

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!!!

EXAMPLES...

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

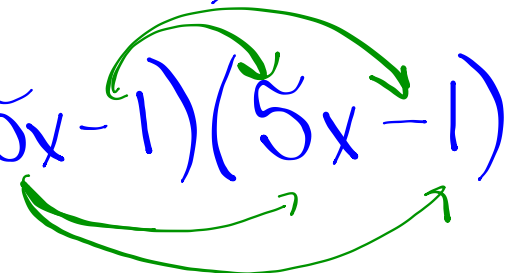
$(5x - 1)^2$

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

$(3x + 4)^2$

$-x- =$
 $-+- = -2x$

$$(5x-1)^2$$

$$(5x-1)(5x-1)$$


$$25x^2 - 5x - 5x + 1$$

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

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

$$4x^2 + 12x + 9$$

$$\cancel{9x^2 - 24x + 16}$$

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

$$(x - 6)^2$$

$$x^2 + 8x + 16$$

$$(x + 4)^2$$

$$2x^2 + 12x + 18$$

$$2(x^2 + 6x + 9)$$

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

$$\frac{2(x+3)(x+3)}{2(x+3)^2} = \frac{1 \times 9}{3 \times 3}$$

$$\begin{array}{l} -x = 9 \\ -t = 6 \end{array}$$

Factor using Perfect Squares Method

$$25x^2 - 120x + 144$$



$$81x^2 - 180x + 100$$



$$49x^2 + 80x + 36$$



$$36x^2 + 132x + 121$$



Difference of Squares

1. GCF
(all)

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

trinomials {
2. Simp Tri
3. Hard Tri
4. Perf sq. Tri
5. DOS

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

EXAMPLES...

1) $4x^2 - 49$ $(2x+7)(2x-7)$ 2) $16x^2 - 9y^2$ $(4x+3y)(4x-3y)$

3) $81z^4 - 625$ $(9z^2+25)(9z^2-25)$ $49w^2 - 4s^2$ $(7w+2s)(7w-2s)$

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

5) $32x^4 - 2$

$$2(16x^4 - 1)$$

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

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

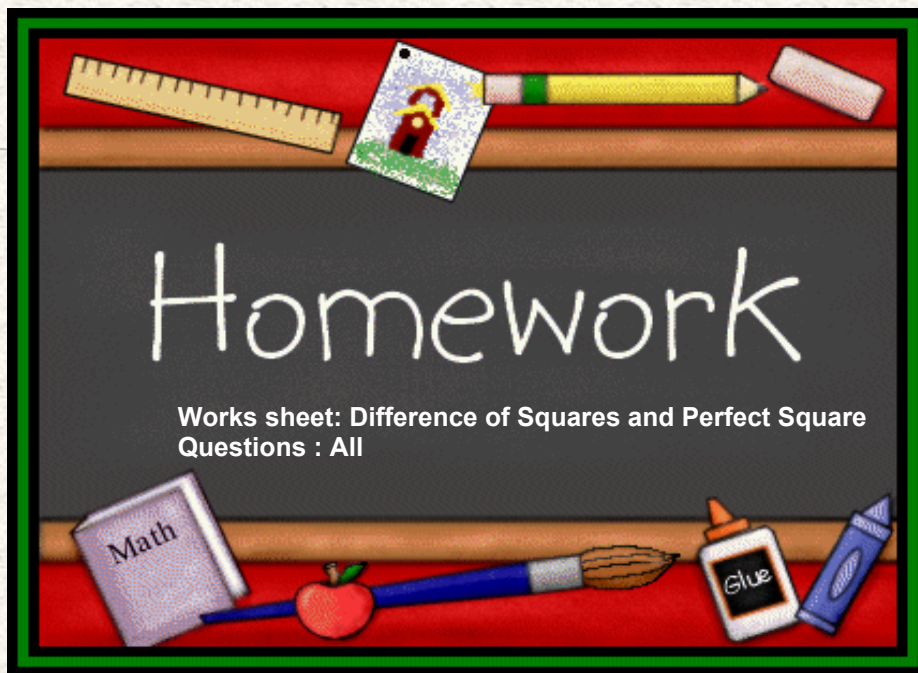
$$(2x+7)(2x-7)$$
$$4x^2 - 14x + 14x - 49$$
$$4x^2 - 49$$

Recognize binomial

Check for difference of squares

Double check!!

$$81z^4 - 625$$



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

$$1) \ n^2 - 9$$
$$(n + 3)(n - 3)$$

$$2) \ 25a^2 - 9$$
$$(5a + 3)(5a - 3)$$

$$3) \ k^2 - 4$$
$$(k + 2)(k - 2)$$

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

$$5) \ x^2 - 25$$
$$(x + 5)(x - 5)$$

$$6) \ 25x^2 - 16y^2$$
$$(5x + 4y)(5x - 4y)$$

$$7) \ u^2 - 16v^2$$
$$(u + 4v)(u - 4v)$$

$$8) \ u^2 - 9v^2$$
$$(u + 3v)(u - 3v)$$

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

$$10) a^2 - 25b^2$$
$$(a + 5b)(a - 5b)$$

$$11) 9m^2 + 12m + 4$$
$$(3m + 2)^2$$

$$12) 16r^2 + 8r + 1$$
$$(4r + 1)^2$$

$$13) 25x^2 - 20x + 4$$
$$(5x - 2)^2$$

$$14) 16n^2 + 40n + 25$$
$$(4n + 5)^2$$

$$15) 9b^2 - 24b + 16$$
$$(3b - 4)^2$$

$$16) 16m^2 - 24mn + 9n^2$$
$$(4m - 3n)^2$$

$$17) 9x^2 - 6xy + y^2$$
$$(3x - y)^2$$

$$18) 25x^2 + 10xy + y^2$$
$$(5x + y)^2$$

$$19) x^2 - 8xy + 16y^2$$
$$(x - 4y)^2$$

$$20) 9x^2 + 24xy + 16y^2$$
$$(3x + 4y)^2$$

