Name Key Date Period

Find the x-intercepts of the quadratics by factoring.

1. $y = x^2 - 15x + 50$

$0 = (x-5)(x-10)$

$x = 5 \quad x = 10$

50, -5, -10, -15

$1 \cdot 50$

$2 \cdot 25$

$5 \cdot 10$

x-intercepts: $x = 5$

$x = 10$

2. $y = 5x^2 + 19x + 12$

$0 = 5x^2 + 15x + 4x + 12$

$5x(x+3) + 4(x+3)$

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

$x = -3$

$x = -4/5$

60, 4, 15, 19

$1 \cdot 60$

$2 \cdot 30$

$3 \cdot 20$

$4 \cdot 15$

x-intercepts: $x = -3$

$x = -4/5$

Put the quadratic equation into vertex form then find the x-intercepts by completing the square.

3. $y = x^2 + 6x - 59$

$y + 59 = x^2 + 6x$

$y + 59 + \boxed{9} = x^2 + 6x + \boxed{9}$

$y + 68 = (x+3)^2$

$y = (x+3)^2 - 68$

$\pm\sqrt{68} = x + 3$

$x = -3 \pm \sqrt{68}$

$x = -3 \pm 2\sqrt{17}$

68

34

$2 \cdot 17$

Vertex Form: $y = (x+3)^2 - 68$

Vertex: $(-3, -68)$

Exact x-intercepts: $-3 \pm 2\sqrt{17}$

Approximate x-intercepts: $x \approx 5.25$

$x \approx -11.25$

68

$2 \cdot 34$

$2 \cdot 17$

$\sqrt{68} = \sqrt{2^2} \cdot \sqrt{17}$

$\sqrt{68} = 2\sqrt{17}$

Name________________ Date__________ Period__________

Find the x-intercepts of the quadratic by using the quadratic formula.

4. $y = 2x^2 + 3x - 20$

Exact x-intercepts: $X = 2.5 \quad X = -4$

Approximate x-intercepts: same

$$x = \frac{-3 \pm \sqrt{3^2 - 4(2)(-20)}}{2(2)}$$

$$x = \frac{-3 \pm \sqrt{169}}{4}$$

$$X = \frac{-3 \pm 13}{4}$$

$$X = \frac{-3+13}{4} = \frac{10}{4} \quad \text{and} \quad X = \frac{-3-13}{4} = \frac{-16}{4}$$

Find the x-intercepts, y-intercept AND the vertex using ANY method, then graph.

5. $y = x^2 + 7x - 120$

x-Intercepts: $(-15, 0)$ & $(8, 0)$

vertex: $(-3.5, -132.25)$

y – intercept: $(0, -120)$

1 · 120
2 · 60
3 · 40
4 · 30
5 · 24
6 · 20
8 · 15
10 · 12

-120; 15, -8; 7

$0 = (x+15)(x-8)$

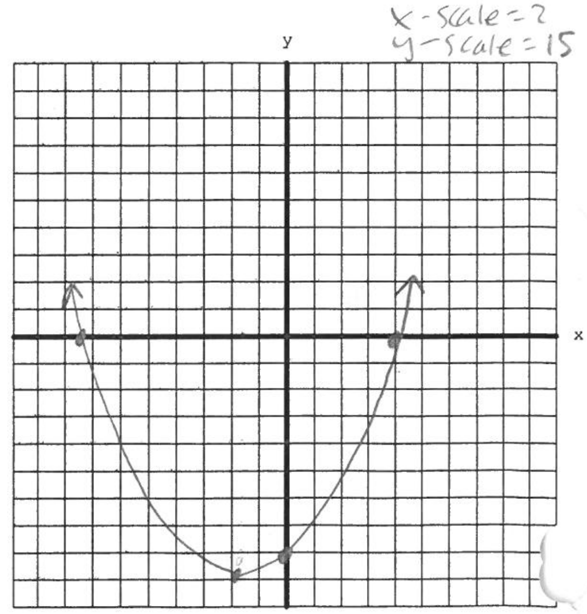
$X = -15 \quad x = 8$

$$\frac{-15+8}{2} = \frac{-7}{2}$$

$y = (-7/2)^2 + 7(-7/2) - 120$

$y = -132.25$

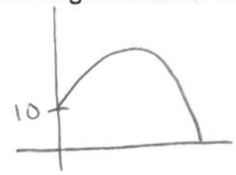
x-scale = 2
y-scale = 15



Name________________________ Date______________ Period__________

6. Mr. Belby and Mr. Sacco were goofing around on the football field. Mr. Sacco punted the football to Mr. Belby with an initial velocity of 24.5 ft/sec. He was standing in the bleachers, about 10 feet high. Use the equation $y = -16x^2 + v_0x + h_0$ to write an equation for this situation. Then: $y = -16x^2 + 24.5x + 10$

   a. Draw a rough sketch of the information in the problem.



   b. How high is the ball after 1 second?

$y = -16(1)^2 + 24.5(1) + 10 = \boxed{18.5 \text{ ft.}}$

   c. Find the maximum height of the ball to one decimal place.

$x = -b/2a = -\frac{24.5}{2(-16)} = .765625$

$y = -16(.765625)^2 + 24.5(.765625) + 10 = \boxed{19.4 \text{ ft.}}$

   d. When does the ball reach its maximum height?

$\boxed{.765625 \text{ sec}}$

   e. When does the ball hit the ground?

$0 = -16x^2 + 24.5x + 10$

$x = \frac{-24.5 \pm \sqrt{24.5^2 - 4(-16)(10)}}{2(-16)}$

$\boxed{x = -.33 \quad x = 1.87}$

7. How do you decide which method of solving quadratics is best to use? Write down each method and explain when it is and isn't best to use this method.

Factoring - If I quickly see a solution to the product/sum rule, I especially hope a=1 if I don't want to group.

CTS - a=1 and b is even, this isn't too hard.

QF - any time... substitute and calculate! need to know the formula.