Name Key Date _____ Pd _____

3.6 Quadratic Inequalities 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

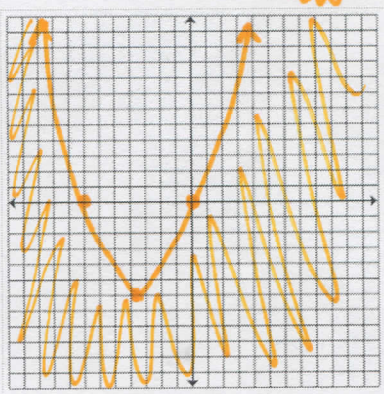
X Use when a question was attempted but wrong (get help)

N Use when a question was not even attempted

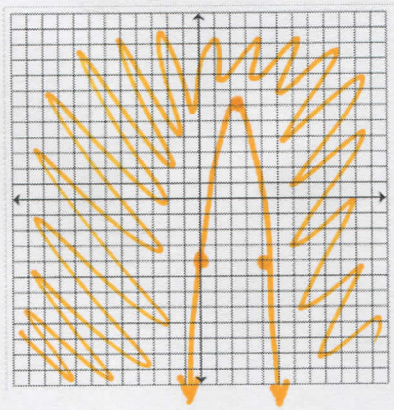
CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Graphing quadratic inequalities	1	2, 4, 5	3
Modeling with Mathematics Real World Problem		4, 5	
Graphing a system of quadratic inequalities		6, 7, 8	
Solving quadratic inequalities with one variable	9	10	11

Graph the inequality.

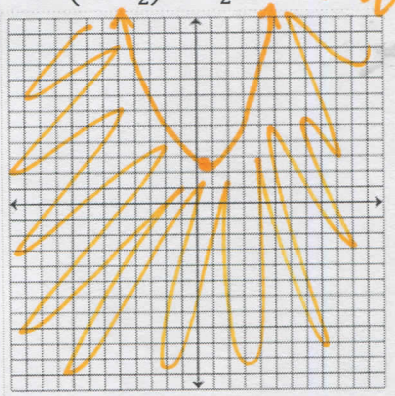
1. $y \leq x^2 + 5x$



2. $y \geq -2x^2 + 9x - 4$

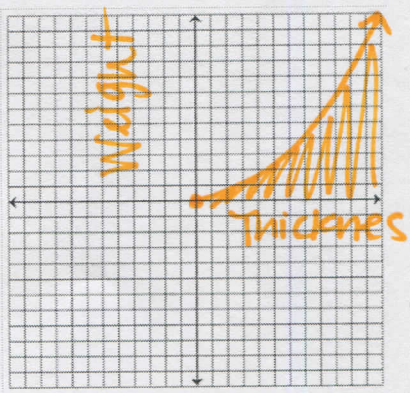


3. $y \leq \left(x - \frac{1}{2}\right)^2 + \frac{5}{2}$



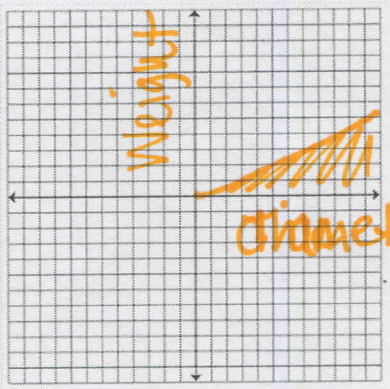
4. **MODELING WITH MATHEMATICS** A hardwood shelf in a wooden bookcase can safely support a weight W (in pounds) provided $W \leq 115x^2$, where x is the thickness (in inches) of the shelf. Graph the inequality and interpret the solution in terms of the scenario.

Shaded region represents weights that can be supported by shelves with various thicknesses.



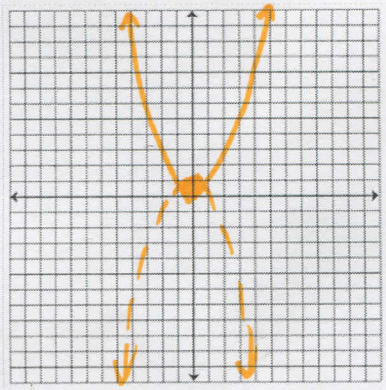
5. **MODELING WITH MATHEMATICS** A wire rope can safely support a weight W (in pounds) provided $W \leq 8000d^2$, where d is the diameter (in inches) of the rope. Graph the inequality and interpret the solution in terms of the scenario.

Shaded region represents the weights that can be supported by wire ropes with various diameters.

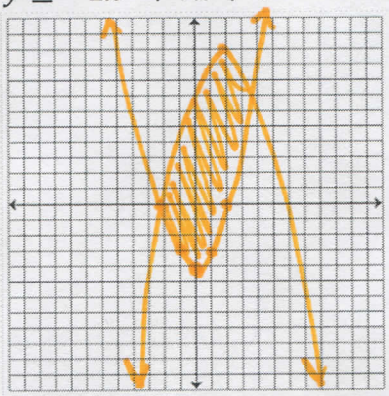


Graph the system of quadratic inequalities.

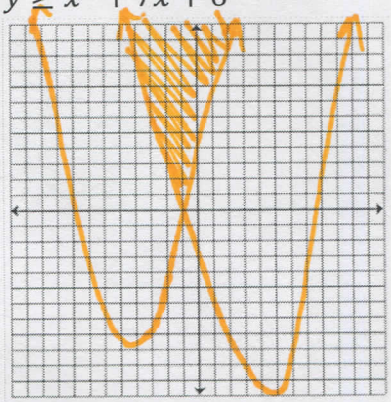
6. $y \geq 2x^2$
$y < -x^2 + 1$



7. $y \geq x^2 - 4$
$y \leq -2x^2 + 7x + 4$

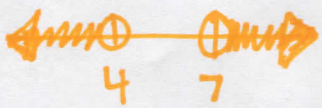


8. $y \geq x^2 - 3x - 6$
$y \geq x^2 + 7x + 6$



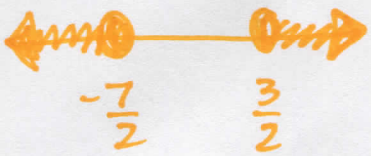
Solve the inequality algebraically.

9. $x^2 - 11x \geq -28$



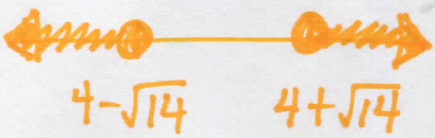
$(-\infty, 4) \cup (7, \infty)$

10. $4x^2 + 8x - 21 \geq 0$



$(-\infty, -\frac{7}{2}] \cup [\frac{3}{2}, \infty)$

11. $-\frac{1}{2}x^2 + 4x \leq 1$

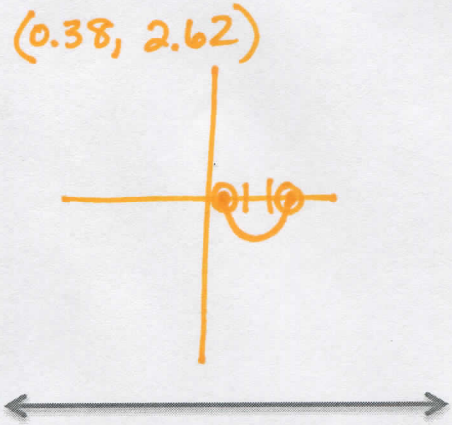


$(-\infty, 4-\sqrt{4}] \cup [4+\sqrt{14}, \infty)$

Solve the inequality by graphing.

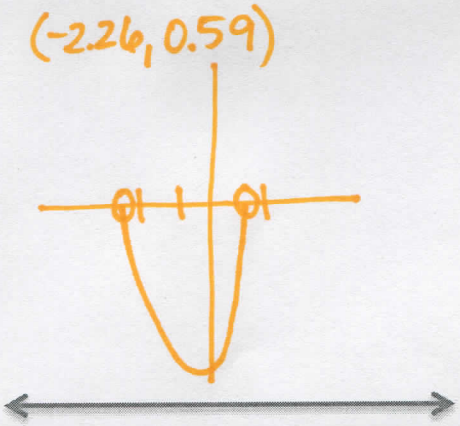
12. $x^2 - 3x + 1 < 0$

(0.38, 2.62)



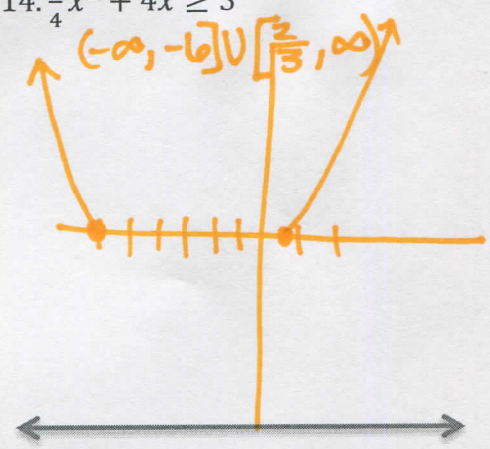
13. $3x^2 + 5x - 3 < 1$

(-2.26, 0.59)



14. $\frac{3}{4}x^2 + 4x \geq 3$

$(-\infty, -6] \cup [\frac{2}{3}, \infty)$



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