

CYU 1.2 Transformations

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
Translations: left, right, up, down	5, 6, 7, 8, 9, 11 - 14	1, 3,	16, 17, 19, 20
Reflections: $R_x, R_y$	6, 8, 10, 12	4	18, 20
Vertical Stretch (VS)/ Vertical Compression (VC)	5, 9, 10, 13, 14	2,	15, 18
Horizontal Stretch (HS)/ Horizontal Compression (HC)	11		19

- Transform the linear parent function ( $f(x) = x$ ) down 3 units. Write the new rule.  $f(x) - 3$   
 $f(x) = x - 3$
- Transform the absolute value parent function ( $f(x) = |x|$ ) by a vertical compression of  $\frac{1}{4}$ . Write the new rule.  $\frac{1}{4}f(x)$   $f(x) = \frac{1}{4}|x|$
- Transform the quadratic parent function ( $f(x) = x^2$ ) left 5 units. Write the new rule.  $f(x + 5)$   
 $g(x) = (x + 5)^2$
- Reflect the constant function ( $y = 2$ ) over the x-axis. Write the new rule.  $-f(x)$   
 $g(x) \Rightarrow x = 2$
- Describe the transformations from the parent function to this function:  $f(x) = 2x + 3$ .  $VS 2; \uparrow 3u$   
linear
- Describe the transformations from the parent function to this function:  $f(x) = 4 - x$ .  $R_x; \rightarrow 4u$   
linear  
 $-x + 4 = -(x - 4)$
- Describe the transformations from the parent function to this function:  $f(x) = (x - 6)^2$ .  $\rightarrow 6u$   
quadratic
- Describe the transformations from the parent function to this function:  $f(x) = -(x + 8)^2$ .  $R_x; \leftarrow 8u$   
quadratic
- Describe the transformations from the parent function to this function:  $f(x) = 2x^2 + 6$ .  $VS 2; \uparrow 3u$   
quadratic  
 $2(x^2 + 3)$



10. Describe the transformations from the parent function to this function:  $f(x) = -\frac{1}{3}x^2$ . Rx; VC  $\frac{1}{3}$   
*quadratic*
11. Describe the transformations from the parent function to this function:  $f(x) = |2x| - 3$ . HC  $\frac{1}{2}$ ;  $\downarrow 3u$   
*absolute value*
12. Describe the transformations from the parent function to this function:  $f(x) = -|x - 2|$ . Rx;  $\rightarrow 2u$   
*absolute value*
13. Describe the transformations from the parent function to this function:  $f(x) = 2|x - 1| - 6$ . VS 2,  $\rightarrow 1u$ ,  $\downarrow 6u$   
*absolute value*
14. Describe the transformations from the parent function to this function:  $f(x) = \frac{1}{2}|x + 3|$ . VC  $\frac{1}{2}$ ,  $\leftarrow 3u$   
*absolute value*
15. Use the rule provided to transform the original  $f(x)$  function and describe the changes and write the new equation.  $f(x) = 3x - 2$ ;  $2f(x)$ .  $g(x) = 2(3x - 2) = 6x - 4$   
VS 2
16. Use the rule provided to transform the original  $f(x)$  function and describe the changes and write the new equation.  $f(x) = 3x - 2$ ;  $f(x) - 7$ .  $g(x) = 3x - 2 - 7 = 3x - 9$   
 $\downarrow 7u$
17. Use the rule provided to transform the original  $f(x)$  function and describe the changes and write the new equation.  $f(x) = 3x - 2$ ;  $f(x + 2)$ .  $g(x) = 3(x + 2) - 2 = 3x + 6 - 2 = 3x + 4$   
 $\leftarrow 2u$
18. Use the rule provided to transform the original  $f(x)$  function and describe the changes and write the new equation.  $f(x) = 3x - 2$ ;  $f(x) = -3f(x)$ .  $g(x) = -3(3x - 2) = -9x + 6$   
Rx; VS 3
19. Let the graph of  $h(x)$  be a horizontal stretch by a factor of 8 followed by a translation 10 units down of the graph of  $f(x) = x$ .  $h(x) = f\left(\frac{1}{8}x\right) - 10 \Rightarrow h(x) = \frac{1}{8}x - 10$
20. Let the graph of  $g(x)$  be a reflection over the x-axis followed by a translation 5 units left of the graph of  $f(x) = |x|$ .  $g(x) = -f(x + 5) \Rightarrow g(x) = -|x + 5|$

**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 score you would give yourself.

