$(3x-2)(5x+1) - 2(x-4)^2 + 5(2x+1)(4x-3)$

$15x^2 + 3x - 10x - 2$

$-2(x-4)(x-4)$

$(-2x+8)(x-4)$

$-2x^2 + 8x + 8x - 32$

$5(2x+1)(4x-3)$

$(10x+5)(4x-3)$

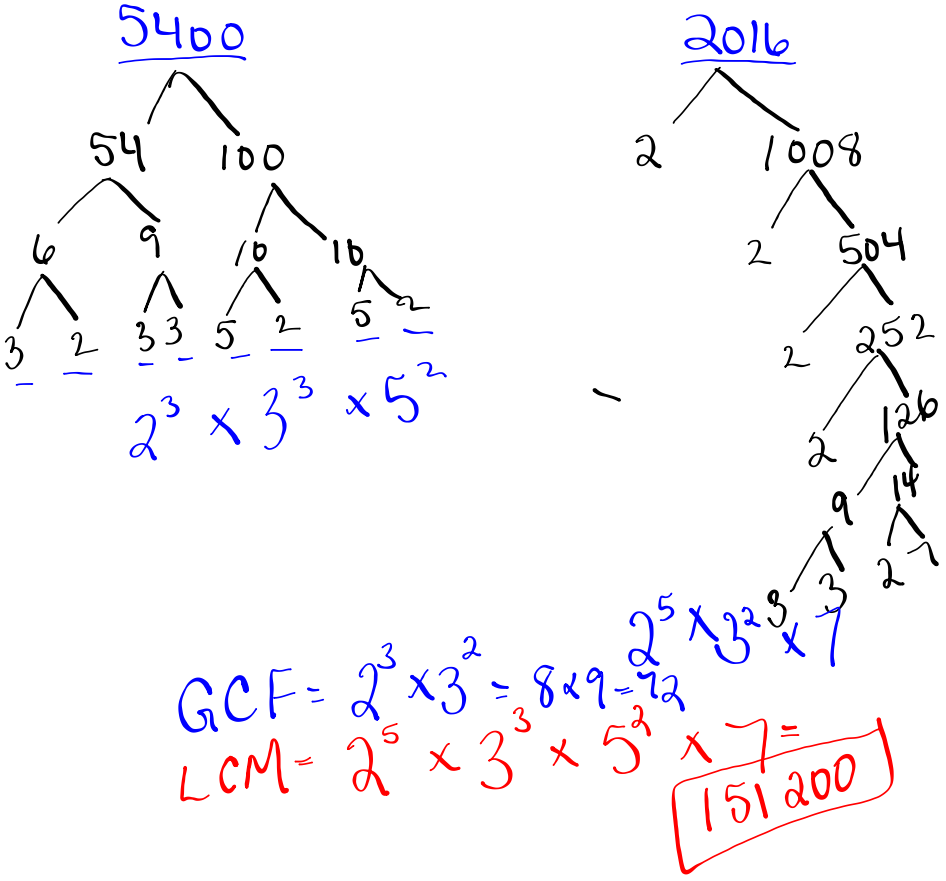
$40x^2 - 30x + 20x - 15$

$15x^2 + 3x - 10x - 2 - 2x^2 + 8x + 8x - 32 + 40x^2 - 30x + 20x - 15$

$53x^2 - x - 49$

$(2x+3)(x^2+x+4)$

2 3



Perfect Square Trinomials

- three terms: the first and last are perfect squares.
- factors like this...

$$a^2 + 2ab + b^2 = (a + b)^2$$
OR
$$a^2 - 2ab + b^2 = (a - b)^2$$

- recognize them and you save yourself the decomposition steps!!!

Time Saver!

$4x^2 - 20x + 25$

$-10 \times -10 = 100$

$-10 + -10 = -20$

$4x^2 - 10x - 10x + 25$

$2x(2x-5) - 5(2x-5)$

$(2x-5)(2x-5)$

$(2x-5)^2$

$(\sqrt{4x^2} - \sqrt{25})^2$

$(2x-5)^2$

EXAMPLES...

1) $25x^2 - 10x + 1$

$(5x-1)^2$

$25x^2 - 10x + 1$

2) $9x^2 + 24x + 16$

$(3x+4)^2$

$(x+3)^2$

$(x+3)(x+3)$

$x^2+3x+3x+9$

x^2+6x+9

$(x+7)^2$

$x^2+14x+49$

$(x+5)^2$

$x^2+10x+25$

Sq. 1st

multiply + double for 2nd term

sq. last.

$9x^2-24x+16$

Factored → $(3x-4)^2$

$$\frac{x^2-12x+36}{x^2+8x+16} \qquad \frac{(x-6)^2}{(x+4)^2}$$

Factor using Perfect Squares Method

$25x^2 - 120x + 144$

$81x^2 - 180x + 100$

$49x^2 + 84x + 36$

$36x^2 + 132x + 121$

Difference of Squares

- two terms that are perfect squares.
- must be a difference
- factor like this...

Look for a binomial where both terms are perfect sq. and the sign is (-)

$4x^2 + 49$ ↳ Can not factor

$a^2 - b^2 = (a + b)(a - b)$

EXAMPLES...

1) $4x^2 - 49$ $(2x+7)(2x-7)$

2) $16x^2 - 9y^2$ $(4x+3y)(4x-3y)$

3) $81z^4 - 625$ $(9z^2+25)(9z^2-25)$ $(9z^2+25)(3z+5)(3z-5)$

4) $49w^2 - 4s^2$ $(7w+2s)(7w-2s)$

$z^2 \cdot z^2 = z^4$ $\sqrt{z^4} = z^2$

$a^{-3} \cdot a^3 = a^6$ $\sqrt{a^6} = a^3$

Math 10 Name_____

Factoring: Difference of Squares and Perfect Squares Date_____

Factor each completely.

1) $n^2 - 9$

2) $25a^2 - 9$

3) $k^2 - 4$

4) $16x^2 - 9$

5) $x^2 - 25$

6) $25x^2 - 16y^2$

7) $u^2 - 16v^2$

8) $u^2 - 9v^2$

9) $4x^2 - y^2$

10) $a^2 - 25b^2$

11) $9m^2 + 12m + 4$

12) $16r^2 + 8r + 1$

13) $25x^2 - 20x + 4$

14) $16n^2 + 40n + 25$

15) $9b^2 - 24b + 16$

16) $16m^2 - 24mn + 9n^2$

17) $9x^2 - 6xy + y^2$

18) $25x^2 + 10xy + y^2$

19) $x^2 - 8xy + 16y^2$

20) $9x^2 + 24xy + 16y^2$

Answers to Factoring: Difference of Squares and Perfect Squares (ID: 1)

1) $(n+3)(n-3)$	2) $(5a+3)(5a-3)$	3) $(k+2)(k-2)$	4) $(4x+3)(4x-3)$
5) $(x+5)(x-5)$	6) $(5x+4y)(5x-4y)$	7) $(u+4v)(u-4v)$	8) $(u+3v)(u-3v)$
9) $(2x+y)(2x-y)$	10) $(a+5b)(a-5b)$	11) $(3m+2)^2$	12) $(4r+1)^2$
13) $(5x-2)^2$	14) $(4n+5)^2$	15) $(3b-4)^2$	16) $(4m-3n)^2$
17) $(3x-y)^2$	18) $(5x+y)^2$	19) $(x-4y)^2$	20) $(3x+4y)^2$