Algebra Worksheet – Section 10.5
Factoring Polynomials of the form $x^2 + bx + c$ with GCFs

Name _____
Block ____

GCF
Greatest Common Factor

Factor Completely

1. $2x^2 + 6x + 4$
$2(x^2+3x+2)$
$2(x+2)(x+1)$

2. $4a^2 - 12a + 8$
$4(a^2-3a+2)$
$4(a-2)(a-1)$

3. ~~$10a^2 + 10 - 20$~~

4. $7a^2 - 14a - 21$ $7(a^2-2a-3)$
$7(a-3)(a+1)$

$3(y-2)(y-3)$

5. $3y^2 - 15y + 18$
$3(y^2-5y+6)$

6. $a^3 - 5a^2 + 4a$
$a(a^2-5a+4) = a(a-4)(a-1)$

7. $x^4 - 15x^3 + 56x^2$
$x^2(x^2-15x+56)$
$x^2(x-8)(x-7)$

8. $b^4 - 3b^3 - 10b^2$

-32
$8 \cdot -4$

9. $2a^3 + 8a^2 - 64a$
$2a(a^2+4a-32)$
$2a(a+8)(a-4)$

10. $3a^3 - 9a^2 - 54a$

11. $9p^2 - 54p + 72$
$9(p^2-6p+8)$
$9(p-4)(p-2)$

12. $4y^3 - 4y^2 - 24y$ $4y(y^2-y-6)$
$4y(y-3)(y+2)$

13. $3x^4 - 21x^3 + 10x^2$
$x^2(3x^2-21x+10)$

14. $5x^4 - 10x^3 - 75x^2$
$5x^2(x^2-2x-15)$
$5x^2(x-5)(x+3)$

Solve each equation by factoring

15. $3x^2 + 15x + 18 = 0$
$\frac{3(x^2+5x+6)}{3} = \frac{0}{3}$
$x^2+5x+6 = 0$
$(x+3)(x+2) = 0$
$x+3=0$ $x+2=0$
$x=-3$ $x=-2$

16. $2x^2 + 16x + 24 = 0$ $2(x^2+8x+12)=0$
$x^2+8x+12=0$
$(x+6)(x+2)=0$
$x+6=0$ $x+2=0$
$x=-6$ $x=-2$

17. $5x^2 - 35x + 60 = 0$
$5(x^2-7x+12)=0$
$(x-4)(x-3)=0$ $x^2-7x+12=0$
$x=4, x=3$

18. $x^3 + 11x^2 - 12x = 0$
$x(x^2+11x-12)=0$

19. $2y^2 + 10y = 28$

20. $6y^2 + 36 = 30y$