

### III. Perfect Square Trinomials:

Square each of the following binomials:

$$\begin{aligned} & \overbrace{(x+3)(x+3)}^{(x+3)^2} \\ & x^2 + 3x + 3x + 9 \\ & x^2 + 6x + 9 \end{aligned}$$

$$\begin{aligned} & \overbrace{(5x+4)(5x+4)}^{(5x+4)^2} \\ & 25x^2 + 20x + 20x + 16 \\ & 25x^2 + 40x + 16 \end{aligned}$$

$$\begin{aligned} & \overbrace{(3x-1)(3x-1)}^{(3x-1)^2} \\ & 9x^2 - 3x - 3x + 1 \\ & 9x^2 - 6x + 1 \end{aligned}$$

Factor the following trinomial:

$$\begin{aligned} & 9w^2 + 48w + 64 \\ & (3w + 8)^2 \end{aligned}$$

$$\overbrace{(7x-2)^2} = 49x^2 - 28x + 4$$

$$\overbrace{(6x+5)^2} = 36x^2 + 60x + 25$$

$$(6x+5)(6x+5)$$

How will we reverse this process and FACTOR a perfect square trinomial?

Factor the following trinomial:

$$25w^2 + 40w + 16$$

$$(5w + 4)^2$$

## II. Perfect Square Trinomials

Criteria...

- three terms: the first and last are perfect squares.
- $\sqrt{\text{of the first}}$  &  $\sqrt{\text{of the last}}$  then double equals the coefficient of the middle term.
- 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)  $9x^2 + 24x + 16$

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

Math 10

Name \_\_\_\_\_

Factoring: Difference of Squares and Perfect Squares

Date \_\_\_\_\_

Factor each completely.

- |  |                           |
|--|---------------------------|
| 1) $n^2 - 9$ <span style="color: red;">(n+3)(n-3)</span>       | 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) $4x^2 - y^2$ <span style="color: red;">(2x+y)(2x-y)</span>  | 10) $a^2 - 25b^2$         |
| 11) $9m^2 + 12m + 4$ <span style="color: red;">(3m+2)^2</span> | 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) $(3x+4y)^2$   |

Review - Factoring.pdf



Factoring Review

Name \_\_\_\_\_

Math 10 (Numbers, Functions and Relations 10)

Factor the common factor out of each expression.

- |                          |                             |
|--------------------------|-----------------------------|
| 1) $20r^5 + 4r^2 - 40$   | 2) $-5x^3 - 5x^2 - 5x$      |
| 3) $12n^5 - 48n^2 + 42n$ | 4) $-56a^7 + 48a^6 + 16a^3$ |

Factor each completely.

- |                          |                       |
|--------------------------|-----------------------|
| 5) $x^2 + x - 56$        | 6) $6n^2 - 6n - 120$  |
| 7) $4k^2 - 24k - 28$     | 8) $x^2 - 3x - 18$    |
| 9) $b^2 - 7b - 8$        | 10) $a^2 + 13a + 30$  |
| 11) $30n^2 - 24n - 72$   | 12) $5x^2 - 21x - 54$ |
| 13) $16n^2 - 164n + 288$ | 14) $54x^2 - 90x$     |
| 15) $4x^2 + 6x$          | 16) $6n^2 - 5n + 1$   |
| 17) $4r^2 + 7r - 2$      | 18) $4n^2 - 4n - 35$  |
| 19) $6v^2 - 14v$         |                       |

Answers to Math 10 (Numbers, Functions and Relations 10)

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



## Attachments

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