

## Graphing Techniques: Transformations -- Characteristics Worksheet

HORIZONTAL TRANSFORMATIONS

Horizontal Shift		Vertical Shift	
How does the graph change?	It shifts _____ or _____	How does the graph change?	It shifts _____ or _____
How does the eq'n change?	Replace all $x$ with _____ where _____ tells the direction of shift	How does the eq'n change?	Add __ to the equation
Which coord's change? How?	Add ____ to all the ____-coordinates	Which coord's change? How?	Add ____ to all the ____-coordinates
Horizontal Compression		Vertical Compression	
How does the graph change?	It compresses towards the ____-axis	How does the graph change?	It compresses towards the ____-axis
How does the eq'n change?	Replace all $x$ with _____ where _____ $> 1$	How does the eq'n change?	Multiply the equation by _____, with $0 < \text{____} < \text{____}$
Which coord's change? How?	Multiply all of the ____-coordinates by _____	Which coord's change? How?	Multiply all of the ____-coordinates by _____
Horizontal Stretch		Vertical Stretch	
How does the graph change?	It stretches away from the ____-axis	How does the graph change?	It stretches away from the ____-axis
How does the eq'n change?	Replace all $x$ with _____ where $0 < \text{____} < \text{____}$	How does the eq'n change?	Multiply the equation by _____, with _____ $> 1$
Which coord's change? How?	Multiply all of the ____-coordinates by _____	Which coord's change? How?	Multiply all of the ____-coordinates by _____
Horizontal ( $y$ -axis) Reflection		Vertical ( $x$ -axis) Reflection	
How does the graph change?	Spin it around the ____-axis	How does the graph change?	Spin it around the ____-axis
How does the eq'n change?	Replace all $x$ with _____	How does the eq'n change?	Multiply the equation by _____
Which coord's change? How?	Multiply all of the ____-coordinates by _____	Which coord's change? How?	Multiply all of the ____-coordinates by _____

VERTICAL TRANSFORMATIONS