Expanded Mathematics through Application
Factoring – Difference of Two Squares

Name: KEY
Date: _____ Period: _____

## PERFECT SQUARES

| | | | |
|---|---|---|---|
| $\sqrt{4} =$ 2 | $\sqrt{49} =$ 7 | $\sqrt{144} =$ 12 | $\sqrt{x^2} =$ $x$ |
| $\sqrt{9} =$ 3 | $\sqrt{64} =$ 8 | $\sqrt{169} =$ 13 | $\sqrt{x^4} =$ $x^2$ |
| $\sqrt{16} =$ 4 | $\sqrt{81} =$ 9 | $\sqrt{196} =$ 14 | $\sqrt{x^6} =$ $x^3$ |
| $\sqrt{25} =$ 5 | $\sqrt{100} =$ 10 | $\sqrt{225} =$ 15 | $\sqrt{x^8} =$ $x^4$ |
| $\sqrt{36} =$ 6 | $\sqrt{121} =$ 11 | $\sqrt{256} =$ 16 | $\sqrt{x^{48}} =$ $x^{24}$ |

**DIFFERENCE OF TWO SQUARES**

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

$x^2 - 9 = (x-3)(x+3)$

$4m^2 - 25 = (2m+5)(2m-5)$

ctor completely.

1.) $a^2 - 16$

$(a-4)(a+4)$

2.) $16m^2 - 81$

$(4m-9)(4m+9)$

3.) $y^2 - 49$

$(y-7)(y+7)$

4.) $36b^2 - 49$

$(6b-7)(6b+7)$

5.) $2t^2 - 8$

$2(t^2-4)$

$2(t-2)(t+2)$

6.) $49k^2 - 1$

$(7k-1)(7k+1)$

7.) $m^4 - 16$

$(m^2-4)(m^2+4)$

$(m-2)(m+2)(m^2+4)$

8.) $4c^4 - 4$

$4(c^4-1)$

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

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

9.) $b^2 + 25$

PRIME

.) $16m^4 - 81$

$(4m^2-9)(4m^2+9)$

$(2m-3)(2m+3)(4m^2+9)$

11.) $81c^4 - 1$

$(9c^2-1)(9c^2+1)$

$(3c-1)(3c+1)(9c^2+1)$

12.) $20b^2 - c^4$

PRIME

**Factor Completely.**

**14.)** $x^2 - x - 72$

$\boxed{(x-9)(x+8)}$

**15.)** 4. $x^2 - 169$

$\boxed{(x-13)(x+13)}$

**16.)** $2x^3 - 20x^2 + 48x$

$2x(x^2 - 10x + 24)$

$\boxed{2x(x-6)(x-4)}$

**17.)** $x^4 - 16y^4$

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

$\boxed{(x-2y)(x+2y)(x^2+4y^2)}$

**18.)** $3x^2 + 24x + 45$

$3(x^2 + 8x + 15)$

$\boxed{3(x+3)(x+5)}$

**19.)** $2x^2 + 3x + 1$

| a·c | +b |
|---|---|
| 2 | 3 |
| 2 | 1 |

$\boxed{(x+1)(2x+1)}$

**20.)** $4x^2 - 10x - 9$

| a·c | +b |
|---|---|
| -36 | -10 |
| 1 | -36 |
| 2 | -18 |
| 3 | -12 |
| 4 | -9 |
| 6 | -6 |

$\boxed{\text{PRIME}}$

**21.)** $6x^2 - 36$

$\boxed{6(x^2-6)}$

**22.)** $5x - 14 + x^2$

$x^2 + 5x - 14$

$\boxed{(x+7)(x-2)}$

**23.)** $6x^2 + 27x - 15$

$3(2x^2 + 9x - 5)$

| a·c | +b |
|---|---|
| -10 | 9 |
| 10 | -1 |

$\boxed{3(x+5)(2x-1)}$

**24.)** $12x^2 - x - 6$

| a·c | +b |
|---|---|
| -72 | -1 |
| -9 | 8 |

$\boxed{(4x-3)(3x+2)}$

**25.)** $x^4 - y^4$

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

$\boxed{(x-y)(x+y)(x^2+y^2)}$