Kuta Software - Infinite Algebra 1 Name________________

Solving Quadratic Equations with Square Roots

Date________________ Period____

Solve each equation by taking square roots.

1) $\sqrt{k^2} = \sqrt{\cancel{76}}$

$2 \wedge \cancel{38}$

$2 \wedge 19$

$\boxed{k = \pm 2\sqrt{19}}$

2) $k^2 = 16$

3) $x^2 = 21$

4) $a^2 = 4$

5) $x^2 + 8 = 28$

$\sqrt{x^2} = \sqrt{\cancel{20}}$

$4 \wedge 5$

$2\ 2$

$\boxed{x = \pm 2\sqrt{5}}$

6) $\cancel{2}n^2 = -144$

$\frac{\cancel{2}}{\cancel{2}} \quad \frac{}{2}$

$\sqrt{n^2} = \sqrt{-\cancel{72}}$

$\cancel{9} \wedge \cancel{8}$

$3\ 3 \quad 2 \wedge \cancel{4}$

$2\ 2$

$\boxed{n = \pm 6i\sqrt{2}}$

7) $-6m^2 = -414$

8) $7x^2 = -21$

9) $m^2 + 7 = 88$

10) $-5x^2 = -500$

11) $-7n^2 = -448$

12) $-2k^2 = -162$

13) $x^2 - 5 = 73$

14) $\cancel{16}n^2 = 49$

$\frac{}{\cancel{16}} \quad \frac{}{16}$

$\sqrt{n^2} = \sqrt{\frac{49}{16}}$

$\boxed{n = \pm \frac{7}{4}}$

15) $n^2 - 5 = -4$

16) $n^2 + 8 = 80$

17) $7v^2 + 1 = 29$

18) $10n^2 + 2 = 292$

19) $2m^2 + 10 = 210$

$2m^2 = 200$

$\sqrt{m^2} = \sqrt{100}$

$\boxed{m = \pm 10}$

20) $9n^2 + 10 = 91$

21) $5n^2 - 7 = 488$

22) $8n^2 - 6 = 306$

23) $10n^2 - 10 = 470$

24) $8n^2 - 4 = 532$

25) $4r^2 + 1 = 325$

26) $8b^2 - 7 = 193$

27) $2k^2 - 2 = 144$

28) $3 - 4x^2 = -85$

Algebra II

Factoring: General Trinomials when a≠1

Name________________

Period_____Date____________

To **factor a trinomial** like $a \cdot x^2 + b \cdot x + c$ in general, think of FOIL in reverse or consider an area model. If there is no common factor, this must be the product of two binomials, so it must be in the form (___$\cdot x$ + ___) (___$\cdot x$ + ___). Three conditions must be met.

The product of the numbers in the first blanks in each binomial is a.

The product of the numbers in the last blanks in each binomial is c.

The sum of the outside product and the inside product is b.

Option 1: Guess and Check: Consider the polynomial: $3x^2 + 11x + 10$

$(3x + \cancel{2})(x + \cancel{5})$

$\cancel{3x^2 + 15x + 2x + 10}$

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

$3x^2 + 6x + 5x + 10$

Option 2: Grouping:

a·c

b

30

6 5

11

$(3x^2+6x)+(5x+10)$

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

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

Option 3: Slip and Divide:

Solve these by Factoring each of the following polynomials.

-45

-9 5

-4

1.) $3x^2 - 4x - 15=0$

$(3x^2-9x)+(5x-15)=0$

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

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

$\boxed{x=3}$

$3x+5=0$

$3x=-5$

$\boxed{x=-\frac{5}{3}}$

2.) $3n^2 - 5n - 2=0$

3.) $3x^2 - 7x + 2=0$

4.) $2x^2 + 7x - 4=0$

5.) $6a^2 + 23a + 7=0$

6.) $15x^2 - 19x - 10=0$

7.) $9n^2 + 12n - 5 = 0$

8.) $14x^2 - 19x - 3 = 0$

9.) $9x^2 + 18x + 8 = 0$

10.) $7x^2 = 15x - 2$

11.) $0 = 4x^2 + 4x - 15$

12.) $20x^2 = 6x + 2$

13.) $15 + x - 2x^2 = 0$

14.) $-2y^2 - 6y + 20 = 0$

15.) $30x^2 - x - 20 = 0$

16) $33x + 15 = -6x^2$

10 10 1 11

$6x^2 + 33x + 15 = 0$

$3(2x^2 + 11x + 5) = 0$

$3([2x^2 + 10x] + [1x + 5]) = 0$

$3(2x(x+5) + 1(x+5)) = 0$

17.) $3x^2 - 4x + 1 = 0$

18.) $6x^2 + 4x - 10 = 0$

$3(x+5)(2x+1) = 0$

$\cancel{3=0}$ $\boxed{x = -5}$ $2x + 1 = 0$

$2x = -1$

$\boxed{x = -\frac{1}{2}}$

19.) $0 = 15x^2 + 19x + 6$

20.) $15x^2 - 25x - 10 = 0$

21.) $35x^3 = 34x^2 - 8x$

280 -20 -14 -34

$35x^3 - 34x^2 + 8x = 0$

$x(35x^2 - 34x + 8) = 0$

$x[(35x^2 - 20x) - (14x + 8)] = 0$

$x[5x(7x-4) - 2(7x-4)] = 0$

22.) The length of a rectangle is 8ft more than the width. The area is 20ft². What is the width and the length of the rectangle?

$x(7x-4)(5x-2) = 0$

$\boxed{x = 0}$ $\boxed{x = \frac{4}{7}}$ $\boxed{x = \frac{2}{5}}$

$l = 3(6) - 4 = 14$ $\boxed{l = 14, w = 6}$

23.) The length of a picture is four less than three times the width. If the area is 84 cm², what is the length and width of the picture?

$A = lw$

$84 = (3w - 4)w$

$84 = 3w^2 - 4w$

$0 = 3w^2 - 4w - 84$

-252 -18 14 -4

$0 = (3w^2 - 18w) + (14w - 84)$

$0 = 3w(w-6) + 14(w-6)$

$0 = (w-6)(3w+14)$

$w = 6, \cancel{-\frac{14}{3}}$