Name Key Date _____ Pd _____

3.1 – 3.3 Quiz Review CYU

☑ *Use when you get it right all by yourself*

S *Use when you did it all by yourself, but made a silly mistake*

H *Use when you could do it alone with a little help from teacher or peer*

G *Use when you completed the problem in a group*

X *Use when a question was attempted but wrong (get help)*

N *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Solving Quadratic Equations	1 - 8	9 – 12, 31 - 34	13, 14, 43 - 48
Factoring	1, 2, 4	3, 5 - 8	
Square Root Method	9	10	11, 12
Projectile Motion			13, 14
Complex Numbers	15 - 20		
Operations with Complex Numbers	15 - 20		
Simplifying Radicals with Negatives	21 – 24		
Vocabulary	25 - 30		
Finding a new "c" or □	35 – 38		
Converting to Vertex Form			39 - 42
Completing the Square		43 - 48	39 - 42

Be sure to show all work for full and partial credit. Read the directions carefully, and box your final answer If time allows check your work using a different method like the calculator!

3.1 Solving Quadratic Equations

I. Using Factoring: because it is the most efficient

1. $(3n-2)(4n+1)=0$

$n=\frac{2}{3},-\frac{1}{4}$

2. $m(m-3)=0$

$m=0,3$

3. $3k^2+72=33k$

$k=8,3$

4. $n^2=-18-9n$

$n=-6,-3$

5. $-2v^2-v+12=-3v^2+6v$

$v=4,3$

6. $3x^2-8x=16$

$x=-\frac{4}{3},4$

7. $28n^2=-96-184n$

$n=-\frac{4}{7},-6$

8. $7a^2+32=7-40a$

$a=-\frac{5}{7},-5$

II. Using the Square Root Method: because "b" is 0

9. $k^2 + 6 = 6$

$K = \pm 0$
or
$K = 0$

10. $25v^2 = 1$

$V = \pm \frac{1}{5}$

11. $-10 - 5n^2 = -330$

$n = \pm 8$

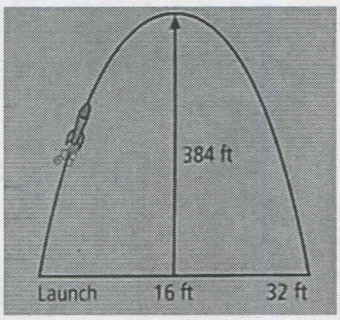
12. $13p^2 - 3 = 4209$

$p = \pm 18$

III. With Projectile Motion: word problems in meters (-4.9) and feet (-16)

13. The diagram shows the path of a model rocket launched from the ground. It reaches a maximum altitude of 384 ft when it is above a location 16 ft from the launch site. What quadratic function models the height of the rocket? *(HINT: write your equation without the "b" and use the vertex or zero as your point (x, y) to find b, then write your equation!)*

$y = -1.5(x)(x-32$
or
$y = -1.5(x-16)^2 + 384$



14. A woman drops a front door key to her husband from their apartment window several stories above the ground. The function $h = -16t^2 + 64$ gives the height *h* of the key in feet, *t* seconds after she releases it.

a. How long does it take the key to reach the ground?

2 seconds

Window
0
5
0.5
0
100
5

b. What are the reasonable domain and range for the function *h*?

D: [0, 2] seconds

R: [0, 64] feet

3.2 Complex Numbers

I. Operations: be careful of the sign: addition, subtraction, or multiplication

15. $i + 6i$ — $7i$

16. $(-1 - 8i)\quad (4 + i)$ — $-5-9i$

17 $-3 + 6i - (-5 - 3i) - 8i$ — $2+i$

18. $4i(-2 - 8i)$ — $32-8i$

19. $(\ 2 - i)(4 + i)$ — $-7-6i$

20. $6(-7 + 6i)(-4 + 2i)$ — $96-228i$

II. Properties of Imaginary Numbers: $i^2 = -1$

21. $\sqrt{-40}$ — $2i\sqrt{10}$

22. $\sqrt{-210}$ — $i\sqrt{210}$

23. $\sqrt{-24}$ — $2i\sqrt{6}$

24. $\sqrt{-96}$ — $4i\sqrt{6}$

III. Vocabulary Definitions: in order to understand word problems better

25. Natural numbers — counting #'s
26. Integer — ± whole #'s
27. Complex number — a+bi
28. Real number — non-imaginary
29. Irrational number — rounded
30. Whole number — natural & 0

IV. Solving with Complex Numbers: no solution is no longer an acceptable answer

31. $k^2 + 12 = 6$ — $K = \pm i\sqrt{6}$

32. $x^2 - 2 = -20$ — $X = \pm 3i\sqrt{2}$

33. $4b^2 - 2 = -326$ — $b = \pm 9i$

34. $2p^2 + 2 = 6$ — $p = \pm 2i$

3.3 Completing the Square

I. Find the new "c" value: what would go in your □

35. $x^2 + 6x + \square$ — $\boxed{9}$

36. $z^2 - 10z + \square$ — $\boxed{25}$

37 $r^2 + 32r + \square$ — $\boxed{256}$

38. $a^2 - 7a + \square$ — $\boxed{\frac{49}{4}}$

II. Convert to Vertex Form: DO NOT SOLVE

39. $x^2 + 14x - 38 = y$ $y = (x+7)^2 - 87$

40. $y = x^2 + 6x - 59$ $y = (x+3)^2 - 68$

41. $x^2 - 2x - 3 = y$ $y = (x-1)^2 - 4$

42. $y = x^2$ $12x + 23$ $y = (x-6)^2 - 13$

III. Solve Using Completing the Square: get x alone and do not forget the "±"

43. $r^2 - 4r - 91 = 7$ $r = 2 \pm \sqrt{102}$

44. $b^2 + 2b = -20$ $b = -1 \pm i\sqrt{19}$

45. $k^2 - 4k + 1 = -5$ $K = 2 \pm i\sqrt{2}$

46. $2x^2 - 5x + 67 = 0$ $X = \frac{5 \pm i\sqrt{511}}{4}$

47. $4n^2 + 4n + 36 = 0$ $n = \frac{-1}{2} \pm \frac{i\sqrt{35}}{2}$ or $n = \frac{-1 \pm i\sqrt{35}}{2}$

48. $3x^2 = -4 + 8x$ $X = 2, \frac{2}{3}$

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the