

Name _____

GSE Algebra I

Factoring WS

Factor the following COMPLETELY!
Show all work on a separate piece of paper.

1. $x^2 + 5x + 6$ $(x+3)(x+2)$

$\frac{-21}{80}$

2. $2x^2 - 21x + 40$ $(2x-5)(x-8)$

3. $x^2 - 625$ $(x-25)(x+25)$

4. $3x^2 + 24x + 48$ $3(x^2 + 8x + 16)$
 $3(x+4)(x+4)$

5. $6x^3 + 54x$ $6x(x^2 + 9)$

6. $1 + 2x - 8x^2$ $-1(4x+1)(2x-1)$
 $-8x^2 + 2x + 1$

7. $12x - x^2 - 36$ $-1(x^2 - 12x + 36)$
 $-x^2 + 12x - 36$ $-1(x-6)(x-6)$

8. $4x^4 - 18x^3 - 36x^2$ $2x^2(2x^2 - 9x - 18)$
 $2x^2(2x+3)(x-6)$

9. $36x^2 - 33x + 7$ $3(6x^2 - 11x + 7)$
 $(3x-1)(12x-7)$

10. $3 + 22x + 24x^2$ $(24x^2 + 4x + (8x+3))$
 $24x^2 + 22x + 3$ $(4x+3)(6x+1)$

11. $16x^2 - 4$ $4(2x+1)(2x-1)$
 $4(4x^2 - 1)$

12. $-x^2 + 4x + 140$ $-1(x^2 - 4x + 10x - 140)$
 $-1(x^2 - 4x - 140)$ $-1(x-14)(x+10)$

13. $x^3 + 26x^2 + 169x$ $x(x^2 + 13x + 13x + 169)$
 $x(x^2 + 26x + 169)$ $x(x+13)(x+13)$

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

15. $12x^2 - 2x - 2$ $2(6x^2 - 3x + 2x - 1)$
 $2(6x^2 - x - 1)$ $2(3x+1)(2x-1)$

16. $5x^2 + 37x + 14$ $5x^2 + 2x + 35x + 14$
 $(5x+2)(x+7)$

17. $7x^2 + 21x - 70$ $7(x^2 - 2x + 5x - 10)$
 $7(x^2 + 3x - 10)$ $7(x-2)(x+5)$

18. $450 - 5x - 5x^2$ $-5(x^2 - 10x + 9x - 90)$
 $-5x^2 - 5x + 450$ $-5(x^2 - x - 90)$
 $-5(x-10)(x+9)$

$$19. 63x^2 + 39x + 6 \quad 3(21x^2 + 7x + 6x + 2)$$

$$3(21x^2 + 13x + 2) \quad \boxed{3(7x+3)(3x+1)}$$

$$20. 4 - 5x - 6x^2 \quad -1(6x^2 - 3x + 8x - 4)$$

$$-6x^2 - 5x + 4$$

$$-1(6x^2 + 5x - 4)$$

$$\boxed{-1(3x+4)(2x-1)}$$

$$21. 25x^2 - 20x + 4 \quad 25x^2 - 10x - 10x + 4$$

$$\boxed{(5x-2)(5x-2)}$$

$$22. -6x^2 + 102x - 252 \quad -6(x^2 - 14x - 3x + 42)$$

$$-6(x^2 - 17x + 42)$$

$$\boxed{-6(x-14)(x-3)}$$

$$23. 8x^2 + 29x - 12 \quad 8x^2 - 3x + 32x - 12$$

$$\boxed{(8x-3)(x+4)}$$

$$24. x^2 + 13x - 48 \quad x^2 - 3x + 16x - 48$$

$$\boxed{(x-3)(x+16)}$$

$$25. 49 - 121x^4$$

$$-1(121x^4 - 49)$$

$$\boxed{-1(11x^2-7)(11x^2+7)}$$

$$26. 8x^2 - 12x + 20$$

$$\boxed{4(2x^2 - 3x + 5)}$$

$$27. 81x^2 + 18x + 1$$

$$81x^2 + 9x + 9x + 1$$

$$\boxed{(9x+1)(9x+1)}$$