Algebra 1 Name KEY ID:

WS Solving Quadratics by Factoring

Date Period

Solve each equation by factoring.

1) $(7n-5)(7n-6)=0$

$7n-5=0$ $\quad$ $7n-6=0$

$+5\ +5$ $\quad$ $+6\ +6$

$\frac{7n}{7}=\frac{5}{7}$ $\quad$ $\frac{7n}{7}=\frac{6}{7}$

$n=\frac{5}{7}$ and $n=\frac{6}{7}$

2) $(m-6)(m+7)=0$

$m-6=0$ $\quad$ $m+7=0$

$+6\ +6$ $\quad$ $-7\ -7$

$m=6$ and $m=-7$

3) $(7k+2)(k+6)=0$

$7k+2=0$ $\quad$ $k+6=0$

$-2\ -2$ $\quad$ $-6\ -6$

$\frac{7k}{7}=\frac{-2}{7}$ $\quad$ $k=-6$

$k=\frac{-2}{7}$

4) $a(3a-7)=0$

$a=0$ $\quad$ $3a-7=0$

$+7\ +7$

$\frac{3a}{3}=\frac{7}{3}$

$a=0$ $\quad$ $a=\frac{7}{3}$

5) $7x^2-5=34x$

$-34x\ -34x$

$7x^2-34x-5=0$ $\quad$ $(7x^2-35x)+(x-5)=0$

$a\quad b\quad c$

$7x(x-5)+1(x-5)=0$

$(7x+1)(x-5)=0$

$a\cdot c=-35$

1	-35
5	-7

$7x+1=0$

$-1\ -1$

$\frac{7x}{7}=\frac{-1}{7}$

$x=5$

$x=\frac{-1}{7}$

6) $3x^2=-5-8x$

$+8x\ +5\ +8x$

$+5$

$3x^2+8x+5=0$

$a\quad b\quad c$

$a\cdot c=15$

1	15
3	5

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

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

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

$x=\frac{-5}{3}$ $\quad$ $x=-1$

7) $3a^2=8a$

$3a^2-8a=0$

$a(3a-8)=0$

$a=0$ $\quad$ $a=\frac{8}{3}$

8) $3v^2-v=10$

$3v^2-v-10=0$

$a\quad b\quad c$

$a\cdot c=-30$

1	-30
2	-15
3	-10
5	-6

$(3v^2+5v)(-6v-10)=0$

$v(3v+5)-2(3v+5)=0$

$(v-2)(3v+5)=0$

$v=2$ and $v=\frac{-5}{3}$

9) $k^2 = 7k - 10$

$k^2 - 7k + 10 = 0$

$(k-5)(k-2) = 0$

$k = 5 \quad k = 2$

10) $p^2 = 12 + 4p$

$p^2 - 4p - 12 = 0$

$(p-6)(p+2) = 0$

$p = 6 \quad p = -2$

11) $x^2 = 3x$

$x^2 - 3x = 0$

$x(x-3) = 0$

$x = 0$ and $x = 3$

12) $n^2 - 12n = -35$

$n^2 - 12n + 35 = 0$

$(n-7)(n-5) = 0$

$n = 7$ and $n = 5$

13) A group of friends tries to keep a beanbag from touching the ground without using their hands. Once the beanbag has been kicked, its height can be modeled by $h = -16t^2 + 14t + 2$, where h is the height in feet above the ground and t is the time in seconds. Find the time it takes the beanbag to reach the ground.

$-16t^2 + 14t + 2 = 0$

$-2(8t^2 - 7t - 1) = 0$ (a, b, c)

$a \cdot c = -8$: $1 \mid -8$, $2 \mid 4$

$(8t^2 - 8t) + (t - 1) = 0$

$8t(t-1) + 1(t-1) = 0$

$(8t+1)(t-1) = 0$

(When it reaches ground, height = 0)

$t = \frac{-1}{8}$ or $t = 1$

1 second

14) The height of a flare can be approximated by the function $h = -16t^2 + 95t + 6$, where h is the height in feet and t is the time in seconds. Find the time it takes the flare to hit the ground.

$-16t^2 + 95t + 6 = 0$

$-1(16t^2 - 95t - 6) = 0$ (a, b, c)

$a \cdot c = -96$: $1 \mid -96$

$(16t^2 + 1t) - 96t - 6 = 0$

$t(16t+1) - 6(16t+1) = 0$

$(t-6)(16t+1) = 0$

$t = 6 \quad t = -1/16$ so → $t = 6$ seconds

15) The height of a fireworks rocket in meters can be approximated by $h = -5t^2 + 30t$, where h is the height in meters and t is the time in seconds. Find the time it takes the rocket to reach the ground after it has been launched.

$-5t^2 + 30t = 0$

$-5t(t-6) = 0$

$t = 0$ or $t = 6$ → $t = 6$ seconds