SECTION 4.5 **ALGEBA 2** **THOMPSON**

SOLVE USING FACTORING

1) $x^2 - 4 = 0$ when 2 terms: difference of two squares

$(x+2)(x-2)= 0$ take square root, signs are different in answer

Set each equal to zero:

$x+2 = 0$ and $x - 2 = 0$

$x = -2,2$

2) $(x+9)(x-7)= 0$ Set each equal to zero:

$x+9 = 0$ and $x - 7 = 0$

$x = -9, 7$

3) $(x-2)(3x-5)= 0$ Set each equal to zero:

$x-2 = 0$ and $3x - 5 = 0$

$3x = 5$

$x = 2, \frac{5}{3}$

4) $-2n(5n-1)=0$ Set each equal to zero:

$-2n=0$ and $5n-1=0$

$5x = 1$

$n = 0, \frac{1}{5}$

5) $v^2 - 12v + 36 = 0$ factors of 36 that add (same signs +) to get 12

$(v-6)(v-6) = 0$ only put the answer once

$v - 6 = 0$

$x = 6$

6) $p^2 + 8p + 15 = 0$ factors of 15 that add (same signs +) to get 8

$(p+5)(p+3) = 0$ Set each equal to zero:

$x+5 = 0$ and $x + 3 = 0$

$x = -5, -3$

7) $x^2 - 11x + 24 = 0$ factors of 24 that add (same signs +) to get 11,

$(x-8)(x-3) = 0$ signs are the same (first sign)

$x-8=0$ and $x-3=0$

$x = 8,3$

8) $p^2 + 7p - 30 = 0$ factors of 30 that subtract (different signs +) to get 7

$(p+10)(p-3) = 0$ Set each equal to zero:

$p+10 = 0$ and $p + 3 = 0$

$p = -10, -3$

9) $x^2 - 121 = 0$ when 2 terms: difference of two squares

$(x+11)(x-11)= 0$ take square root, signs are different in answer

Set each equal to zero:

$x+11 = 0$ and $x - 11 = 0$

$x = -11,11$

10) $4x^2 = 32x$ move everything to the left = 0

$4x^2 - 32x=0$ when 2 terms: use GCF

$4x(x-8)=0$ take GCF, always has only one set of parentheses

$4x = 0$ and $x - 8 = 0$

$x = 0,8$

11) $x^2 - 11x + 24 =0$ factors of 24 that add (same signs +) to get 11,

$(x-8)(x-3)=0$ signs are the same (first sign)

$x-8=0$ and $x-3=0$

$x = 8,3$

EASY WAY TO GET FACTORS:

FACTORS 24

Write Factors: 1 and 24

then double the left column
and half the right column

EASY WAY TO GET FACTORS

DOUBLE	HALF
1	24
2	12
4	6
8	3

ALWAYS TRY 2, 3, 5, 7 ON THE LEFT-HAND SIDE IF YOU CAN'T HALF THE RIGHT

12) -2n(5n-1)=0

-2n=0 and 5n-1=0 set each equal to zero and solve for x

5x = 1 divide by 5

n = 0, $\frac{1}{5}$

13) $t^2 + 5t + 4 = 0$ factors of 4 that add (same signs +) to get 5

(t+1)(t+4) = 0 set each equal to zero and solve for x

t+1=0 and t+4=0

t = -1,4

14) $t^2 - 14t + 45 = 0$ factors of 45 that add (same signs -) to get 14

(t-9)(t-5) = 0 set each equal to zero and solve for x

t-9=0 and t-5=0

t = 9,5

15) $v^2 + 12v + 27 = 0$ factors of 27 that add (same signs +) to get 12

(v+9)(v+3) = 0 set each equal to zero and solve for x

v+9=0 and v+3=0

v = -9,-3

16) $g^2 + 2g - 35 = 0$ factors of 35 that subtract (different signs) to get 2

(g+7)(g-5)=0 *(higher number gets 1st sign from problem)*

g + 7 = 0 and g – 5 = 0 set each equal to zero and solve for x

g = -7,5

17) $2s^2 + 9s = 35$ move 35 to the left = 0

$2s^2 + 9s - 35 = 0$ **SLIDE AND DIVIDE**

$s^2 + 9s - 70 = 0$ factors of 70, subtract (different signs) to get 9

$(s-5)(s+14)=0$ the divide by 2

2 2

$s - \frac{5}{2} = 0$ and $s + \frac{14}{2} = 0$

$s = \frac{5}{2}, -7$

18) $4w^2 + 8w = 3$ move 3 to the left and set =0

$4w^2 + 8w - 3 = 0$ **SLIDE AND DIVIDE**

$w^2 + 8w + 12 = 0$ factors of 12 that add (same signs +) to get 8

$(w+2)(w+6)=0$ the divide by 4

4 4

$w + \frac{2}{4} = 0$ *and* $w + \frac{6}{4} = 0$ reduce each fraction

$w = -\frac{1}{2}, -\frac{3}{2}$

19) $5m^2 - 26m - 24 = 0$

$m^2 - 26m - 120 = 0$ factors of 120 that subtract (different signs +) to get 26

$(m+4)(m-30)=0$ *higher # is -* the divide by 5

5 5

$m + \frac{4}{5} = 0$ and $m - 6 = 0$

$m = -\frac{4}{5}, 6$

20) $4s^2 - 25s = 21$ move 21 to the left and set =0

$4s^2 - 25s - 21 = 0$

$s^2 - 25s - 84 = 0$ factors of 84that subtract (different signs +) to get 25

$(s+3)(s-28)=0$ *higher # is -* the divide by 4

4 4

$s + \frac{3}{4} = 0 \; and \; s - 7 = 0$

$s = -\frac{3}{4}, 7$