square.

Examples 7 and 8: (with your shoulder buddy)

$\quad h^2 + 8h + 16$

$\quad 4r^2 + 36r + 81$
**Vocabulary:**

From 8.4

\[(a + b)(a - b) = a^2 - b^2\]

Examples (algebra):

**Examples 9 and 10:**

Examples (numbers):

**Examples 11 and 12:**

(with your shoulder buddy)

**Examples 13 and 14:**
Examples 15 and 16:
(with your shoulder buddy)

\[64q^2 - 81\]
\[16x^2 - 121\]

Summary

How do I know if it is a perfect - square trinomial?

How do I know that I can use factoring by a differences of two squares?