Objective: Factoring with leading coefficient other than 1 (F.IF.8)

Review Examples: Multiply the following.

a) $(2x+3)(5x+4)$ b) $(3v-1)(v+2)$ c) $(4c-3)(7c-2)$

Factoring a Trinomial of the Form ax^2+bx+c by Grouping:
1. Always check for a GCF first! If there is a GCF, factor it out.
2. Multiply $a \cdot c$.
3. Find two numbers that multiply to your answer $(a \cdot c)$ and add to b.
4. Rewrite the middle term bx as $\textbf{1st \#} \cdot x + \textbf{2nd \#} \cdot x$
5. Factor the resulting polynomial by grouping.
6. If there are no numbers that multiply to $a \cdot c$ and add to b, the polynomial is prime.

Examples: Factor the following polynomials using grouping.

a) $9h^2+9h+2$ b) $3x^2+19x+15$

$ac=$_____ $b=$_____ $ac=$_____ $b=$_____

Factors of ac: Factors of ac:

Which factors add to b?   Which factors add to b?

Factor the expression.   Factor the expression.

c) $2z^2 - 11z + 12$

$ac = \underline{\hphantom{xxxx}}$ $b = \underline{\hphantom{xxx}}$

Factors of ac:

Which factors add to b?

Factor the expression.

d) $4p^2 - 20p + 21$

$ac = \underline{\hphantom{xxxx}}$ $b = \underline{\hphantom{xxx}}$

Factors of ac:

Which factors add to b?

Factor the expression.

e) $\quad 4n^2 - 20n + 25$

f) $10m^2 + 13m - 3$

g) $\quad 12y^2 + 30y - 72$

h) $8k^4 + 42k^3 - 36k^2$

i) $\quad 3r^2 - 16r - 12$

j) $9x^2 - 4$