

## 7.7 - Factoring with a coefficient greater than 1.

Factor  $12x^2 + 3x - 10$

$$\begin{aligned} & \cancel{(2x+2)(6x-5)} \\ & (2x+5)(6x-2) \\ & (2x+10)(6x-1) \\ & (2x+1)(6x-10) \\ & (3x+2)(4x-5) \\ & (3x+5)(4x-2) \end{aligned}$$

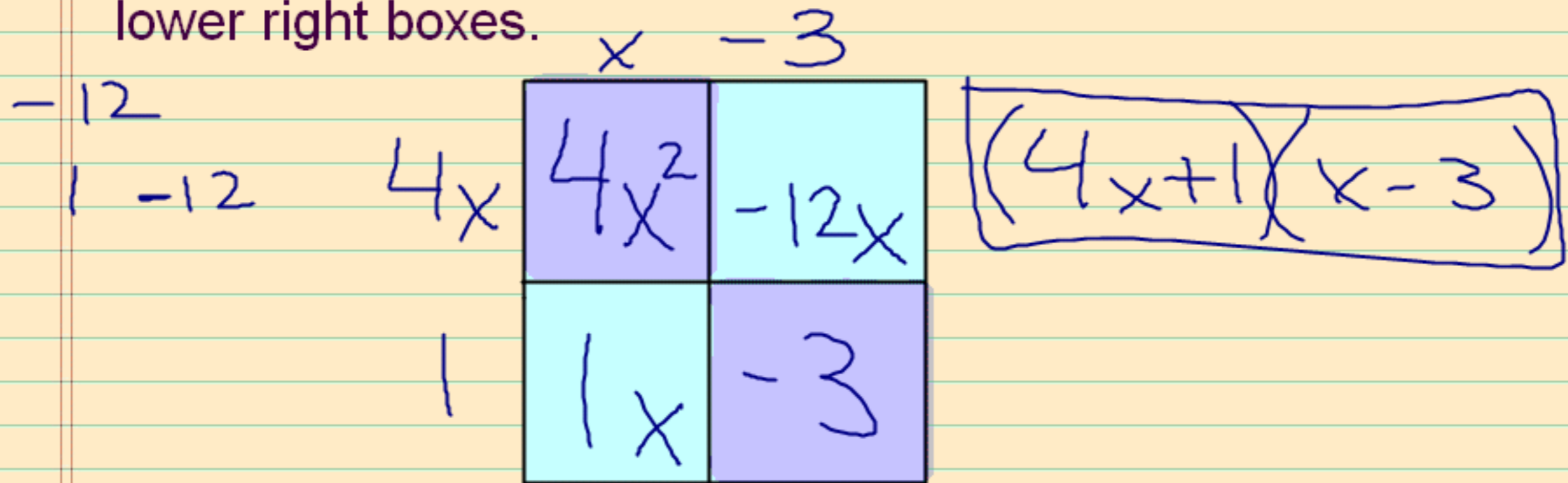
$$\begin{array}{l} 2, 6 \\ 3, 4 \\ 1, 12 \end{array}$$

$$\begin{array}{l} 2, 5 \\ 10, 1 \end{array}$$

⋮

Example: Factor  $4x^2 + 11x - 3$

1) Make a box divided into 4 sections. Put the first term and the last term in the upper left and lower right boxes.



2) Multiply the first number by the last number to get  $-12$ . Then, find two factors of  $12$ , that are  $11$  numbers apart and place them in the remaining boxes.

3) Factor out the GCF.

4) Write as a product of 2 binomials.

Example:  $2x^2 + 7x + 5$

10  
/ \  
5 2

	$x$	$1$
$2x$	$2x^2$	$2x$
$5$	$5x$	$5$

$(2x+5)(x+1)$

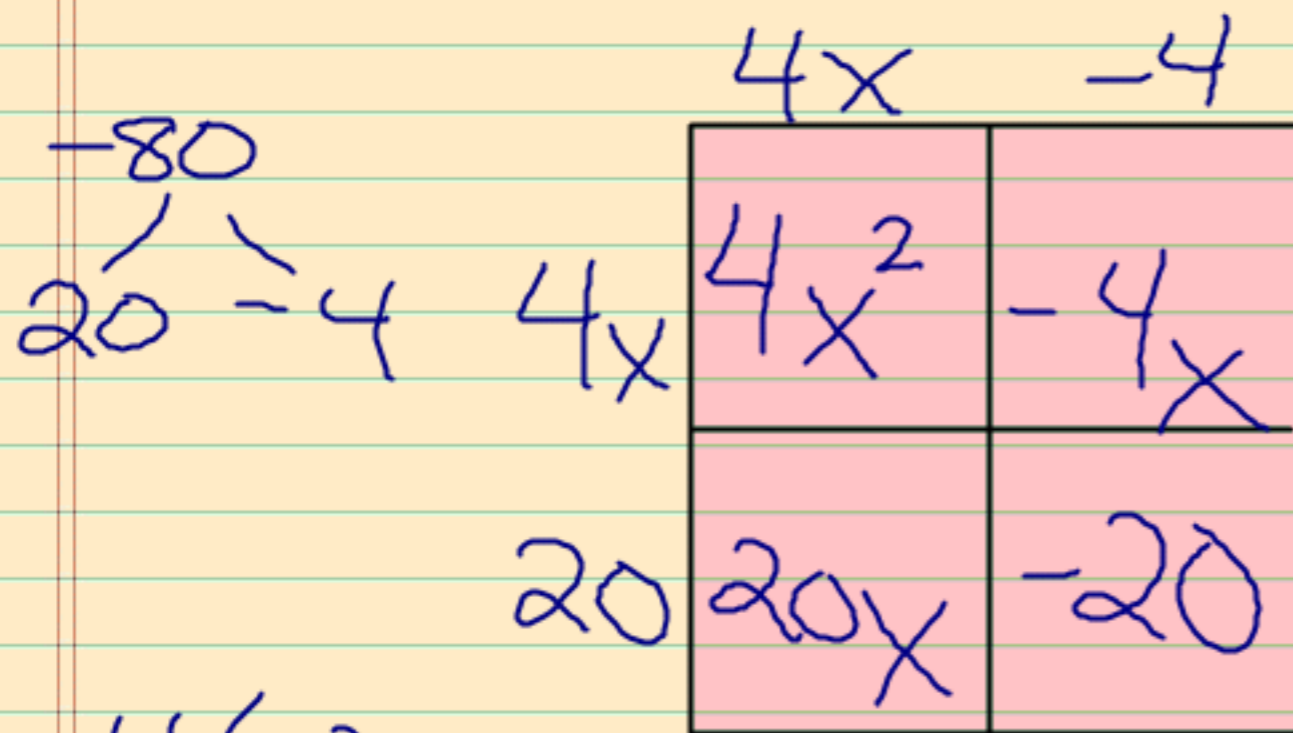
Example:  $3x^2 + 16x - 12$

$-36$   
 $18 - 2$

	$3x$	$-2$
$x$	$3x^2$	$-2x$
$6$	$18x$	$-12$

$(3x - 2)(x + 6)$

Example:  $4x^2 + 16x - 20$



$$(4x+20)(4x-4)$$
$$4(x+5)(x-1)$$

$$4(x^2 + 4x - 5)$$

$$4(x+5)(x-1)$$

$$\textcircled{19} 10p^3 - 1960p$$

$$10p(p^2 - 196)$$

$$10p(p + 14)(p - 14)$$

18)  $16b^2 + 60b - 100$

$4b$	$16b^2$	$-20b$
$20$	$80b$	$-100$
	$16b$	$-20$

$$\begin{array}{r} -1600 \\ \swarrow \quad \searrow \\ -20 \quad 80 \end{array}$$

$$(4b + 20)(16b - 20)$$

4                      4

$$4(b + 5)(4b - 5)$$