Name: :Denson

Factoring Polynomials of the form $x^2+bx+c$ with GCFs

Block ___

3-21-1

Factor Completely

1. $2x^2+6x+4$

$2(x+1)(x+2)$

2. $4a^2-12a+8$

$4(a-2)(a-1)$

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

$10(a-1)(a+2)$

4. $7a^2-14a-21$

$7(a-3)(a+1)$

5. $3y^2-15y+18$

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

6. $a^3-5a^2+4a$

$a(a-1)(a-4)$

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

$x^2(x-8)(x-7)$

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

$b^2(b-5)(b+2)$

9. $2a^3+8a^2=64a$

$2a(a+8)(a-4)$

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

$3a(a-6)(a+3)$

11. $9p^2-54p+72$

$9(p-2)(p-4)$

12. $4y^3-4y^2-24y$

$4y(y-3)(y+2)$

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

$x^2(3x^2-21x+10)$

14. $5x^4-10x^3-75x^2$

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

Solve each equation by factoring

15. $3x^2+15x+18=0$

$3(x+3)(x+2)=0$

16. $2x^2+16x+24=0$

$2(x+6)(x+2)=0$

17. $5x^2-35x+60=0$

$5(x-3)(x-4)=0$

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

$x(x+12)(x-1)=0$

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

$2(y+7)(y-2)=0$

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

$6(y-6)(y+1)=0$

# Factoring:
# GCF & Punnett Square

$A=3 \quad B=-2 \quad C=-5$

**Factor** $3p^2 - 2p - 5$

| | $p$ | $+1$ |
|---|---|---|
| $3p$ | $3p^2$ | $3p$ |
| $-5$ | $-5p$ | $-5$ |

$$(p+1)(3p-5)$$

| $a \cdot c$ | $+b$ |
|---|---|
| $-15$ | $-2$ |
| $1 \cdot -15$ | $-14$ |
| $3 \cdot -5$ | $-2$ |
| $5 \cdot -3$ | $2$ |
| $15 \cdot -1$ | $14$ |

Factor $2|4x^2+6x-18$

GCF=2

$2x^2+3x-9$

$A=2 \quad B=3 \quad C=-9$

| | $2x$ | $-3$ |
|---|---|---|
| $x$ | $2x^2$ | $-3x$ |
| $+3$ | $6x$ | $-9$ |

$2(2x-3)(x+3)$

| $a \cdot c$ | $+b$ |
|---|---|
| $-18$ | $3$ |
| $1 \cdot -18$ | $-17$ |
| $2 \cdot -9$ | $-7$ |
| $3 \cdot -6$ | $-3$ |
| $6 \cdot -3$ | $3$ |
| $9 \cdot -2$ | $7$ |
| $18 \cdot -1$ | $17$ |

**Factor** $3\overline{)9k^2+66k+21}$

$3k^2+22k+7$

GCF = 3

$A=3 \quad B=22 \quad C=7$

| | $3k$ | $+1$ |
|---|---|---|
| $k$ | $3k^2$ | $k$ |
| $+7$ | $21k$ | $7$ |

$3(3k+1)(k+7)$

| $a \cdot c$ | $b$ |
|---|---|
| $21$ | $22$ |
| $1 \cdot 21$ | $22$ |
| $7 \cdot 3$ | $10$ |
| $-1 \cdot -21$ | $-22$ |

**Factor** $3 \mid 15n^2 - 27n - 6$

GCF=3

$5n^2 - 9n - 2$

$A=5 \quad B=-9 \quad C=-2$

| | $5n$ | $+1$ |
|---|---|---|
| $n$ | $5n^2$ | $n$ |
| $-2$ | $-10n$ | $-2$ |

$3(5n+1)(n-2)$

| $a \cdot c$ | $b$ |
|---|---|
| $-10$ | $-9$ |
| $1 \cdot -10$ | $-9$ |
| $2 \cdot -5$ | $-3$ |
| $5 \cdot -2$ | $3$ |
| $10 \cdot -1$ | $9$ |

**Factor** $5x^2 - 18x + 9$

$A = 5 \quad B = -18 \quad C = 9$

| | $x$ | $-3$ |
|---|---|---|
| $5x$ | $5x^2$ | $-15x$ |
| $-3$ | $-3x$ | $9$ |

$$(5x-3)(x-3)$$

| $a \cdot c$ | $+b$ |
|---|---|
| $45$ | $-18$ |
| $1 \cdot 45$ | $46$ |
| $-15 \cdot -3$ | $-18$ |
| $15 \cdot 3$ | $18$ |
| $-1 \cdot -45$ | $-46$ |

**Factor** $4 \mid 16b^2 + 60b - 100$

$4b^2 + 15b - 25$

$A = 4 \quad B = 15 \quad C = -25$

| | $b$ | $+5$ |
|---|---|---|
| $4b$ | $4b^2$ | $20b$ |
| $-5$ | $-5b$ | $-25$ |

| $a \cdot c$ | $+b$ |
|---|---|
| $-100$ | $15$ |
| $20 \cdot -5$ | $15$ |
| $5 \cdot -20$ | $-15$ |

$$4(4b-5)(b+5)$$

**Factor** $6x^2 + 37x + 6$

$A=6 \quad B=37 \quad C=6$

$(6x+1)(x+6)$

| | $6x$ | $+1$ |
|---|---|---|
| $x$ | $6x^2$ | $x$ |
| $+6$ | $36x$ | $6$ |

| $a \cdot c$ | $+b$ |
|---|---|
| $36$ | $37$ |
| $1 \cdot 36$ | $37$ |